Faculty: Architecture and Design
Course Code & Number: ARCH 443
Type of Course: Elective
Course Credit Hours: (3+0+0) 3 / 5 ECTS
Language of Instruction: English

Department: Architecture
Course Title: Acoustics and Lighting Design
Semester: Spring
Pre-requisite: None
Mode of Delivery / Classroom: Face-to-face / F 117

Instructor: Zühre SÜ GÜL
Email: zuhre.su@tedu.edu.tr
Class hours: Thursdays 09:00 - 12:00
Office/contact hours: Thursdays 12:00 - 13:00 (via appointment)

CATALOG DESCRIPTION

Principle design methods and applications of acoustics and lighting design in buildings. Introduction to subjects of architectural acoustics and noise control. Fundamental daylighting and artificial lighting design principles, detailing, materials and systems.

COURSE OBJECTIVE

This course aims to provide students with the fundamentals and application of acoustics and lighting design in architecture. The course will introduce basic principles of acoustics and lighting and cover the theory of acoustics, vision, light, and color; absorptive, diffusive, and reflective materials and systems; design methods for speech & music spaces; sound insulation and isolation for noise control; speech privacy; and acoustical details. The course aims to facilitate the students consider material science and architectural detailing knowledge to develop innovative solutions for acoustics and lighting conditions of architectural spaces.

LEARNING OUTCOMES

Upon successful completion of the course, students will be able to:

1. Analyze case studies on acoustics and lighting in different scales and contexts,

2. Identify basic principles of acoustics and lighting to develop solutions for various types of architectural spaces,

3. Implement material science and architecture detailing knowledge in design problems,

4. Apply the current knowledge in recent technologies to address optimum/sustainable solutions for room and building acoustics, and lighting design problems,

5. Develop innovative solutions for sustainable building performance using passive systems.

EVALUATION
In-class Work & Homework: 20%
Presentations: 30%
Final Project: 40%
Contribution (Attendance & Participation): 10%

GRADING SYSTEM

For each course taken, the student is given one of the following grades by the course teacher. The letter grades, coefficients and percentage equivalents are given below.

AA	4.0 / 100-90
BA	3.5 / 89-85
BB	3.0 / 84-80
CB	2.5 / 79-75
CC	2.0 / 74-70 average
DC	1.5 / 69-60
DD	1.0 / 59-50 unsatisfactory
F	0.0 / 49-0 fails to follow requirements of the assignment
FX	0

LANGUAGE

The discussions and all of your submissions will be in English. Developing your verbal language skills will be very important in acquiring design terminology as well as daily communication in the class.

ATTENDANCE

It is extremely important to follow the course. 25% worth of non-attendance results in failing.

MISSED WORK

In case of medical report or accepted excuses by the university policies, the instructor may evaluate the missed work as incomplete. Incomplete work is generally discouraged.

PLAGIARISM & CHEATING

Each student is expected to respect for others work, and learning experience, avoid plagiarism and cheating, provide appropriate citation of others' ideas, works and products. Each work should be an original product of students' own learning and research process.

NOTES

In the course of the semester, instructor may require to make changes in the terms that are declared in this Syllabus. Any announcement posted on Moodle should be considered as an official addition to this Syllabus.

STUDENT SERVICES INFO

Student Development and Psychological Counseling Center: Student Development and Psychological Counseling Centre is mandated with providing crisis intervention and supportive listening services to the campus community. The Center conducts individual counseling, group guidance studies, workshops, seminars, and orientation studies for all students in need. You may apply to the Center in order to deal with all your current problems. For further information and/or questions: ogrencidanismamerkezi@tedu.edu.tr, http://csc.tedu.edu.tr/

TEDU WITHOUT BARRIERS UNIT

Please inform the TEDU Without Barriers Unit and the instructor of the course about the specific issues in case you have a physical or mental disability and are having trouble with anything related to this course— such as accessing the material, participating in the class, taking notes, preparing for, attending or managing to complete the exams. Your situation will be reviewed by commission, in accordance with the principle of confidentiality, and if deemed appropriate, facilitating measures will be taken so that you can take the course more efficiently. For further information and/or questions: engelsiz@tedu.edu.tr, https://www.tedu.edu.tr/engelsiz-tedu

TENTATIVE WEEKLY SCHEDULE / ARCH 443 ACOUSTICS AND LIGHTING DESIGN

W1	**Introduction to the Syllabus**
13.02.25	
W2	**Historical Overview – Introduction of Sound**
20.02.25	Evolution of Architectural Acoustics; Basics of Sound and Vibration
W3	**Acoustical Materials**
27.02.25	Absorption, Reflection and Diffusion; Acoustical Materials
W4	**Reverberation Time (RT)**
06.03.25	Material Exhibit; Assignment 1 (RT)
W5	**Room Acoustics – Part 1**
13.03.25	Rooms for Speech; Rooms for Music
W6	**Sound Isolation**
20.03.25	Airborne and Structure Borne Noise Control
W7	**Speech Privacy; Environmental Noise Control**
27.03.25	Open Plan Offices; Building Forms and Landscape Elements
W8	**Field Survey**
03.04.25	Presentations
W9	**Vision and Perception**
10.04.25	Physics of Light and Color, Basics of Natural Lighting
W10	**Natural Light in Architecture**
17.04.25	General Design Strategies and Guidelines
W11	**Case Study and Concept Design of Term Project**
24.04.25	Presentations
W12	**Holiday**
01.05.25	
W13	**Artificial Lighting Design Process**
08.05.25	Artificial Lighting Design Strategies
W14	**Artificial Lighting Design Process**
15.05.25	Lighting Metrics, Criteria and Lighting Calculations
W15	**Term Project**
22.05.25	Reviews
W16	**Term Project**
29.05.25	Reviews
Final	**Final Project Submission** (date to be determined according to your final jury dates)

Recommended Textbooks:

Architectural Acoustics (J. Ross Publishing) Paperback – 2007 by M. David Egan (Author) ISBN-13: 978-1932159783 ISBN-10: 1932159789

Architectural Acoustics. (Prentice-Hall) by 1999 - Mehta, M., Johnson, J., Rocafort, J.

Architectural Lighting (2nd Edition): McGraw Hill, Paperback – 2002 by M. David Egan (Author) ISBN 0-07-020587-6

The Architecture of Light (2nd Edition): A Textbook of Procedures and Practices for the Architect. Designer and Interior Designer (Paperback) by Sage Russell, Publisher: Concept nine (May 8, 2012), ISBN-10: 0980061717 ISBN-13: 978-0980061710