

## **Area Exam in Biological Engineering** **ME Doctoral Qualifying Exam**

*Topics:* This exam covers the mechanics of biological systems, from single molecules to whole tissues, as well as biologically-relevant topics in transport and fluid flow.

*Preparation:* Students wishing to take this exam would be recommended to be well-versed in those topics included in two graduate subjects: 2.795: *Fields, Forces and Flows in Biological Systems*, and 2.798: *Molecular, Cellular and Tissue Biomechanics*.

*Purpose:* The exam is based on the student's ability to read, comprehend, and analyze one or two publications from the relevant literature.

*Logistics:* Each student is given a copy of the paper at 9:00 am on the first day of the exam. They are then asked to submit a short written analysis of the paper by the morning of the second day. On the third day, a committee of three or more faculty examines each student on their written critique and related topics. The oral exam is between 20 and 50 minutes in length. The student should prepare a short presentation (no more than half of the length of the exam) to be used as a basis for questioning.

# **Biological Engineering Exam May, 2005**

## **Schedule:**

Distributed in Room 1-106:	May 18, 10:00AM
Critique due in Room 1-106:	May 19, 10:00AM
Oral exams:	May 20

## **Format of the exam:**

The exam will be based on the attached paper from the published literature. You should read through the paper carefully, and write up a critique of no more than five pages in which you provide a critical evaluation of the research presented in the paper. A sample critique is available in Room 1-106 if you have not yet had a chance to look at it. You are free to use any materials available from your own notes, course materials, in the library or on the internet for your analysis, but you should be prepared to provide references if asked. You are NOT, however, to consult with anyone else. If you have any questions, you should contact Prof. Roger Kamm (rdkamm@mit.edu, x3-5330), or someone in the Graduate Office (Rm. 1-106, x2-2291).

Your written critique is due in the Graduate Office by no later than 10:00AM Wednesday, Jan. 19. It will then be copied and distributed to the faculty examiners, so that they can look it over prior to the oral exams on Thursday. You can assume that all of the examiners have had a look at your critique prior to the oral exam.

When you come to your oral exam, you should be prepared to present an overview of your critique (using a laptop, overhead projector, or whiteboard) in no more than 10 minutes. The rest of the 30 minute exam will be for oral examination on topics related to the paper. There will be one faculty member who has been assigned to be the “primary reviewer” of your critique, so he/she will start off the questioning. Following that, the rest of the examiners will chime in.

You will find a schedule for the oral exams in your Qualifying Exam handout.