

ARC 3353: Building Technology V - Summer 2010

Hazem Rashed-Ali, Ph.D., LEED AP

This Syllabus is provided for informational purposes regarding the anticipated course content and schedule of this course. It is based upon the most recent information available on the date of its issuance and is as accurate and complete as possible. I reserve the right to make any changes I deem necessary and/or appropriate. I will make my best efforts to communicate any changes in the syllabus in a timely manner. Students are responsible for being aware of these changes.

CATALOGUE DESCRIPTION

(3-0) 3 hours credit. Prerequisite: ARC 3343.

Light and sound as building form determinants and the natural and artificial systems that support them, including illumination, electrical design, and acoustics. (Formerly titled Environmental Systems II.)

EDUCATIONAL OBJECTIVES & NAAB CRITERIA

The course will address the following National Architectural Accreditation Board (NAAB) student performance criteria:

4. Research Skills:

Ability to gather, assess, record, and apply relevant information in architectural coursework.

15. Sustainable Design:

Understanding of the principles of sustainability in making architecture and urban design decisions that conserve natural and built resources, including culturally important buildings and sites, and in the creation of healthful buildings and communities

19. Environmental Systems:

Understanding of the basic principles and appropriate application and performance of environmental systems, including acoustical, lighting, and climate modification systems, and energy use, integrated with the building envelope.

23. Building Systems Integration:

Ability to assess, select, and conceptually integrate structural systems, building envelope systems, environmental systems, life-safety systems, and building service systems into building design.

COURSE CONTENT

The Building Technology V course will include the following:

- Surveying environmental systems, lighting and acoustics, by which introductory knowledge of qualitative and quantitative aspects of environmental controls can be achieved.
- Developing and understanding the basic vocabulary of environmental systems terminology, lighting and acoustics, especially as the terms pertain to the overriding principles of sustainable architecture.
- Recognizing the use of environmental control systems, lighting and acoustics, as architectural form determinants.
- Understanding selection criteria for appropriate environmental control system, lighting and acoustics, early in the design process; and the basic methods of sizing and laying out elements of these systems.
- Conducting exercises, technical research, and reporting to understand performance evaluation of environmental control systems, lighting and acoustics, and how they affect architectural design.
- Recognizing the implications of architectural design decisions, both in general and as they relate to lighting and acoustic systems, on resource consumption and overall sustainability of the built environment.

GUEST LECTURERS AND FIELDTRIPS

In addition to the teach-in, class activities may also include presentation by guest lecturers in relevant topics. Fieldtrips to interesting projects may also be arranged during the semester.

PROJECTS AND ASSIGNMENTS

One term project will be assigned and will represent the vehicle for applying, documenting and evaluating the knowledge gained by the students during the course of the semester. Guidelines for each project will be described in writing and will be provided to students beforehand. The projects will relate to one of the three main topics of the course: natural lighting, artificial lighting, and acoustics.

STUDENT EVALUATION & GRADING POLICY

Student evaluation in this course will involve a number of components including projects, quizzes, exams, and other assignments as follows:

Four quizzes will be held on Monday of each week (except for week one). The final grade for the quizzes will consist of the average of the best three quiz grades, while the lowest grade will be excluded. The quizzes will usually occur at the beginning of class and will last about 10-15 minutes. A missed quiz results in a grade of “zero” and cannot be re-taken at a later date. Quizzes will include true-false questions, multiple-choice questions, and brief calculations and analyses. Each quiz will only cover the topics presented since the previous quiz was held.

There will also be a comprehensive final exam (according to the final exam schedule). The exam may include true-false questions, multiple-choice questions, and calculations and analysis. Both the exam and the quizzes will be based on both the assigned readings from the required textbook as well as all class presentations.

Grading of projects will be based on depth of research, clarity of observation and analysis, accuracy of the outcomes, completeness and thoroughness in responding to project statement, and quality and craftsmanship of graphics. Projects must be submitted in a format reflective of your status as a student in a professional program and submission guidelines must be followed. Poorly-organized work, torn sheets of paper, unintelligible writing, handwriting, and indecipherable spelling will not be accepted.

The breakdown of the course evaluation is described below:

▪ Term Project	40%
▪ Quizzes (average of best four grades)	20%
▪ Final Exam	30%
▪ Attendance, participation, and development:	10%
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▪ Total:	100%

GRADING POLICY

The general meaning of the letter grades is presented below:

A (90-100) **Excellent:** Exceeds requirements and reaches a state of exceptional work produced. Strong initiative, attendance, participation, research and reading. Complete comprehension of course/project goals. Adds positively to the educational experience for the rest of the class. Tests and projects are well beyond the minimum requirements to expand the questions or problems assigned. Work is delivered by the due date and is of exceptional graphic quality.

B (80-89) **Good:** Often exceeds minimum requirements for work produced – for quality and quantity, attendance, research and reading. Participates regularly in class discussions. Solid comprehension and above average demonstration of course/ project goals. Tests and projects are well composed, and make thoughtful original contributions to the questions or problems assigned. Work is delivered by the due date and is of good graphic quality.

C (70-70) **Average:** Meets minimum requirements for work produced – for quality and quantity, attendance, research and reading. Little or no participation in class discussions. Tests answer the question as given and projects provide the required information. Work is delivered by due date and is of average or acceptable informational and graphic quality.

D (60-69) Not a passing grade: Work produced is consistently weak with poor craft, absences, insufficient or no research, little or no reading, little or no participation. Demonstrates a weak comprehension of course/ project goals. Tests provide only partial answers to the questions given and projects may also be partially complete. Work, if delivered by the due date, is of poor informational and graphic quality.

