MSE 395 Course Outline

The requirement for the completion of MSE 395 can be satisfied by one of the following:

1. Regular design project as part of the class.
2. Participation in a broad multi- and inter-disciplinary team project with a significant materials and design component, although the project outcome may not be a materials component, system or process. For example, Solar car, concrete canoe building or similar projects, Engineers Without Borders, etc.
3. Design, select and evaluate the application of materials for a specific application.
4. Reverse engineering of a component and designing a better component through selection of different materials.
5. Design, conduct and perform a custom project. The students will identify a problem, propose a work plan and then implement the work plan to solve the problem.
   a. The problem may be an engineering project in which the student or students determine the structure-processing-property-performance relationship for a process or component.
   b. The problem could also involve a properly constituted and framed research problem, which may be performed during an industrial internship, a summer program, as part of a co-op or in a scientific research group at a University.
   c. Third possibility is a computer aided design and material property determination.

All projects, except those under category 1, must be pre-approved by Prof. Shim. If you choose any projects outside of category 1, please send Prof. Shim a descriptive title and 1 paragraph description of the project including how it relates to materials science and engineering before you leave for winter break. All projects and reports will have to consider the following items (as defined by ABET) to the extent appropriate:

1. Mission (objective)
2. Constraints including such factors as material selection, economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability to the extent appropriate
3. “Benchmarks” (comparison products, materials, research)
4. Results

The report should present evidence of your ability to apply and integrate knowledge from each of the four elements of MatSE (structure, property, processing, and performance) to solve materials selection, processing and/or design problems and to function as part of a team.

All students are required to participate in the lectures/presentations that are part of MSE 395.

Schedule for the rest of the semester (including due dates for progress reports and final presentations) will be announced on the first day of class in spring.