Materials Engineering Program PhD Qualification Requirements:

Overview and Required Completion: To fulfill the qualification requirements for a PhD from the Auburn Materials Engineering program students must complete two components as described below. The first component evaluates student’s fundamental knowledge in Materials Engineering core subjects. Successful completion is assessed by grade attainment in five core Materials Engineering Graduate courses. The second component evaluates student’s ability to utilize this knowledge to develop an understanding of a materials engineering research field. Students must complete both components prior to the end of their second year of enrollment, including summers, in the materials engineering graduate program. Students that have not met the Qualification requirements by the end of their second year, including summers, in the materials engineering graduate program will be allowed to complete a Masters Degree or leave the graduate program.

Core Course Requirement: Students wishing to pursue a PhD in the Materials Engineering Program at Auburn University must take all five of the core courses at Auburn. Students must achieve grades of A or B in each course. These courses are:

- MATL – 6100: Thermodynamics of Materials Systems
- MATL – 6200/6201: Materials Characterization
- MATL – 6300: Phase Transformations in Material Processing
- MATL – 6400: Physics of Solids
- MATL – 7050: Deformation and Failure of Engineering Materials

For students that completed their undergraduate degrees in Materials Engineering at Auburn their undergraduate grade in the corresponding 5000 level course will be used to determine if they meet the Core Course qualification requirement. If students have one (1) or two (2) courses with grades below a B they may retake these courses, and the grade earned during the retake will be used to determine if the student has completed the Core Course Requirement. Students that have three (3) or more scores below a B or who earn a C or lower in any retaken course have not met the Qualification Requirements and will be allowed to complete a Masters Degree or leave the graduate program.

Research Presentation Requirement: Students wishing to pursue a PhD in the Materials Engineering Program at Auburn University must prepare and present a research presentation. The topic selected should not be similar to a research area the student has worked in prior to the semester they propose to complete the Research Presentation Requirement. The steps to complete the Research Presentation requirement are:

1) The student along with their advisor select a research topic and at least six (6) papers related to that topic. The topic selected should not be similar to a research area the student has worked in prior to the semester they propose to complete the Research Presentation Requirement. The papers must have been published within the preceding five (5) years. However, up to one (1) paper, identified as a seminal paper that defines a field, may be included regardless of publication date.

2) The student prepares a short summary (two pages maximum, 12 point font, double spaced, and following dissertation format) of how the selected papers are related to the research topic and submits this overview and the six (6) papers to the Qualifying Exam Manager with the first two weeks of classes in the semester the student wishes to attempt the Research Presentation Requirement. At the same time the student’s advisor will submit a statement to the Qualifying Exam Manager stating
that they approve of the topic and the papers. The Qualifying Exam Manager will notify all graduate students and their advisors of the due date for this material each semester, and the format for the advisors’ statement.

3) The Qualifying Exam Manager will provide all documents to the Program Research Presentation Committee. **By the end of the fourth week of classes** the Program Research Presentation Committee will:
   a) Review the papers and overview to ensure that they meet the requirements. If they do not the student will have one week after notification to correct the issue.
   b) Based on the research topic assign two of the Program Research Presentation Committee members to the Students Research Presentation Committee. The third member of the Students Research Presentation Committee is the students research advisor. If the student is co-advised all the students co-advisors that are faculty in the Materials Engineering Program will serve on the Students Research Presentation Committee.
   c) Notify the student of the members of their Student Research Presentation Committee and that the student is allowed to schedule their Research Presentation.

4) The student schedules the Research Presentation with their Student Research Presentation Committee no earlier than the 7th week of the semester.

5) The student prepares an extended abstract of the research topic (four pages maximum, 12 point font, double spaced, and following dissertation format) that focuses on the papers provided. This extended abstract must be supplied to the Student Research Presentation Committee at least two (2) days prior to the data scheduled for the presentation.

6) The student prepares and presents a presentation to the Student Research Presentation Committee that critically reviews the research topic with particular emphasis, but not limited to, the papers provided. This presentation should be forty-five (45) minutes in length and:
   a) Define the research area in context with the broader field
   b) Relate the general research area, methods used in the papers, results proposed by the papers, and theories espoused in them to fundamental topics discussed in the core courses.
   c) Articulate any criticisms of the papers methods or results.
   d) Identify current research problems/thrusts within the research area.
   e) Articulate a narrow research question suitable for a proposal and outline a plan to answer this research question.

7) The Student Research Presentation Committee asks questions during and after the student’s presentation. These questions will probe the students understanding and ability to explain the research topic. The question period will typically be twenty (20) minutes. but may last longer at the discretion of the committee.

8) The Student Research Presentation Committee will determine if the student has successfully completed the Research Presentation Requirement or not. The committee can decide that the student has passed, failed, or earned a second chance to complete the Research Presentation requirement. The committee reports this result to the Qualifying Exam Manager.
   a) If the Student Research Presentation Committee determines the student has failed the Research Presentation the student may complete a Masters Degree or leave the program.
   b) If the student Research Presentation Committee determines the student earned a second chance to complete the Research Presentation requirement, the student MUST complete this requirement in the next semester on a new research topic.