



**Philadelphia University**  
Faculty of Engineering and Technology  
Department of Architecture  
First Semester 2022-2023

### Course Details:

<b>Title:</b>	Acoustics and Lighting (0660592)
<b>Prerequisite:</b>	Applied physics (0302102)
<b>Credit Hours:</b>	3 credit hours (16 weeks per semester, approximately 48 contact hours)
<b>Course Logistics</b>	Term, class location and time, notation if online
<b>Textbook:</b>	Selected sections from several books
<b>References:</b>	1. تقنيات الإضاءة الطبيعية والصناعية، أ.د. رزق شعبان : الناشر: مكتبة الفنون: الكتاب حائز على جائزة جامعة فيلادلفيا لأحسن كتاب مؤلف عام 2007 2. الهندسة الصوتية في العمارة : أ.د. رزق شعبان، الناشر: مكتبة الفنون، 2008 كتاب مقرر من قبل الجامعة الأردنية
<b>Course Description:</b>	<p>This course aims essentially to improve the student's understanding in natural and artificial lighting in architecture, and study the General guidance in architecture design to achieve the daylight within interior spaces. In addition to identify the behavior of sound in interior architectural spaces and study the principles of Acoustical design of building and sound insulation.</p> <p>This main goal can be achieved through achieving the following Course objectives.</p>
<b>Website:</b>	<a href="http://www.philadelphia.edu.jo/academics/lalahmad">http://www.philadelphia.edu.jo/academics/lalahmad</a>
<b>Instructor:</b>	Eng. Asmaa Al Sayyed Ahmad <b>Email:</b> <a href="mailto:aomar@philadelphia.edu.jo">aomar@philadelphia.edu.jo</a> <b>Office:</b> Architectural Engineering building, office no.317 <b>Office hours:</b> Sun. Tue. 10:00-12:00 Mon. Wed. 9:00-10:00
<b>TA information</b>	

### Course Outlines:

Week	Topic
1	Introduction to the Course & Identify Content
2	General Introduction to Lighting

	Basics of light: Main Definitions (Light / Luminance Flux / Luminance Intensity / Candela Illuminance / Luminance)
3	Basics of light: human eye and visual Vision / Colors and Color Temperature. Introduction to artificial lighting / Artificial lighting units.
4	Artificial lighting calculation
5	Introduction to Natural lighting / day lighting Day lighting calculation
6	Identify day lighting Techniques, General guidance in architecture design to achieve the daylight within interior spaces.
7	Discuss the Students reports/Quiz
8	Physical Introduction (sound definition / Sound source/ Sound waves/ Wavelength / Frequency / speed of sound). Sound intensity level / Sound pressure level/ Sound power level. Ear and Hearing / Auditory sensation area.
9-10	The behavior of sound in interior architectural spaces ( Sound distribution/ Sound Reflection, Sound Absorption , Sound Transmission& insulation, sound diffraction) . The properties of materials in terms of sound insulation and absorption and reflection.
11	Identify the acoustic insulation. Noise criteria and Background noise.
12-13	The principles of acoustical design in architecture
14-15	Discuss the Students reports.

### Course Learning Outcomes with reference to NAAB Student Outcomes:

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

1.	The main Definitions used in acoustics and lighting.	B9
2.	The units of measurement and devices used in acoustics and lighting.	B9
3.	The techniques of acoustical design and proper lighting (Artificial and natural lighting) in different architectural spaces.	A3
4.	The properties of materials in terms of sound insulation and absorption and reflection.	A3
5.	The global criteria for lighting and sound levels inside the Blanks, And to identify the Jordanian Building Code in Acoustics and lighting.	B9
6.	Dealing with the engineers in the field of lighting and acoustics.	B9, A3

## 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:** (3-5) quizzes of (10-15) minutes will be conducted during the semester. The materials of the quizzes are set by the lecturer.
- Homework:** Tutorials sheets will be handed out to the students and homework should be solved individually and submitted before or on a set agreed date. Student may be assigned to present project(s).  
Cheating by copying homework from others is strictly forbidden and punishable by awarding the work with zero mark.
- Projects:** At least one project will be given to students; the students are required to work in small groups to design a lighting solution in a given room and use simulation tools to verify their results, such as physical model.
- Final Exam:** The students will undergo a scheduled final exam at the end of the semester covering the whole materials taught in the course.

## Grading policy:

First Exam	20%
Second	20%
Homework and Quizzes	20%
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.

October, 2023