ARE 462: Lighting Design for the Built Environment II

HW #4: Howard Brandston Student Lighting Design Education Grant

Assigned: Period 7.2
Due: Periods 8.2 (Deliverable #1), 11.1 (Deliverable #2), and 12.1 (Deliverables #3 and #4)

OBJECTIVES AND OUTCOMES

The objectives for this assignment parallel course objectives and include the implementation of the lighting design process for a space of modest complexity, development of design documentation, and reporting of results both orally and in the form of a professionally prepared report. The work product will be a lighting design solution for the series of spaces that are described in the 2022 Howard Brandston Student Lighting Design Education Grant. The expected outcomes for this project are for you to:

- **Produce** a high-quality lighting solution for a lighting problem of modest complexity that: 1) is inspired by and integrated with the architecture, and 2) meets or exceeds best practices as defined by IES and/or other professional organizations.
- **Demonstrate competence** in the creation of high-quality physically-based computer visualizations of your lighting design solutions.
- **Communicate visually and orally** your design concepts and solutions through the production of high-quality presentation materials, including: 1) all submittals required by IES, and 2) a graphically rich oral presentation to be presented to the class.

The materials you produce should be suitable for a portfolio that showcases your design and presentation skills.

LEARNING OUTCOME MAPPING

<table>
<thead>
<tr>
<th>Course Learning Outcome</th>
<th>ABET Student Learning Outcome</th>
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<tbody>
<tr>
<td>2. Implement the lighting design process for a space of modest complexity where there are multiple and competing design considerations and design criteria.</td>
<td>2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors [Maps to course learning outcome 2.]</td>
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<td>3. Report the results of your design process orally in the form of a professionally prepared presentation and in writing in the form of a professionally prepared report.</td>
<td>3. An ability to communicate effectively with a range of audiences. [Maps to course learning outcome 3.]</td>
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BACKGROUND

The Howard Brandston Student Lighting Design Education Grant was established to encourage and recognize students who have demonstrated exceptional professional promise through the presentation of an original and ingenious solution to a supplied problem. If you win the
competition, the award comprises a plaque and a $1,000 cash prize, which is presented at the IES annual conference.

METHODS
This is an individual project, though you are encouraged to discuss your work with your classmates. Study the project solicitation carefully. It contains information about the project, its intended use, the building site and context, surface finishes, and geometry. Use this information as a springboard to get you started on the lighting design process (e.g. Programming → Schematic Design → Design Development → Construction Documents).

You will use AGi32 to assist you with your design and to perform computer-based lighting calculations. You are expected to seek appropriate references, including the IES Lighting Library, Standard 90.1, and other resources as appropriate.

I do not intend to micromanage your process and suggest that you revisit the schedule that you already worked on during a break-out session in a previous class period. Below are formal deliverables associated with major milestones.

DELIVERABLES
Deliverable #1 – Interim Design Presentation (Due: Class Period 8.2)
Prepare a presentation not to exceed 5 minutes of your work-to-date. Your presentation should:

1. Summarize the high-level overarching concept for this project and how your lighting design solution will conceptually and thematically support the project goals.
2. Summarize your design criteria, which should be directly linked to your analysis of space functions, visual tasks, activities, architectural opportunities and constraints, and any client wishes that were documented in the project brief.
3. Offer schematic design concepts, as with sketches and/or precedent imagery.
4. Ideally, you will also present preliminary design concepts that include lighting equipment types and layouts, including preliminary renderings from AGi32.

In preparation for this presentation, you should have completed programming. You should be able to discuss your design objectives, intended design outcomes, and lighting design strategies.

Please be organized and succinct so that there is time to discuss your work.

Prepare a brief PowerPoint presentation. Five or six slides is probably adequate. Post your slides to Canvas by 8:00 AM on the morning of class period 8.2. After discussion of your presentation, create a Word document summarizing feedback and how you plan to act in response to the comments. This should be no more than one page. Upload your Word file to the Canvas folder created for this purpose by 11:59 PM on the evening of class period 8.2.

