Portfolio Defense for the PSM in Industrial Mathematics at Michigan State University, Spring 2012

This document serves as a guide for students who are preparing for the oral Portfolio Defense for the Professional Science Master's (PSM) in Industrial Mathematics (a.k.a MSIM) degree at Michigan State University in spring 2012.

MSIM students will be expected to defend a portfolio of their major work that they have done to fulfill the requirements of the program in Industrial Mathematics no later than Friday, April 20, 2012. This includes at least three project reports under MTH 843 and one industrial project report under MTH 844, plus other possible work, if any, done during your study in the program.

The defense is a two-hour oral examination conducted by three MSU faculty members in the defense committee (discuss with Dr. Wu to finalize the committee). The student is expected to arrange an examination date and time acceptable to all the examiners, schedule a room with a black board, and provide each examiner with a copy of the portfolio at least two weeks in advance of the defense.

Students are expected to be thoroughly conversant with their entire portfolio and so are expected to do the following from memory with little, if any, reference to the individual reports:

- Give a one-minute elevator speech describing the problem from the project.
- Explain the project clearly in broad terms and be prepared to provide details requested by the examiners. The session will be interactive with the examiners leading the discussion. Expect to be interrupted every few sentences.
- State and explain the definitions and underlying theorems of the mathematics central to the project. Describe understanding of the physical or economic ideas at the core of the problem.
- Demonstrate the underlying mathematics in statistical or other software used in the project. Be ready to explain the definition, concepts, or equations involved in the software.
- Reflect on any errors in the report, why they arose, and how they affect the report and its conclusions. Prepare for the question, “What should have been done differently and why?” Describe alternative approaches to the work done in the report in light of the student's subsequent course work and experience.