

## School of Materials Engineering PHD PRELIMINARY EXAM GUIDE

This is the annual guide for students and faculty, to the PhD Preliminary Exam in the School of Materials Engineering. The Graduate Student Manual provides full details of the objectives, format and procedure for the exam and has answers to many common questions. The MSE Preliminary Exam Evaluation Rubric is also available on the school website. The intention here is to provide a succinct guide highlighting the key steps, main pitfalls, tips for navigating the logistics and modifications under the current pandemic.

The deadline to turn in the documents to Prof. Kvam and Karen Morgan is **November 15** for the fall semester and **April 15** for the spring semester.

There are three main parts of the exam. The student writes an original critical review (4000 words) on a specific subject area/topic related to their thesis research, and presents it in a public seminar of 30-35 minutes plus questions, after which there is a separate oral exam by the advisory committee.

### **Preparing the original critical review:**

The topic area of the **original** critical review must be related to the student's thesis research, and should not be a general background literature review or prospectus. Instead, the critical review must be a "deep dive" into a particular topic that is sufficiently focused to demonstrate the student's ability to independently and critically analyze the topic from an MSE perspective using published research. Work that is merely descriptive of a topic is not acceptable.

Identifying a good topic is an important part of the assignment. The topic can be related to a phenomenon, a process, an analytical technique, a modeling method or a problem in design, development or research, and should be "useful" for the student to learn about for their research. The latest trends or "hot topics" can be suitable, but there also must be a sufficient body of research literature for the student to analyze. Topics on which review papers have already been written, or the student's advisor has written extensively, may not be good choices. The student should discuss possible topics with their advisor to make sure a sufficiently original perspective can be developed.

In the written review, seminar, and oral exam, the student is expected to demonstrate deep knowledge of the chosen topic area, including seminal works and related MSE fundamentals. Some pitfalls are the following: 1. Too broad a topic area, leading to shallow analysis; 2. Weak, superficial or missing analysis of the topic and of its relationships to MSE fundamentals; 3. Lack of originality or identifying critical research questions. If you have any questions regarding how focused the critical review document must be, please contact Prof. Chawla.

See the Graduate Student Manual for additional details of the document format. Advisor(s) are allowed to provide general guidance to the student, but must certify that they have not contributed any text to the document. The critical review is to be original work of the student. Plagiarism violations are strictly enforced. Where another author's organization of ideas or particular phrasing are used, they must be properly cited. Closely paraphrasing or copying, even if the content is considered general knowledge, is not acceptable. Referencing the source of directly copied material, although certainly better than not, does not make it acceptable. An unlimited number of figures can be used, including copyrighted (i.e., published) figures, but any figure that is not original must be clearly referenced, and redrawn figures marked, as "after" or "from" the original source. Read the information on responsible conduct of research provided at <https://purdue.edu/gradschool/research/rcr/index.html> to ensure that you understand what is and is not acceptable.

### Submitting the document:

The exam document is submitted to Prof. Kvam (copied to Karen Morgan) by e-mail as a **single** electronic file (PDF or Word), including four parts in the following order:

- 1) Preliminary Exam cover sheet and checklist (MSE website) signed by the advisor,
- 2) Preliminary research results performed during the PhD (1 page maximum),
- 3) Future research plans (1 page maximum) and
- 4) Critical review document (4000 words max). An abstract for the seminar is also required in the package, either as part of the critical review (not included in the word count) or a separate document.

The document with signed cover page is due to Prof. Kvam and Karen Morgan no later than **Nov. 15 at 5:00 PM**. Submitting the document close to the deadline is not advised.

Once the document has passed the plagiarism check (checked usually within a day or two of submission), the student must provide a copy of the approved document to each member of their committee. The student's advisor should inform Karen/Cathy as soon as possible which one of the other committee members will serve as the Exam Chair. **Faculty:** signing your student's document should trigger the process of selecting the Exam Chair; see additional notes in the last section of this document.

### Scheduling the exam:

Only after the document is approved can the exam be officially scheduled with the Graduate School. All exams are scheduled by Karen Morgan. Students or advisors cannot schedule an exam. The Graduate School requires 14 days advanced notice to schedule an exam. The student is entirely responsible for arranging with their committee the date and times for the seminar and oral exam. Two separate meetings need to be arranged, a first meeting of 1 hour for the public seminar, followed by a second meeting of 2.5 hours for the oral exam with only the student and committee.

**Students:** In polling your committee for their availability, first get a sense of general availability, starting with your advisor(s), before narrowing down the options; please do not send out a poll requesting hour-by-hour availability over multiple weeks. Once you have the date and times of your meetings set, send them to Karen Morgan, along with your document title, in order to get the exam scheduled with the Graduate School.

**Note that Dec 3, 2021 is the last possible day allowed by the Graduate School to hold a preliminary exam in Fall 2021. Failure to schedule the exam by this date without a valid excuse will constitute a first failure of the exam.**

**Notes to faculty:** Advisors are responsible for consulting with the other committee members and deciding who will serve as the Exam Chair. Co-advisors and non-MSE faculty are not eligible to serve as Exam Chair. If there is no eligible Exam Chair on the committee (e.g., two MSE co-advisors and two non-MSE faculty on the committee), contact the chair of the Graduate Committee, who will assign one. In any case, the Exam Chair should be decided as soon as possible and forwarded to Cathy Noerenberg well in advance of the exam. The Exam Chair reviews the questions submitted by the committee members before the exam and runs the oral exam. It is the responsibility of the Advisor(s) and Exam Chair to confirm that committee member(s) from outside MSE understand the process and time commitments. The oral exam process is detailed in the Graduate Student Manual and the exam evaluation rubric is also available on the MSE website for their information. The evaluation sheet also includes a summary of the exam policies and procedures. These details are also elaborated in the Graduate Manual, and are thus not included here.

Contact Prof. Chawla with any questions. Good luck to all the students.