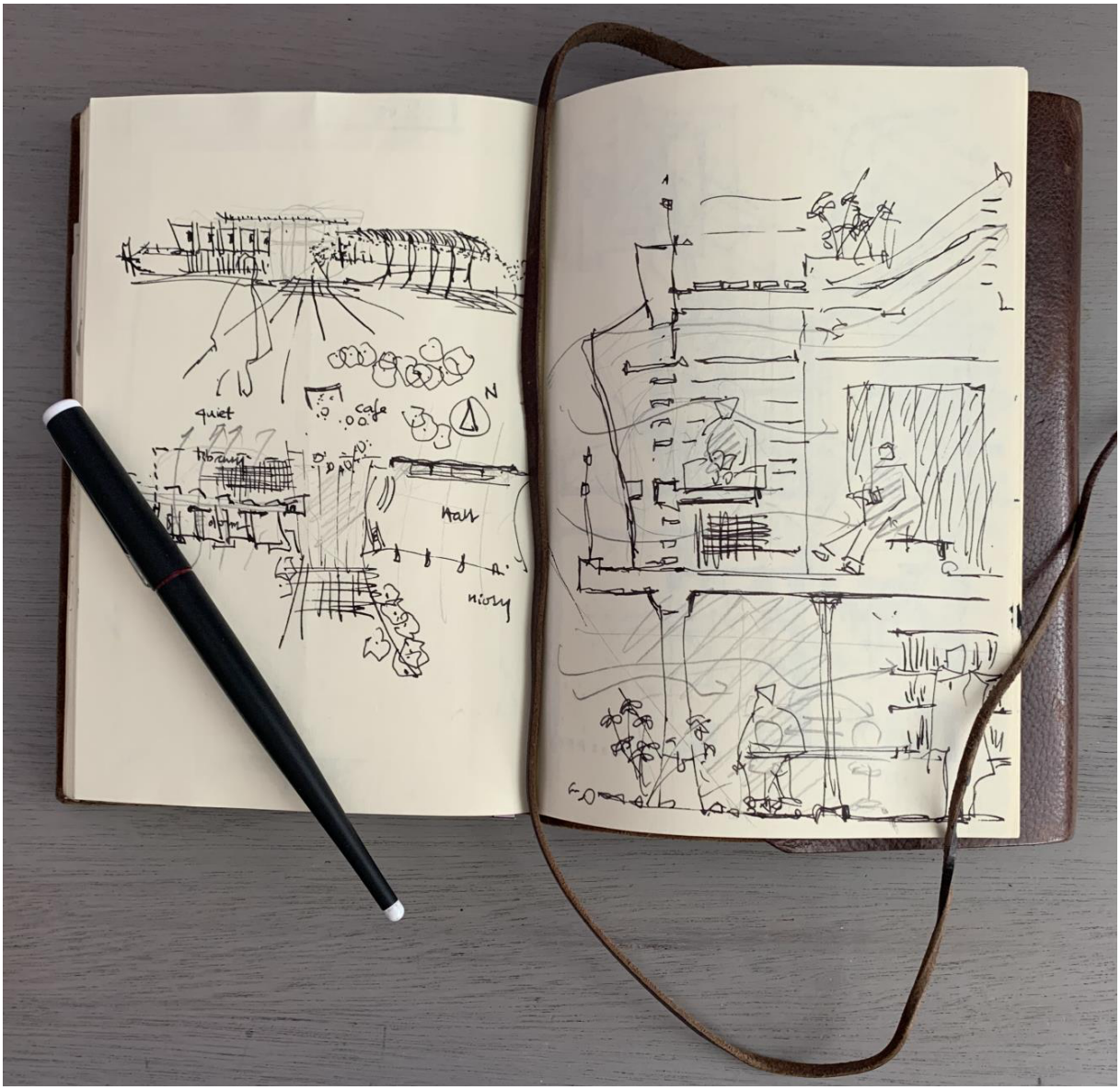

BUILDING TECHNOLOGY III
ENVIRONMENTAL TECHNOLOGY

INSTRUCTOR
Edward Ng
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DESCRIPTION

Introduces the fundamental concepts of passive environmental design. Examines the effect on buildings and their occupants of environmental conditions of light, temperature, air movement, and sound. Case studies are used to reviews both traditional and current approaches of representative building types in more depth.

OBJECTIVES

- To understand the significances of environmental design in architecture.
- To understand and to be able to apply appropriate environmental strategies in different climatic and urban contexts to achieve human comfort.
- To have a basic understanding of the building physics related to passive environmental design.
- To appreciate the application and integration of passive environmental design in architectural works.
- To develop skills in conducting a systematic investigation into the subject and presenting the results in a clear and convincing manner.

