

Construction & Building Engineering Courses (CB)

Environmental Engineering Courses Group

CB 533 – Environmental Control and Energy in Buildings

COURSE INFORMATION

Course Title: Environmental Control and Energy in Buildings

Code: CB 533

Hours: Lecture – 2 Hrs. Tutorial – 2 Hrs. Credit –3.

Prerequisite: CB 531

GRADING

Class Performance/Attendance: 10%

Midterm # 1/Assignments – (7th Week): 30%

Midterm # 2/Assignments – (12th Week): 20%

Final Exam: 40%

COURSE DESCRIPTION

Energy expenditure in construction stages; Comparison of building material on a production energy basis; Energy demands of a building; Renewable energy and Sustainable development; Thermal load of building spaces; Effect of building envelop; Energy conscious building design; Description of some methods of energy conservation & waste-energy recovery; Alternative building demands; Environmental safety & public health considerations.

TEXT BOOK

The Building Environment: Active & Passive Control Systems by Bradshaw V.
 Publisher: John Wiley, New York, 1999.

REFERENCE BOOKS

Building Control Systems by V. Bradshaw, Publisher: John Wiley, New York, 1995.

Building design & Construction Hand Book by MERRITT F.S., RICKETTS J.T.
 Publisher: McGraw Hill, Inc, New York, 1994.

APPENDIX A-158

COURSE AIM

The course aims at introducing the student to the means of energy conservation in buildings, the impact of climate and environment on buildings, and the impact of Civil Engineering projects on its microclimate and environment.

SPECIFIC OUTCOMES OF INSTRUCTION

- The student should be aware with various means of sustainable development and energy conservation; and to understand the procedures for passive control alternatives.
- The student should be able to understand the thermal requirements of buildings and identify the principles of environmental safety and public health.

COURSE OUTLINE

Week Number 1-2: Sustainable development and renewable energy

Week Number 3: Air quality standard and public health considerations

Week Number 4: Thermal dynamics of buildings

Week Number 5: Heating load calculations

Week Number 6-7: Cooling load calculations

Week Number 8: Principles green building design

Week Number 9: Solar control

Week Number 10: Wind control

Week Number 11-12: Passive heating systems

Week Number 13-14: Passive cooling systems

Week Number 15: Economics for decision working

Week Number 16: Final Exam.

COURSE COORDINATOR AND DEMAND

Course Coordinator: Dr. Ola Diaa El Monayeri.

Course Demand: *Required*