Deliverable #2 – Final Oral Presentation (Due: Class Periods 11.1 and 11.2)
Post your presentation to Canvas no later than 8:00 AM on the morning of class period 11.1. Use either PowerPoint format or PDF. The presentation order will be randomly selected on the day of the presentation.

You may use PowerPoint or any other software (e.g., Prezi, Keynote, SlideDog, Visme). Your presentation should be 9 – 10 minutes, which will be followed by questions. Practice your presentation ahead of time to make sure that your presentation is within that time range. When you present, do not read from a script. Time management matters; it is part of the grading criteria. Your formal presentation will be followed by questions. Expect your total time in front of the class to be about 15 – 18 minutes.

Focus your presentation on the most important aspects of the problem, your design criteria, and your solution. You may also include elements of your design process and provide comments about how you worked toward and arrived at your final solution. The most critical aspect of your presentation (and indeed, your design) is to explicitly communicate, in clear language and with clear graphics, how your design solution addresses your design criteria. If your presentation is one of the later ones, do not modify it in response to the earlier ones. You still need to explain the problem, your design criteria, and your solution even if you repeat things other people have already said.

Review separate documents titled Oral Presentation Grading Standards and the Oral Presentation Evaluation Form. They describe the characteristics of a good presentation and are intended to help you focus your time and effort on the most critical actions.

Your presentation will be graded using five categories:

1. Technical Content: Topic mastery, including technical correctness; completeness of analysis and interpretation of data; clarity of purpose and approach; scientific tone/language; appropriate level of detail; visualization of the results.
2. Organization: Effective introduction (including problem statement); clear technical transitions among major topics; clear conclusions; skill handling questions; clock mastery.
3. Presentation Skills: Eye contact; overall vocal quality; pace and timing; appropriate dress.
4. Visuals/Graphics: Clear; easy to read and interpret; relevance to topic; enriches orally stated information; technical correctness; appropriate aesthetic design and layout; craftsmanship.

These categories are part of the Oral Presentation Grading Rubric that I will use to provide feedback about your presentation and to assign a grade.

Here are some general suggestions related to your presentation:

- It is impossible to overstate the importance of a good introduction and good conclusions.
- Guide your audience through your presentation by outlining key points of information.
- Use one simple font style for clarity and to minimize visual clutter. Limit the use of italics and ALL CAPITALIZED text.
- On text-based slides, which should be minimal, use brief and concise phrases rather than complete sentences. Do not read your slides to the audience.
• Make complicated information easier to understand by using charts, graphs, diagrams, renderings, photographs, or other intuitive visual aids. Your visuals should complement the verbal presentation. Confusing visuals or irrelevant clip-art is distracting.

• Visibility is mandatory. Make sure all lettering is large enough and of appropriate contrast to be easily read. Images that have been cut from AGI32 and pasted into PowerPoint must still be readable and legible. Take care with font size, line weight, color, and consistency with the rest of your presentation.

• Avoid red letters on a blue background and other such hard-to-read color combinations. A little color goes a long way. Color can add emphasis, separate different elements of a graph, show similarities, and improve readability. But the benefits are lost if too many colors are used on one slide. In general, limit the number of colors used to three plus black. Too many colors cause visual clutter. Less is usually more.

• Be consistent when creating your slides. Once you have chosen a color scheme stick close to it. Ditto for fonts, bullets, line spacing, image alignment and placement, and everything else. Only stray from your standards if you have a very good reason, such as to emphasize a particularly important point.

• Take care with your slide layout. Do not add gratuitous shapes, or images, or clip art unless you have thought through “why?” Everything on your slides should be considered.

• You should be able to defend every design decision on your slides in the same manner that you should be able to defend your lighting design decisions.

• Number your slides.

Deliverable #3 – IES Brandston Submission (Due: 11:59 PM on the Tuesday of Finals Week)
Follow exactly the project requirements mandated by the Howard Brandston Student Lighting Design Education Grant. Everything that you produce is expected to be of professional quality. Your presentation should have a crisp graphical design and persuasive graphical elements. It should clearly communicate the aesthetic and technical aspects of a quality lighting design solution. In short, put your best foot forward.