LEARNING OUTCOMES

Upon the completion of the course, students will have demonstrated a basic understanding of fundamental issues related to the environmental design of architecture. They will acquire knowledge of the subject with sufficient exposure and at a suitable level so that they will be able to appreciate the topical issues of climate, human bio-meteorology and the design of indoor and outdoor environment for human habitation. This will allow the design of better buildings, further study, or to pursue a career in the building design and construction industry.

ASSESSMENT SCHEME

SPECIFIC ASSESSMENT

00_Class Quizzes	(short answer tests) 25%
01_Assignment 1 (basic principles and climatic analysis)	(essays)* 15%
02_Assignment 2 (case study)	(essays)* 20%
03_Assignment 3 (design and application)	(essays)* 40%

Total: 100%
(* to be externally assessed.)

COURSE FORMAT

1_Lectures
2_Guest lectures
3_Group discussions
4_Presentations
5_Design tutorials

REQUIRED READINGS

Brown G Z and Dekay M, (2001) Sun, Wind and Light, 2nd edition, John Wiley and Sons Inc., New York.

RECOMMENDED

Brown G Z and Dekay M, (2001) Sun, Wind and Light, 2nd edition, John Wiley and Sons Inc., New York.
Steven Szokolay, Introduction to Architectural Science: The basis of sustainable design. Architectural Press – Elsevier, 2004.
V. Olgyay, Design with Climate: bioclimatic approach to architectural regionalism, Princeton University Press, 1963.
Reyner Banham, The Architecture of the Well Tempered Environment, 2nd edition, The Architectural Press, London, 1984.
Baruch Givoni, (1998). Climate Considerations in Building and Urban Design. John Wiley & Sons, Inc.
Baruch Givoni, (1981). Man, Climate and Architecture, Van Nostrand Reinhold, NY. .
Dean Hawkes, The Selective Environment, E & FN Spon, London, 2000.
Thomas Randall (ed), Environmental Design, E & FN Spon, London, 1996.
M Rohinton Emmanuel, An Urban Approach to Climate-Sensitive Design, Spon Press, London, 2005.
Robert and Brenda Vale, Green Architecture, Thames and Hudson, London, 1991.

OTHER REFERENCES

Mossin, N., Stilling, S., Bøjstrup, T. C., Larsen, V. G., Blegvad, A., Lotz, M., & Rose, L. (2018). An architecture guide to the UN 17 Sustainable Development Goals. KADK.

IMPORTANT NOTE TO STUDENTS

Expectations for Professional Conduct
The motto of The Chinese University of Hong Kong (CUHK) is "Through learning and temperance to virtue". This motto places equal emphasis on the intellectual and moral education of students. In addition to pursuing academic excellence, students of CUHK are expected to maintain and uphold the highest standard of integrity and honesty in their academic and personal lives, respect the rights of others and abide by the law. More information on Postgraduate studies can be found in the PG Student Handbook. https://www.gs.cuhk.edu.hk/

Attendance
Class attendance is required in all courses. For an excused absence, the instructor must be notified and presented with documentation of illness or personal matter. Please note: **Three (3)** or more unexcused absences may result in a failing grade for the course.

Academic Honesty
The Chinese University of Hong Kong places very high importance on honesty in academic work submitted by students and adopts a policy of zero tolerance on academic dishonesty

Attention is drawn to University policy and regulations on honesty in academic work, and to the disciplinary guidelines and procedures applicable to breaches of such policy and regulations. Details may be found at: http://www.cuhk.edu.hk/policy/academichonesty/.

With each assignment, students may be required to submit a statement that they are aware of these policies, regulations, guidelines and procedures.

Third-Party Assistance
All intellectual work essential to the design project must be completed by the student and cannot, under any circumstance, be outsourced to a third party (including, but not limited to a company, consultant, alumni, and/or friend).

In the design studio context, students may utilize external resources, such as printing services for presentation materials, and/or laser cutting and 3D printing services for prototyping purposes. Use of such third-party services constitutes non-intellectual work done by others. It is only permitted with prior written consent from the studio tutor and acknowledgment of such work done by the third party.

Assistance from other students or friends for aspects of project production also constitutes non-intellectual work done by others; this is allowed only if declared and acknowledged in a written statement attached to any such work that has received assistance.

Under all circumstances, students must declare all work done by others by completing the school's designated form before assessment. This form must include a detailed explanation of the third party's identity (name and relationship to the student), when and how they were utilized, and the specific tasks they performed in the project. The completed form, signed by the student, must be endorsed by the tutor and presented during the final review. The school will collect and retain this form for record-keeping purposes.

