

microEP Graduate Program - PhD Candidacy Exam Cover Sheet
March 14, 2003

Introduction

The microEP graduate program is an experimental educational program that is attempting to bring significant extra value beyond traditional programs to its students. This is the third candidacy exam issued by the microEP program and significant faculty thought has gone into designing its approach, execution, and evaluation. We recognize that we had a significant failure with the exam last year in that we did not complete grading and return for several weeks. We have completely reviewed this process, and believe that things will go smoothly this year.

You, the PhD candidates, are partners with the faculty in creating a new approach to PhD education. Your evaluation of this candidacy exam process will be solicited immediately after you complete you exam. As it was stated by the faculty in the exam definition document:

“The implementation of the microEP candidacy process will be closely examined during its first five years of use, with an *expectation* that some changes will be required to the candidacy process as the process is used during that time period.”

The faculty feels that the questions contained in this exam will provide both the candidate and us a method to evaluate the candidate’s readiness to proceed toward completion of the PhD microEP degree. However, the composite results of all the candidates will be closely examined during the grading process to assure that this examination does not have seem to have any significant problems in its approach to your evaluation.

Logistics

1. You will meet on Friday, March 14 at 3:00 in the Upchurch Conference room in Bell Engineering. You will receive a copy of each of three exams, one each for Microelectronics, Materials and Processing, and Photonics. You will have one hour to read the exams and choose which exam to take. The microEP exam administrator will document your choice by you signing an exam roster with your choice indicated.
2. You have until noon on Saturday, March 15th, to request exam clarifications from the microEP exam administrator (to be specified during the March 14 meeting). Preferred contact method will be cell phone, followed by message on home phone. If you call before noon and have to leave a message, your call will be returned and the discussion will happen later in the day.
3. The completed examination must be returned to the microEP program director by 12:00 noon, Monday March 24th. You are required to submit one hardcopy printout, with dated signature on each page (to be maintained in the microEP office). You will also submit one electronic file on a disc or CD containing your Word document, with your dated signature on the label of the disc or CD. **NO EXAMS WILL BE ACCEPTED AFTER 12:00 SHARP!**
4. You may use any written source of information in formulating your answer. This does include on-line searches and internet materials. If you are using textbooks that are in any of the university libraries, please do not check them out. Your microEP colleagues taking this exam may also need to use them in the course of formulating their own answers.

5. You may ***NOT*** discuss this exam in any fashion (oral, written, sign language, smoke signal, etc) with any person except the microEP exam administrator. It is emphasized that your major advisor should specifically not be approached in casual conversation on your approach or progress to date.
6. It is expected that you will have casual contact with faculty, microEP students, and other candidates during your exam week. General conversations with your colleagues are not restricted during this week, but it is your responsibility to immediately disengage from any conversation that might be construed to pertain to the examination process.
7. It is anticipated that the submitted solutions will be completely graded by the faculty within two weeks. If in grading the solutions the faculty feels that the intent of an answer is unclear, the candidate may be required to join the grading committee to orally discuss his solution. A minimum of twenty-four hours notice will be given to the candidate to prepare for this discussion.

Areas of Emphasis

The exam was created using the following concentrations:

- Microelectronics
- Photonics
- Materials and Processing

In addition, the exam has been designed to balance assessment of your understanding of both the science and engineering aspects of the given problems. We anticipate that your response will give appropriate treatment to both of these areas.

Examination format

1. Use 12 point, Times New Roman font. Smaller font may be used in diagrams or figures, provided it is readable to the exam graders when printed on normal office printers.
2. Use one inch margins on sides, top, and bottom.
3. Line spacing may be no smaller than single spacing.
4. Modify the footer of the document to replace “nnnnn” with a random five-digit number of your choice. Choose a number sequence that will not be associated with you by any of the grading faculty.
5. The exam questions are identified by Section and Number. Please utilize this same identification scheme in your solution document.
6. You are limited to a maximum of 15 pages in your problem solution (including diagrams and illustrations). We believe that it is impossible to fully answer the given problems in less than 15 pages, and that you will feel that you are leaving out critical information in order to compress the response to 15 pages. Since you will probably initially develop much more than 15 pages, please be sure to leave yourself time to edit the responses to meet the limit.
7. It is critically important to fully reference any materials directly copied from another source. Plagiarism will be grounds for failure without grading of content.

NOTE: Two appendices will be allowed that will not be counted toward the fifteen page limit. Your bibliographic list of any references you feel are appropriate in your solution should be included as an appendix. A second list of publications examined as part of the intellectual property question should also be included as an appendix.

Special Note to Candidates

This is a PhD capability assessment process and should be approached with a great deal of seriousness. It is anticipated that fully answering the questions in the exam should require the full nine days to accomplish the examination process (reflection, solution, documentation, reflection, and final documentation). Answers are expected to contain the level of detail necessary to fully evaluate your understanding of the microelectronics-photonics field.