Post a file compliant with the IES submission guidelines no later than 11:59 PM on the Tuesday of finals week. You’re not required to submit the same file to IES through their online portal, but since you will have prepared a submission, I encourage you to do so.

NOTE: If you win the competition or receive an honorable mention, and you did not already receive a grade of “A” in this course, your course grade will be changed to an “A”.

Deliverable #4 – Final Written Report (Due: 11:59 PM on the Tuesday of Finals Week)
Technical completeness, clearly expressed design criteria, evidence that you have addressed the design criteria, and professional appearance are all key considerations in evaluation of this project. The format for deliverables can be:

A. Format Option #1: You may produce your deliverables as a website. The content listed below is still expected, though producing the work as a webpage may offer more creative freedom. If this is your choice, please provide the URL for your deliverable.
B. Format Option #2: You may produce your deliverable in PDF format with a page size of either 8½ x 11 or 11 x 17, or a combination of these page sizes. The larger page size may afford some flexibility in how you visually present your work.

Whether as a website or PDF, your final report should (at least) contain the following elements:

1. Cover Page. This should minimally include the project title, course, your name, and submission date. It could but need not include a graphical element.

2. Executive summary. This should be prose, perhaps with brief lists or items with bullets. For a project this size, two or three paragraphs should be sufficient. The executive summary should summarize:
   - project requirements
   - design criteria
   - Your solution
   - Results (with reference to design criteria).
   This should be self-contained. Very likely, it should be the last part of the report that you write. For a project this size, a few paragraphs are sufficient.

3. Typed table of contents with leaders and page numbers.

4. Description of the spaces to be lighted.
   - Brief spatial description (e.g. geometry, material, reflectances), which could be an annotated version of the drawings. Summarize the methods used to attain such information. Table(s) and/or figure(s) may be more useful than prose.
   - Task analysis. What are the purposes of the space? What visual and non-visual activities are likely to take place in this environment? What are the considerations related to visual performance? What are the considerations related to the visual environment?
   - Lighting design criteria, prioritized as appropriate. Include references and explanations as needed to fully explain your intent. The lighting design criteria should be explicitly and directly related to your task analysis.

5. Specification of your design.
   - Drawing(s) to scale with a border and title block, showing the reflected ceiling plan and indicating control zones.
   - Lighting equipment schedule showing (at minimum) luminaire type, symbol, manufacturer, product number, color properties, product description, input wattage.
   - Equipment type(s)/cut sheets, appropriate coded to the lighting equipment schedule.
   - Description of the control strategy. Your lighting solution must address the different functional needs, including different scenes that may be designed for different functions, if appropriate. While you need not provide a detailed specification of the controls equipment, you do need to provide a conceptual description of how the lighting hardware will be controlled.

6. Appendix: The appendix should document your assumptions and procedures. It should provide proof to you and lighting-educated readers that the systems you have specified will meet your design criteria.
   - Calculation details and computer output, including: contours and/or summary statistics for the relevant calculation planes (e.g. horizontal, vertical, sloped at the appropriate task locations), spacing criterion calculation(s) if appropriate
and/or necessary, explanation and/or quantitative summary documenting how you addressed direct and reflected glare, and rendering(s) if appropriate.

- Listing and justification of your light loss factors.
- Calculations showing compliance (or not) with ANSI/ASHRAE/IES Standard 90.1. Show total connected watts and unit power density.
- Your time sheet / work log for this project.
- A copy of this assignment.
- A list of references using a standard format such as APA, CSE, or MLA.

More than anything, your report should explicitly demonstrate that your design solution has met (or not) your design criteria. In cases where a criterion has not been met, provide an explanation.

Supplementary Information:
1. The Project Description as published by IES are available for download from www.ies.org
2. Oral Presentation Grading Standards
3. Oral Presentation Grading Rubric
4. Written Report Grading Rubric