DEng Qualifying Exam Preparation Guidance

This guidance is provided to DEng students to help them prepare for the Qualifying Exam. Sitting for the Qualifying Exam requires that the eligibility requirements listed in the DEng Handbook will be satisfied by the date of the exam. Please review the DEng Handbook to review Qualifying Exam eligibility, structure, and scheduling.

The purpose of the DEng Qualifying Exam is for students to demonstrate that and the program to evaluate if the student has the background and knowledge to perform applied research at the doctoral level. It should be viewed by the student as an opportunity to strengthen these critical evaluation techniques, which are valuable not only for success in this exam, but also for future careers in applied research.

The following items provide guidance to prepare for the exam.

1. Spend at least the full semester prior to the exam preparing for it.
2. For Part 1:
   a. Please review and practice material from ENGR 820. Categories shown below.
   b. Be very familiar with at least one statistical analysis tool to be used during the exam. You may be given data sets to evaluate and describe and report results using APA format.
   c. Practice critiquing experimental study designs.
3. For Part 2:
   a. Practice analyzing papers using the question pool below. This should be done with the three papers to be submitted for the qualifying exam (see handbook), as well as others you have identified.
   b. Review papers for journals, conferences, and/or professional magazines. This may require reaching out to an editor EIC or a conference chair and also in working with your adviser, who will receive many such request per semester. Pease consult your adviser for suggestions.

Doctor of Engineering Qualifying Exam Part 1 Question Categories:

1. Instrumentation and measurement
2. Statistical testing and reporting
3. Ethics and academic integrity
4. Experimental design and methodology

Doctor of Engineering Qualifying Exam Part 2 Question Pool:

1. Write a short synopsis of the technical concepts employed in the research reported, how they are related to each other, how they are used in this paper, and any assumptions and limitations that need to be understood. Explain and properly cite with additional supporting literature.
2. What are the fundamental contributions of the paper to your field? Relate the contribution to your field of engineering. Support and properly cite your responses with additional supporting literature. Explain and properly cite with additional supporting literature.
3. Do you agree with the conclusion(s) of the contributions in the context of the field. Explain and properly cite with additional supporting literature.
4. How well connected is the background/literature review presented in the paper with the hypotheses/research questions? Does the background/literature review form a sound basis for the hypotheses/research questions? Explain and properly cite with additional supporting literature.
5. Comment on the appropriateness of the methodology/approach to executing this research? Explain and properly cite with additional supporting literature.
6. Which aspects of the research problem discussed in the paper have not been addressed? Explain and properly cite with additional supporting literature.
7. Is the work free of technical errors? Please explain your answer using evidence from the paper to support your argument. Think about technical errors in the context of both qualitative <u>and</u> quantitative methods.
8. What are other emergent research questions related to this research? Explain and properly cite with additional supporting literature.
9. What are the practical implications of this work? Explain and properly cite with additional supporting literature.
10. How have others leveraged the findings from this work? Please list with appropriate citation(s).
11. Describe in detail how you would extend this work, provide specific details regarding qualitative methods, experimental procedures, and analysis. What are the next logical areas for future work? Explain and properly cite with additional supporting literature.