

MSE 395: Materials Design Spring 2020 Course Syllabus

Faculty: Prof. Shen J. Dillon, Dr. Matthew D. Goodman

Class Description and Objectives

Students should become comfortable with and proficient in the design of various engineering devices, objects, or systems. Team-based and faculty guided projects are directed toward the development of materials-based solutions to problems originating from student, faculty, and industrial suggestions. Solutions are based on the knowledge, skills, and design experience acquired in earlier course work and incorporate engineering standards, testing standards, and realistic constraints such as economic, environmental, sustainability, manufacturability, ethical, health and safety, social, and political concerns.

MSE 395: Materials Design

3 cr., Spring 2021 CRN: 38216; arranged.

Contact

Prof. Shen J. Dillon sdillon@illinois.edu 172 Materials Research Lab (217-244-5622)

Dr. Matthew D. Goodman mgoodman@illinois.edu 210 Ceramics Building (641-330-8022, cell)

Office Hours: By appointment

Course websites:

Basecamp.com (you'll receive an invite), Compass, Piazza
(piazza.com/illinois/spring2021/mse395)

Grading breakdown

5%	Group Work Agreement
5%	Objective Statement & Timeline
10%	Literature Review
10%	Initial Work Plan
15%	Weekly Progress Reports to Course Advisor
25%	Midterm Presentation
15%	Final Poster
15%	Final Paper

Preliminary Grading Scheme:

A: 90 – 100 % B: 80 – 89.9 % C: 70 – 79.9 % D: 60 – 69.9 %

Course Advisor: Projects are assigned to either Prof. Dillon or Dr. Goodman to assist with course-related questions, deliverables, etc., and they will receive the weekly progress reports.

Students should complete a PowerPoint template for weekly progress reports and post it on basecamp.

Deadlines:

Completed by	Item	Place to submit/present
Wednesday, Feb 3	Group Work Agreement, Objective Statement, Timeline	Compass & Basecamp
Wednesday, Feb 17	20-minute Literature Review presentation	Compass, Basecamp, & course advisor
Wednesday, Feb 24	Initial Work Plan	Compass, Basecamp, & course advisor
Monday, Mar 1	Deadline to Order Supplies & Complete Hazard Analysis (if applicable)	Basecamp
Friday, Mar 12	Approach and Work Plan Presentation	Compass, Basecamp, & Zoom meeting
Friday, Apr 30	Final Poster	Compass & Basecamp
Monday, May 10	Final Paper	Compass & Basecamp

Course Elements

Work Agreement: The roles and responsibilities of each group member should be defined and agreed upon by all group members with respect to decision making, interactions, delegation, management, and accountability.

Literature Review: A 20-minute presentation to the faculty advisor outlining the problem statement, the relevant background necessary to address the problem, specific design goals, and a preliminary plan or approach.

Initial Work Plan: The initial work plan will outline the team's approach and serve as the basis for the final work plan, hazard analysis, and the faculty should provide initial feedback regarding scope, feasibility, and safety.

Approach and Work Plan (Midterm Presentation): The approach and work plan presentation will be \approx 15 mins. It will be presented to and partially evaluated by your peers via Zoom. Therefore, it should provide sufficient background for the general materials scientist to understand and appreciate the project problem, design goals, and proposed work plan. It will describe the relevant background information related to your project, design goals, proposed future work, and relevant information related to standards used for assessment. The presentation will also be graded in part on the quality of the presentation material and its delivery. Presentation dates will be decided via surveys.

Final Paper: A detailed yet concise description of the accomplishments made towards the design project during the semester including the relevant background, problem statement, design goals, and new progress made.

Poster Presentation: Posters (size details will be provided later) will be displayed in MSEB for a two-week duration, centered around finals week. The posters will be open to the public.