



Philadelphia University

Faculty of Engineering and Technology

Department of Architecture

Second Semester 2021/2022

Course Details:

Title:	Environmental Control (0660291)
Prerequisite:	None
Credit Hours:	3 credit hours (16 weeks per semester, approximately 48 contact hours)
Course Logistics	1 st semester, Monday and Wednesday (12:45-14:15)
Textbook:	<ul style="list-style-type: none">Lechner, N. (2009). <i>Heating, Cooling, Lighting: Sustainable Design Methods for Architects</i>. New Jersey: John Wiley and Sons Inc.
References:	<ul style="list-style-type: none">SKAT (1993). <i>Climate Responsive Building – Appropriate Building Construction in Tropical and Subtropical Regions</i>.Mendler, S., Odell, W. and Lazarus, M. A. (2005). <i>The HOK Guidebook to Sustainable Design (2nd edition)</i>. John Wiley and Sons Inc.Szokolay, S. (1990). <i>Environmental Science Handbook for Architects and Builders</i>. New York: The Construction Press.Olgyay, V. (1992). <i>Design with Climate</i>. New York: Nosrand Reinhold.
Course Description:	This course comprises basic knowledge about environmentally responsive designs with their philosophical and functional concepts, taking into consideration heating, cooling and lighting strategies at different scales.
Website:	https://www.philadelphia.edu.jo/academics/nabughunmi/
Instructor:	Eng. Noor Al-Huda Abu Ghunmy Email: nabughunmi@philadelphia.edu.jo Office: 61412 Office hours: On board
TA information	None

Course Outlines:

Week	Topic
1-2	History, Indigenous architecture, modernization, and the need for sustainable turn
3	Thermal comfort
4-5	Climate, climatic zones and microclimate
6-7	Solar geometry (shading and heating)
8-9	Wind and windrose (ventilation)
10	Climate responsive buildings (on settlement level, building and details)
11-13	Sustainable design matrix for different design zones and through different levels
14	Day lighting and acoustics
15	The concept of green building
16	Renewable energy

Course Learning Outcomes with reference to NAAB SPC:

Upon successful completion of this course, student should be able to:

1.	Ability to demonstrate the principles of environmental systems' design, how design criteria can vary by geographic region. This demonstration must include passive heating and cooling, solar geometry, and solar systems.	B6a
2.	Ability to demonstrate the principles of environmental systems' design including daylighting and lighting systems.	B6b
3.	Ability to demonstrate the principles of environmental systems' design including natural ventilation and indoor air quality.	B6c
4.	Understanding of the basic principles involved in the appropriate selection of building envelope systems relative to fundamental performance and energy with focus on shading and heating	B7a
5.	Understanding building envelope designs that guarantee proper ventilation and deals with moisture issues	B7b
6.	Understanding proper lighting design within the building envelope	B7c
7.	Understanding of the basic principles involved in the climate responsive design on settlement level, building and details	B7d
8.	Understanding of the basic principles involved in the environmentally sustainable design of walls, roofs, openings, foundations and other building shapes and components that deals with issues such as functionality and aesthetics	B7e
9.	Understanding energy and material resources that guarantee continuity and durability of building performance.	B7f

Assessment Guidance:

Evaluation of the student performance during the semester (total final mark) will be conducted according to the following activities:

- Sub-Exams:** The students will be subjected to two scheduled written exams, first exam and second exam during the semester. Each exam will cover materials given in lectures in the previous 3-4 weeks.
- Quizzes:** (3) Quizzes of 10-15 minutes will be given to students during the semester.
- Homework:** One take home exam will be given to student during the semester
Cheating by copying homework from others is strictly forbidden and punishable by awarding the work with zero mark.
- Projects:** One project will be given to students to do individually to apply basic information covered through the course
- Final Exam:** The students will undergo a scheduled final exam at the end of the semester covering the whole materials taught in the course.

Assessment and Grading Policies has been modified according to the e-learning criteria

First Exam	20%
Second Exam	20%
Assignments, Homework and Quizzes	10%
Final Project and seminars	10%
Final Exam	40%
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Total:	100%

Attendance Regulation:

The semester has in total 45 credit hours. Total absence hours from classes and tutorials must not exceed 15% of the total credit hours. Exceeding this limit without a medical or emergency excuse approved by the deanship will prohibit the student from sitting the final exam and a zero mark will be recorded for the course. If the excuse is approved by the deanship the student will be considered withdrawn from the course.