Executive Summary:

This is a formal proposal for the lighting and electrical depth topics and the two breadth topics for the spring semester of thesis. The overall conceptual lighting design theme is "Lantern of Enlightenment." The meaning of this theme is that the Duke University Medical School is well known for its prestige and excellence in its researcher and producing high caliber professionals.

The **lighting redesign** will involve four spaces on the first floor: the Gothic Tower Entrance Lobby, the Peter & Ginny Nicholas Auditorium & Learning Center, the Café DUSON student lounge, and the Champagne Courtyard patio. The new lighting designs will follow the fundamental steps of the lighting design process from conceptual design all the way to documentation. The lighting redesign will be completed and documented using a combination of hand sketching and computer software. The final result will be a set of lighting plans for all spaces redesigned and at least two photorealistic renderings of the new lighting design.

The **electrical redesign** will redesign the branch circuit distribution for the four spaces where lighting has been redesigned. A protective device coordination study that addresses a single-path through the distribution system, including short circuit calculations will be conducted. Finally, the electrical redesign will include an investigation of a central transformer system instead of distribution transformers and the use of energy efficient transformers instead of standard transformers. These issues will be addressed by multiple Excel calculations as well as updating the current electrical panel. A cost analysis of implementing these transformer solutions will be conducted.

The **first breadth** topic is an acoustical analysis of the Café DUSON, a large architectural volume with double high glass curtain walls and a large amount of wood finishes on the walls and the ceiling. I propose analyzing the acoustical quality of the Café DUSON and offering solutions to any acoustical problems associated with this study. The analysis will be conducted using acoustical software, EASE, and solutions will be derived from the results.

The **second breadth** topic is a mechanical redesign that involves the integration of the currently exposed mechanical system and my new lighting into the architecture of the space. I plan on creating false beams, which appear to be structurally supporting the ceiling, but in actuality they are hiding the main ambient light fixtures as well as the mechanical equipment. This mechanical integration will entail changing the round ducts to rectangular ducts and modifying diffuser locations if required.