

Philadelphia University
Faculty of Engineering
Department of Architecture
First semester, 2018/2019

Course Syllabus

Course Title: Lighting and Acoustics	Course code: 0660592
Course Level: 4 th year	Course prerequisite (s): 0302102
Lecture Time: 9:45 -11:15 Monday and Wednesday	Credit hours: 3

Academic Staff Specifics

Name	Rank	Office Number and Location	Office Hours	E-mail Address
Eng. Lama Al-Ahmad	Lecturer	405	11:15 – 12:45 Monday, wednesday	<u>Lamaalahmadnsair@gmail.com</u>

• **Course description:**

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.

This main goal can be achieved through achieving the following Course objectives.

• **Course objectives:**

This course aims to familiarize student with the following points:

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

- **Course/ module components**

At completing this course, the students should be having knowledge and understanding of the following:

Acoustics: includes the following:

- 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
- 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.
- Identify the acoustic insulation
- Noise criteria and Background noise
- The principles of acoustical design in architecture

Lighting: includes the following:

- General Introduction to Lighting
- Basics of light: Main Definitions (Light / Luminance Flux / Luminance Intensity / Candela Illuminance / Luminance) / human eye and visual Vision / Colors and Color Temperature.
- Introduction to artificial lighting / Artificial lighting units
- Artificial lighting calculation
- Introduction to Natural lighting / daylighting
- Daylighting calculation
- Identify daylighting Techniques, General guidance in architecture design to achieve the daylight within interior spaces.

Books;

Selected sections from several books shown at the end of this syllabus

Support material;

Various illustrations on Data Show, books.

- **Assessment instruments**

Assessment Instruments	Mark
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Assessment Instruments	Mark
First Exam	20%
Second Exam	20%
Class participation & quizzes	10%
Reports	10%
Final Exam	40%
Total	100%

- **Course academic calendar/ Time Schedule**

Duration: 16 weeks *//// //* **Lectures:** 3 hours /week

Course Contents Schedule		
Week	Basic and support material to be covered	Homework / Reports and their due dates
(1) 14-18/10/2018	- Introduction to the Course & - Identify Content	
Lighting material		
(2) 21-25/10/2018	- General Introduction to Lighting - Basics of light: Main Definitions (Light / Luminance Flux / Luminance Intensity / Candela Illuminance / Luminance)	
(3) 28-1/11/2018	- Basics of light: human eye and visual Vision / Colors and Color Temperature - Introduction to artificial lighting / Artificial lighting units	

<p>(4) 4-8/11/2018</p>	<p>- Artificial lighting calculation</p>	
<p>(5) 11-15/11/2018</p>	<p>- Introduction to Natural lighting / daylighting - Daylighting calculation</p>	
<p>(6) 18-22/11/2018</p>	<p>- Identify daylighting Techniques, General guidance in architecture design to achieve the daylight within interior spaces.</p>	
<p>(7) 25-29/11/2018</p>	<p>discuss the Students reports/Quiz</p>	
<p>Acoustics material</p>		
<p>(8) 2-6/12/2018</p>	<p>- 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</p>	

(9) 9-13/12/2018	- The behavior of sound in interior architectural spaces (Sound distribution/ Sound Reflection, Sound Absorption , Sound Transmission& insulation, sound diffraction)	
(10) 16-20/12/2018	- The properties of materials in terms of sound insulation and absorption and reflection.	
(11) 23-27/12/2018	- Identify the acoustic insulation - Noise criteria and Background noise	
(12) 30-3/12-1/2019	- The principles of acoustical design in architecture	
(13) 6-10/1/2019		
(14+15) 13-24/1/2019	discuss the Students reports	
(16) 27-31/1/2019		

- **Attendance policy:**

Absence from lectures and/or tutorials shall not exceed 15%. Students who exceed the 15% limit without a medical or emergency excuse acceptable to and approved by the Dean of the relevant

college/Faculty shall not be allowed to take the final examination and shall receive a mark of zero for the course. If the excuse is approved by the Dean, the student shall be considered to have withdrawn from the course.

• References

- الكتاب الدراسي

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