F (below 60) Not a passing grade: Work, if any, produced is very weak with poor craft, seven or more absences, little or no research, reading, and participation. Demonstrates that course/ project goals or test questions were misunderstood or ignored. Tests provide irrelevant answers to the questions given and projects may also be substantially incomplete. Work, if delivered by the due date, is of unacceptably sloppy graphic quality.

COURSE REQUIREMENTS AND CLASSROOM POLICIES

ATTENDANCE:

Course attendance is mandatory and is considered an integral component of the learning experience. Attendance will be regularly recorded. Punctuality is required and considered an indication of professionalism and responsibility. Arriving more than 10 minutes late or leaving more than 10 minutes early from the class room will count as ½ day of unexcused absence. A maximum of "4" unexcused absences are allowed during the semester without affecting the final course grade. The final grade will be reduced by A FULL LETTER GRADE for each additional day of unexcused absence. Seven or more unexcused absences will automatically result in a grade of "F". Students should refer to university guidelines for a list of excused absences, however, these excused absences must be arranged for and documented in writing BEFOREHAND with the instructor, otherwise, they will count as unexcused absences. Absence for medical reasons must be supported by the appropriate documentation as soon as possible. Students with 6 or more "excused absences" must consult with the instructor as this excessive absence can impact their performance in the course. This policy will be strictly enforced.

Students with 4 unexcused absences will be contacted by email through WebCT and should consult with the instructor immediately. Students are however responsible for keeping a record of their absences and checking it regularly to make sure their absence does not affect their grade.

LATE SUBMISSION:

Late submittal of projects and assignments is not allowed. Students with excused absences, who will not be present to meet a submittal deadline, MUST consult with the instructor beforehand to make alternative arrangements for submitting their work on time. No exceptions will be made. THERE IS NO MAKE-UP FOR QUIZZES AND EXAMS under any circumstance. Late submittals of projects or assignments will result in a reduction in the grade of the assignment in question by 10 POINTS for each CALENDAR DAY. No excuses will be accepted for late submittals. All submittals are due at the BEGINNING of class at the due date unless otherwise announced.

BLACKBOARD:

All course material, including syllabus, class presentations, projects and assignments, and other resources, will be made available on Blackboard. Blackboard mail will be used by the instructor to communicate important information to students. Students are responsible to check their Blackboard mail account regularly or forward it to an e-mail account they do check regularly. Student grades will also be posted on Blackboard as they become available.

Blackboard will also be used to submit projects and extra credit assignments. A digital version of the assignment MUST be uploaded into WebCT before the beginning of class at the deadline date. Digital submission will not be possible after this due date and the assignment will be considered late. A hard copy of each project or assignment MUST also be submitted in class at the due date. Missing either the digital or the hard copy submission will be considered an incomplete submission and will only be graded after both required submissions are provided and late submission penalties will apply.

REQUIRED TEXTS

Grondzik, W.; Kwok, A.; Stein, B.; and Reynolds, J. 2009. *Mechanical and Electrical Equipment for Buildings*, 11th edition. Hoboken, NJ: John Wiley and Sons.

RECOMMENDED READINGS

SynthLight, 2004, A multinational educational programme on energy efficient integrated building design in the urban environment, London Metropolitan University. Available online at:

<http://www.learn.londonmet.ac.uk/packages/synthlight/index.html>

IEA [International Energy Agency]. 2000. *Daylight in Buildings, A Source Book on Daylighting Systems and Components*. A report of IEA SHC Task 21/ECBCS Annex 29. Available electronically at:

<http://gaia.lbl.gov/iea21/> (a hardcopy can also be ordered free of charge from the same website).

LBL [Lawrence Berkeley National Laboratory] 1997. *Tips for Daylighting with Windows, the Integrated Approach*. LBNL Report Number 39945. Available electronically at:

<http://windows.lbl.gov/daylighting/designguide/designguide.html>

Brown, G. Z. and Dekay, M. 2000. *Sun, Wind & Light: Architectural Design Strategies*, 2nd Edition. New York, NY: John Wiley & Sons.

Egan, M. D. & Olgyay, V. W. 2001. *Architectural Lighting*, 2nd edition. New York, NY: McGraw-Hill Science/Engineering/Math.

Ander, G. D. 1995. *Daylighting Performance and Design*. New York, NY: Van Nostrand Reinhold,.

Baker, N., Fanchiotti, A. and Steemers, K. (eds.). 1993. *Daylighting in Architecture: A European Reference Book*. Commission of the European Communities. London: James & James.

Guzowski, M. 2000. *Daylighting and Sustainable Design*. New York: McGraw-Hill.

Allen, E. and Iano, J. 2002. *The Architect's Studio Companion*, 3rd edition. New York, NY: John Wiley and Sons.

SCHOLASTIC DISHONESTY

Scholastic dishonesty, including any instances of plagiarism and/or cheating *WILL NOT BE TOLERATED* in this class. Any such incident will result in automatic failure in the project, assignment, or exam involved. Plagiarism consists of passing off as one's own ideas, words, writings, etc. which belongs to another. You are committing plagiarism if you are copying another person's work and submitting it as your own, even if you have that person's permission. Signing the attendance sheet for another student or leaving class immediately after signing the attendance sheet are also examples of serious dishonesty. Any and all incidents of plagiarism and academic dishonesty will be reported to the Office of Student Life. For more details, please refer to the Scholastic Dishonesty Policy as stated in the current University Catalogue.

STUDENTS WITH DISABILITIES

The Americans with Disabilities Act (ADA) is a federal anti-discrimination status that provides comprehensive protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you need accommodation related to a disability, please make an appointment to discuss your needs.