Failure to follow this code of conduct may be considered a case of academic dishonesty, to be reviewed by a disciplinary board, and possible failure of the course.

Artificial Intelligence
Unless approved by the Programme or School Director, any use of AI tools such as ChatGPT or image generation tools (Midjourney) etc. is strictly prohibited and may result in disciplinary action in accordance with university policy on academic honesty. Students may refer to the CUHK 'Use of Artificial Intelligence tools in Teaching, Learning and Assessments' – A Guide for Students.

Student Work
Submission of studio documentation must be complete and correctly formatted. Missing or incomplete submission of the documentation folder will result in the grade for the course being withheld. This will prevent registration for the following term or delay graduation. In addition, a grade deduction of *one letter grade* will be made.

GRADE DESCRIPTOR

Grade	Descriptor	Criteria	Points
A	Excellent	Outstanding performance on all learning outcomes.	4
A-	Very Good	Generally outstanding performance on all (or almost all) learning outcomes.	3.7
B+	Good	Substantial performance on all learning outcomes, OR high performance on some learning outcomes which compensates for less satisfactory performance on others, resulting in overall substantial performance.	3.3
B			3
B-			2.7
C+	Fair	Satisfactory performance on the majority of learning outcomes, possibly with a few weaknesses.	2.3
C			2
C-			1.7
D+	Pass	Barely satisfactory performance on a number of learning outcomes.	1.3
D			1
F	Failure	Unsatisfactory performance on a number of learning outcomes, OR failure to meet specified assessment requirements.	0

Term 2: 9 January 2025 (Thursday) – 25 April 2025 (Friday)

WEEK 01		
09.01	**LECTURE**	Introduction
	GUEST LECTURE (10.30am)	**K S Wong**: Architects 'Responsibility in the era towards Carbon Neutrality
WEEK 02		
16.01	**LECTURE**	An Introduction to climatic zones for design
	INTRODUCTION OF ASSIGNMENT 1	Students are to research the climatic details of the climatic zones and their design principles (in groups)
WEEK 03		
23.01	**LECTURE**	Human thermal comfort and bio-meteorology
		Studio Project 1 review 27.01.25
WEEK 04		
30.01	**NO CLASS**	Chinese New Year
WEEK 05		
06.02	**LECTURE**	Design with climate I
WEEK 06		
13.02	**LECTURE**	Design with climate II
WEEK 07		
20.02	**LECTURE**	Environmental elements: design with the sun
	ASSIGNMENT 1	**SUBMISSION**
	ASSIGNMENT 1	**PRESENTATION and DISCUSSION**
	INTRODUCTION OF ASSIGNMENT 2	Individually, students to research design examples of their climatic zones, and analyse them
WEEK 08		
27.02	**LECTURE**	Environmental elements: design with daylight
WEEK 09		
06.03	**READING WEEK**	You should try to go through the course's core readings.
WEEK 10		
13.03	**LECTURE**	Environmental elements: room acoustics and road noise
WEEK 11		
20.03	**LECTURE**	Environmental elements: architectural aerodynamics
	ASSIGNMENT 2	**SUBMISSION**
	ASSIGNMENT 2	**PRESENTATION and DISCUSSION**
	INTRODUCTION OF ASSIGNMENT 3	Students will start designing their respective climatic zones.
WEEK 12		
27.03	**LECTURE**	Urban Greening and Urban Microclimate

WEEK 13		
03.04	**LECTURE**	Hockerton and Eco-school Design
	GUEST LECTURE	MK Leung (10am) & Tony Ip (11am)
WEEK 14		
10.04	**NO CLASS**	Pre-Final Week
WEEK 15		
15.04	**FINAL REVIEW**	Studio Final Reviews
17.04	**NO CLASS**	Term Ends
WEEK 15		
25.04 **Noon, year rep submit to me**	**ASSIGNMENT 3 and ALL SUBMISSION**	You may wish to improve your assignment 1 and 2 when you put your **ALL** together. Submit to group rep to collate, gp reps submit to year rep to collate, year rep submits to me **ON TIME.** [note: Late submission [up to 4 days late] directly to my office will carry a 1 grade (e.g. B to C) penalty. Submission after that will be deemed no submission.]

Written Feedback to Students

Term: _____ **Grade:** _____

Course: _____ Date: _____

Assignment: _____ Student Name: _____

Studio Tutor: _____ Student ID: _____

Feedback from Studio Tutor:

Achievements:

Challenges: