OUTCOMES BASED LEARNING MATRIX

Course: **Lighting and Acoustics ARCH 214** **Department:** **ARCHITECTURE**

Electrical power and distribution systems, lighting design, and acoustics are studied in this course. Particular emphasis is placed on demonstrations and projects. Manufacturers' data and professional level charts and references are used. Interrelation of building design and environmental control systems is the theme. Lecture: 2 hours Laboratory: 4 hours Pre/Corequisites: Concepts of Technical Physics (PHYS133) or Technical Physics II (PHYS142) or College Physics II (PHYS152) or General Physics II (PHYS162); and Construction Planning (ARCH230); or Permission of Instructor

Identify the functions of Lighting	Study and compare functions outlined in various sources including the text and AGS. Evaluate familiar spaces and circumstances to categorize the lighting functions	Quiz Evaluation of designs (CT, TS, OC, QS, R)
Select illumination values for various types of activities	Review published matrices of required and recommended values. Measure illumination in familiar spaces. Research and record Massachusetts Code requirements.	Quiz Evaluation of designs In- class problems (CT, TS, OC, QS, R)
Demonstrate knowledge of the physiology of seeing.	Observe another person's eyes as illumination and focal distances change. Study and compare the mechanisms of a camera to those of the human eye.	In- class problems (CT, OC, QS, R)
Demonstrate knowledge of the physiology of hearing.	Construct or assess models and working devices that produce, record, amplify, transmit or receive sound.	In- class problems (CT, OC, QS, R)

Select lighting sources for required illumination and other constraints	Utilize generalized material in texts and AGS. Download manufacturers data from the internet relative to the project assigned	Group Projects (CT, QS, R, W)
Sketch schematic wiring of a small architectural project showing reflected ceiling plan with luminaires, switches, outlets and circuits.	Design a building and include electrical elements Present in studio fashion	Critique or jury the presentation (CT, TS, OC, QS)
Calculate point source, line source and zonal cavity luminaire requirements for required illumination	Sketch layout and luminaires necessary to satisfy the project requirements. Study text and answer text questions.	Present graph of performance for critique. Function quiz.
Analyze a small architectural project in terms of lighting and acoustical requirements	Design a building and include electrical elements Present in studio fashion	Critique or jury the presentation (CT, TS, OC, QS)
Identify the functions of Hearing and acoustics	Study and compare functions outlined in various sources including the text and AGS. Evaluate familiar spaces and circumstances to categorize the acoustic issues	Quiz Evaluation of designs (CT, TS, OC, QS, R)
Select reverberation and absorption values for various types of activities/ spaces	Review published matrices of required and recommended values. Measure noise levels in familiar spaces. Research and record Massachusetts Code requirements.	Quiz Evaluation of designs In- class problems (CT, TS, OC, QS, R)
Identify the functions of acoustic element in the built and natural environment.	Study and compare functions outlined in various sources including the text and AGS. Evaluate familiar spaces and circumstances to categorize the sound control and sound quality issues.	Quiz Evaluation of designs In- class problems (CT, OC, QS, R)
Demonstrate knowledge of the physiology of hearing.	Study and compare the mechanisms of electronic equipment to those of the human ear.	In- class problems (CT, OC, QS, R)
Demonstrate knowledge of the	Construct or assess models and working devices that	In- class problems

physiology of hearing.	produce, record, amplify, transmit or receive sound.	(CT, OC, QS, R)
Analyze a small architectural project in terms of lighting and acoustical requirements	Design a building and include electrical elements Present in studio fashion	Critique or jury the presentation (CT, TS, OC, QS)