

Catalogue Code: ARCH 447

Course Title: Electrical Services - Lighting

Department: Architecture

Term: Fall 2007

Instructor: Conor Sampson
Teaching Assistant: Welland Sin

e-mail: conor@lightemotion.ca
e-mail: welland.sin@gmail.com

Location: Room 212, Thursday 10:30-12:30
Credits: 2
Prerequisites: none

Office hours: By appointment

Date: September 6, 2007

**Term Project:
Option 2: Micro**

The goal of this project is two-fold: to mimic the use of lighting simulation software in your studio design project and to develop a series of working documents outlining an electric lighting design approach. You will be working in groups of four students.

As a first step, propose a design project or built environment in which you want to use Ecotect/Radiance to develop natural and electrical lighting strategies. For architecture students, your choice must examine an aspect of your current studio project. This space will be selected in consultation with your studio instructors. Once your design is approved by the instructors, you will give an initial presentation of the project in class on November 1st. Based on your feedback from this initial presentation, you will carry out a more detailed design analysis and present your results in a report and a second presentation during the end of term exam period (date to be determined). Please provide the following four deliverables:

- (1) Oct 18: a short proposal for your clients (a.k.a. design studio instructors) to sign off (PDF one pager)
 - (2) Nov 1: initial oral presentation (30% of final mark, PDF)
 - (3) Exam period: final presentation and simulation report (50% of final mark, 2 PDFs)
 - (4) One week following crit: post mortem analysis (10% of final mark, email)
- * The remaining 10% of your final mark for this course are reserved for your participation in in-class exercises.

Please note: The last three documents (the proposal, client report and presentation) should visually “go together” and form a complete package. Consider your graphic and organizational approach with this in mind.

Guideline for Proposal (one pager)

Describe in which context you are doing the simulation. Your “client” could be a building owner, another designer, etc.. Remember to provide a project name and the names of all involved students, in addition to your team number. The team number will be assigned once you have submitted the names all students on the team.

Scenario: describe the project, and the relationship between you and your client

Objective(s): what do you want to do?

Methodology: how do you intend to do it?

Guideline for Client Report

This is a key deliverable for your client. Make sure information such as your names, contact information and project results are easy to find.

Layout: consider aspects such as: readability, ability of the reader to write comments in the report, how well does the report copy in black and white? How well is it organized?

Executive Summary: Everybody is busy, especially decision makers. To be able to influence design decisions, your report should include an “executive summary”, i.e. a one to two page summary that briefly reviews project objectives, what design aspects have been investigated, and what are the results.

Introduction: Review the project objectives (restate your proposal), detailing what aesthetic technical and/or environmental issues you are attempting to address.

Methodology: Briefly state the programs and models you have used, the types of fixtures involved and the choice of light sources (ie incandescent, fluorescent, etc...)

Lighting Layout: Present a reflected ceiling plan with keyed symbols denoting your fixture choices and locations. Sectional diagrams/sketches to demonstrate the distribution of both electrical and natural lighting sources may be an important graphical aid to understanding your approach.

Cutsheets: As shown in class, each fixture has a “cutsheet”, or information sheet, which describes the physical attributes (size, distribution, light output, etc...). Provide a package of keyed cutsheets to describe the fixtures you will be using in you design.

Results and Analysis: Present your simulation results and “explain them”. (E.g. “The two zones facing South have a lower daylight factor than the one facing North. This is to be expected given that light shelves had to be added to the south facing zones to avoid glare from direct sunlight.”) Point out how the initial design could have better addressed lighting concerns had lighting been a primary concern from the outset and were all parameters open to adjustment.

Design Advice: Summarize your design advice based on the results from the previous section. Be specific, use numbers if you can.

Appendix: In case your report becomes “longish”, consider moving details such as simulation parameters, extra figures, etc. into an Appendix to enhance readability. If you choose to do so, indicate this in the main text.

Guideline for Presentations

- Initial Presentation: present your design advice; be prepared for questions
- Final Presentation: same message and content as client report; present your design advice; be prepared for questions based on the effectiveness of your chosen strategies.

Guideline for Post Mortem Analysis

Wherever you are going to work, the ability to manage your time will be an asset. You should therefore develop the habit of tracking the time you spend on any given project using a log book. Do not overdo it. This is supposed to be a helpful tool. Estimate in hour units how much time you have spent and what you have accomplished using the form below. After you have delivered your presentation, use the log book to write a brief analysis of how much time you have spent on the project, where (in retrospect) you could have saved time, and which parts of your report you might reuse in other projects in the future. All in all, this should take no more than 30 minutes and might be a useful exercise for the future.

Post Mortem Form

1st Phase: Project scoping	comments	hours
- refine project constraints		
- learn software		
2nd Phase: Initial design		
- prepare computer model		
- assemble the data		
- formulate design recommendations based on simulation results		
- prepare and deliver first presentation		
3rd Phase: Design development		
- redefine project scope (based on initial feedback)		
- refine computer model(s)		
- carry out daylighting analyses and determine success of each variant		
- assemble the data and formulate design advice		
4th Phase: Prepare final deliverables		
- write report		
- prepare final daylighting analyses at high resolutions		
- prepare and deliver second presentation		