

Qualifying Review for MRAD students

1. The written requirement for the qualifying review as stated in the ECE graduate handbook will be adhered to. The additional constraints are added to ensure high quality within the MRAD area. The spirit of this approach is to ensure good practices in technical assessment, analysis and problem solving relevant to the nature of modern interdisciplinary electrical engineering. This process will also serve as a valuable tool for improving writing and presentation skills.
2. Exam administration. Students should comply with the guidelines in the ECE Graduate Handbook, which currently includes the following:
 - i.) Students entering with a master's degree must take this exam no later than the third semester after entering the PhD program.
 - ii.) Students entering with a bachelor's degree must take this exam no later than the third semester after entering the PhD program.
 - iii.) Students must be registered for ECE 834.
 - iv.) Students must have taken at least two of the MRAD introductory graduate classes to pass ECE834.
3. An MRAD section of ECE834 (e.g. ECE834A) will be held each semester..
4. A committee, the MRAD PhD Qualifying Committee, will conduct the oral and written portions of the qualifying review. The MRAD PhD Qualifying Committee will consist of three members of the MRAD faculty including the instructor of ECE834 who will serve as chair of the MRAD PhD Qualifying Committee . The PhD Committee chair will recuse him or her self from conducting the exam in the case that his or her student is being considered. All faculty in MRAD will be given access to the examinations and all committee evaluations of candidates.
5. The written review will be a four-page, conference-style paper authored by the student with minimal input from the students PhD Committee Chair or other research group members.
 - a. The written portion of the exam will be judged with the same criteria used by the Technical Program Committee of a conference.
 - b. The oral portion of the exam will consist of a 20 minute presentation.
 - c. The examination will be held on one or more days in the third week before the end of the semester.
6. The course content will be decided by the MRAD PhD Qualifying Committee and will normally comprise
 - a) Content on the ethics of publication.
 - b) Content on writing conference and journal papers; and on research skills and organization
 - c) Content on presentation skills and presentations by students in the class.

This part of the course will be satisfied using self-study, referring to the reading list provided at the end of this writeup. Students are to study this material and write a one to two page essay (12 point, single spaced) on what they have learned. That essay is to include content on the following:

- Research ethics, including specific examples of good and bad practices. Examples could include the following:
 1. Originality of work coupled with what has been done in the past.
 2. Names of authors omitted or included on the formal paper & why.
 3. Explain the steps on how data was collected and its interpretation,
 4. How to properly attribute the work of others, including other PhD students in your thesis.
 5. How to properly generate figures for theses and papers.
 6. How to properly quote the writings of others.
 - Presentation skills, with an emphasis on what was learned that was new to the student and how this knowledge is reflected in the talk to be given.
 - Writing skills, with an emphasis on conference paper writing. The student should discuss topics such as the different ways to write an abstract, and what should be included in the introduction and conclusions.
7. The oral review will be scheduled place in the week before finals week for all candidates. The committee may require remedial action, including a retake of the exam.

References

1. Dr. Gary Comstock, "Introduction to Research Ethics" PHI 816
2. H. Michaelson, "How an author can avoid the pitfalls of practical ethics," Professional Communication, IEEE Transactions on Volume 33, Issue 2, June 1990 Page(s):58 – 61
3. H. Michaelson, "How to write and publish engineering papers and reports".
4. P. Fejbelmann, "A PhD is Not Enough: A guide to survival in science"
5. R. Anholt, "Dazzle 'em with style: The art of oral scientific presentation"
6. W. Booth, "The craft of research"
7. K.L. Turabian, "A manual for writers of research papers, theses, and dissertations"
8. M. Alley, "The craft of scientific presentations: Critical steps to succeed and critical errors to avoid"

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