Registering for the Comprehensive Exam

1. The culminating activity for the Master of Engineering degree in Materials Science & Engineering is a Comprehensive Examination (MSE 600 Assessment). The comprehensive exam is taken in the final semester of the program. The Graduate Program Coordinator will facilitate the exam and will be the MSE 600 instructor.

2. Before registering for MSE 600, the student must have successfully completed the core courses (C or better in each core course with an overall average GPA of a 3.0 or higher in the core courses):
   a. MSE 505 Bonding and Structure of Materials
   b. MSE 508 Solid State Thermodynamics
   c. MSE 518 Phase Transformations and Kinetics
   d. PHYS 515 Solid State Physics
   e. PHYS 523 Physical Methods of Materials Characterization

3. In addition, prior to registering for MSE 600, the student must complete the Application for Admission to Candidacy form which is signed by the advisor (if not the Graduate Program Coordinator), the Graduate Program Coordinator and the Associate Dean of the College of Engineering. The original form is submitted to the Graduate College and a copy of the form must be given to the Materials Science & Engineering Department office. The form must be approved by the Graduate College no later than the semester PRIOR to the one in which the student hopes to graduate.

4. After approval of the Application for Admission to Candidacy form by the Graduate College, the student registers for the comprehensive exam by enrolling in MSE 600. A permission number will be required to enroll.

5. Before a permission number can be provided to the student, the Graduate Program Coordinator must determine if the student is eligible to take the exam by checking the following requirements:
   a. Approval of the Application for Admission to Candidacy form by the Graduate College.
   b. Successful completion of the core courses as defined in 2 above.

Comprehensive Exam – General Information

6. The exam is administered by the Comprehensive Examination Committee, comprised of three faculty members from the MSE graduate faculty who are appointed to the committee by the Chair of the MSE Department.

7. In Materials Science & Engineering, the comprehensive exam consists of both written and oral portions. The structure of each component is described in more detail below.
8. The comprehensive exam is graded as either pass or fail; the student must score at least 70% on the written portion and at least 70% on the oral portion to pass. If a student passes the comprehensive exam, a grade of P is recorded for MSE 600. If a student fails the exam, a grade of F is recorded for MSE 600, and the Graduate Coordinator notifies the student in writing with copies to the Dean of the Graduate College, the Members of the Comprehensive Exam Committee, and the Chair of the MSE Department stating what portion(s) of the exam the student failed.

9. If the student does not pass the comprehensive exam on the first attempt, the student will be notified in writing as described in 8 above. The student may request, in writing to the Graduate Program Coordinator with copy to the Chair of the MSE Department, the opportunity to retake the exam. If the student passed one portion of the exam but failed the other portion, he/she need only request permission to retake the portion that was failed. The written request must be received within one week of notification of the results of the exam. The request for a second attempt will either be approved or disapproved by the Comprehensive Examination Committee with notification to the student. If the second attempt is disapproved, then the Graduate Program Coordinator notifies the Dean of the Graduate College that the student should be administratively withdrawn from the program. If the second attempt is approved, the student must retake the exam, including reregistering for MSE 600, within one year after the failed first attempt. The Comprehensive Examination Committee may recommend preparatory actions that the student should complete prior to the second attempt. If the student passes on the second attempt, a grade of P is recorded for MSE 600. If the student fails on the second attempt, a grade of F is recorded for MSE 600, the student is notified as described in 8 above, and the Dean of the Graduate College administratively withdraws the student from the program.

10. A third attempt to pass the comprehensive exam is not permitted.

11. Because the result of each attempt to pass the comprehensive exam is recorded by a grade (P or F) in MSE 600, a Report of Culminating Activity is not required by the Graduate College.

Comprehensive Exam – Written Portion
12. The written portion of the comprehensive exam is approximately 4 hours long and consists of questions from the five core courses required in MSE:
   a. MSE 505 Bonding and Structure of Materials
   b. MSE 508 Solid State Thermodynamics
   c. MSE 518 Phase Transformations and Kinetics
   d. PHYS 515 Solid State Physics
   e. PHYS 523 Physical Methods of Materials Characterization

   If needed, equation sheets will be provided at the time of the exam.

13. On the written exam, the student will be given three questions in each core area and must answer two of the three questions. Each question will be worth 10 points. The student
14. The written exam is compiled by the Graduate Program Coordinator from a list of questions provided by the instructors of the core classes. Questions may also be submitted by any MSE graduate faculty member.

Comprehensive Exam – Oral Portion
15. The oral portion of the exam is approximately two hours long and will be given approximately two weeks after the written exam. The primary intent of the oral exam is to examine the student's breadth of conceptual knowledge of the field of materials science and engineering.

16. The oral exam is administered by the Comprehensive Exam Committee members simultaneously.

17. Topic areas of the oral portion of the exam include:
   a. Atomic Bonding
   b. Crystallography and Defects
   c. Phase Transformations and Diffusion
   d. Thermodynamics and Phase Diagrams
   e. Mechanical Properties
   f. Electrical Properties

18. Example questions for the oral portion of the exam can be found on the department website.

Timing of the Comprehensive Exam
19. The timing of the Comprehensive Exam is as follows:
   a. The written exam will be given the Wednesday of the 5th week of each semester
   b. The oral exam will be given the Wednesday of the 7th week of each semester.

Academic Honesty
20. Students are expected to follow Boise State University’s Student Code of Conduct and in particular, Section 18 - Academic Misconduct (see pages 5-6).

See: http://www.boisestate.edu/osrr/Forms/07.%20BSU%20Code%20FINAL.pdf