

Course name: ENVIRONMENTAL CONTROL

Course code: ME 399

Course hours: Credit hours 2, Contact hours 2

Course Pre-requisites: None

Course Description

Introduction to the basic concepts of environmental control systems (i.e. energy, lighting and acoustics) that are used in buildings, including building fabric, building ventilation and human activities. The students learn the basic understanding in how to design an optimum control system of the internal environment.

Course Main Objective

In this course, the students will be to:

- Understand how insulation, thermal mass and air movement effects the thermal performance of buildings.
- Have a basic understanding of readily available Saudi code design tools used to compute thermal performance of buildings.
- Be able to determine for simple designs, the required amounts of external opening required providing adequate internal illumination levels.
- Be able to carry out simple acoustic design, including construction specification.
- Be able to recognize when the acoustic environment is being modified during the design process.

Course Learning Outcomes

After the completion of this course, the students will be able to;

- Recall the effects of thermal performance of buildings on Energy consumption
- Recognize the required amounts of adequate internal illumination (artificial light) levels
- Describe simple acoustic design
- Estimate the energy consumption and illuminance level of basic space that has specific function.
- Calculate the noise level and reverberation time in a specific space

Course evaluation

- Quizzes, practical assignments
- Weekly/biweekly reviews
- Midterm examination
- Attendance
- Final examination

Course recommended books

- Introduction to Architectural Science – The Basics of Sustainable Architecture, Steven V Szokolay, Elsevier, Second Edition- 2008

Course References

- HVAC Systems Design Handbook, Roger W Haines et al, 1998.
- Heating, Cooling, Lighting Design Methods for Architects, Norbert Lechner, (John Wiley & Sons), New York.
- Plumbing, Cold Water Supplies, Drainage and Sanitation, F. Hall Third Edition, (Longman Scientific & Technical), 1994.
- Essential Building services, F. Hall Third Edition, (Longman Scientific & Technical), 1995.
- <https://app.edgebuildings.com/>