

Progress Reports are graded on the (i) write-up of what has been accomplished and (ii) the amount of said progress on the overall project.

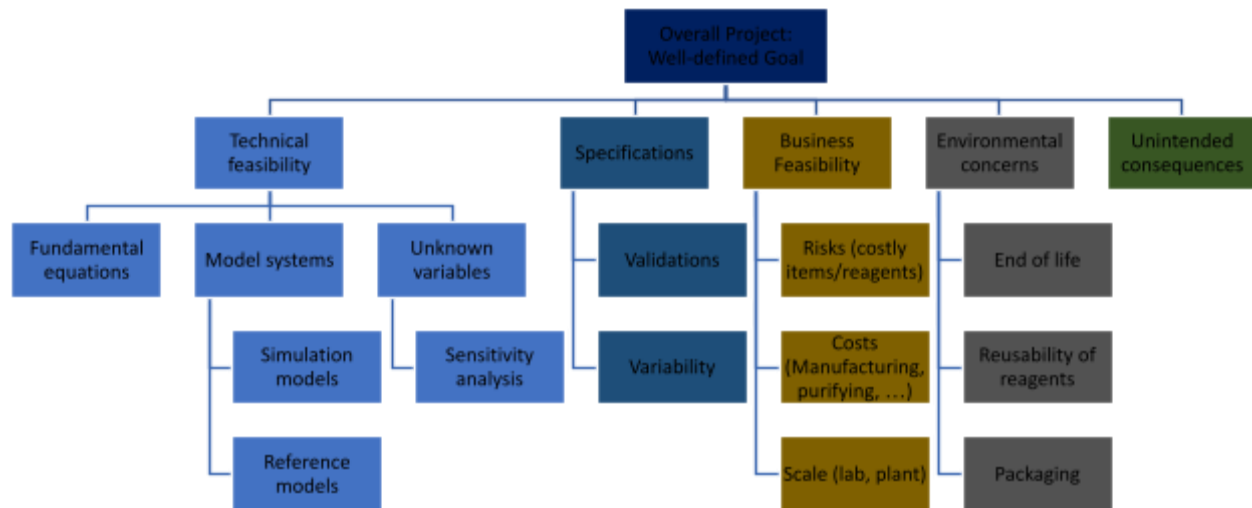
1. Group Number and Title: Group 11 – Sustainable Polymers

2. Week 10/16 and Date: 4/4/2025

Understand	Synthesize	Ideate	Prototype	Implement
Explore	Debrief	Brainstorm	Create	Support
Observe	Organize	Propose	Engage	Sustain
Empathize	Define	Plan	Evaluate	Evolve
Reflect	Interpret	Narrow Concepts	Iterate	Execute

3. Provide a brief list of activities that were done and their corresponding HCD space(s) and subspace(s) (add rows if necessary):

Activity	HCD space(s)	HCD subspace(s)
Finished Degradation Test	Prototype	Evaluate
Mechanical testing prep (hot pulling, OM, tabbing)	Prototype	Evaluate
Working on poster draft	Synthesize, Prototype	Organize, Engage
Continuing DSC measurements and trying to interpret results	Prototype and Understand	Evaluate and Explore
Rheology testing	Prototype	Evaluate
Fiber fabrication (via cotton candy)	Prototype	Create
GPC on degraded samples	Prototype	Evaluate



4. What branches/blocks were work focused on this week?

Technical feasibility - model systems (reference models)

Specifications - validations and variability

Environmental concerns - end of life

Business feasibility - scale

5. What was accomplished? (4-5 bullet points, include data/charts if applicable)

- Concluded degradation testing and did GPC on the final degraded samples
- Created PLA and PLA/PEG blended fibers
- Made cardboard tabs for fibers
- Met with grad student to finalize plans for testing
- Did OM on samples & tabbed fibers for testing
- Conducted DSC on 5,10, 20 % PLA/PEG composites
- Conducted rheology measurements on 5, 10, 20, and 35% PEG/PLA samples

6. What challenges are still outstanding? (2-5 bullet points)

- Still need to do mechanical testing
- New DSC measurements are different from previous ones – need to read more literature to figure out what is going on

7. As you engaged in human-centered engineering design activities this week, do you think you became curious about any new content? If yes, how?

Our DSC measurements showed that some of our samples crystallize while some others don't. We are curious about whether the blending process produced these differences and how we can eliminate them.

8. As you engaged in human-centered engineering design activities this week, do you think you made any new connections (e.g. connections between ideas, connections between people, etc.)? If yes, how?

We have made new connections in how we create our samples and how that affects the composition of the PLA/PEG for the inner versus the outer region of our samples. Our DSC data shows low glass transition temperatures which are inconsistent with those of pure PLA, so we are concerned that the outer region (where we are taking our DSC samples from) is high in PEG concentration, affecting the glass transition temperature.

9. As you engaged in human-centered engineering design activities this week, do you think you created any value (e.g. identified a way to work together more efficiently, found a way to improve your idea or design, etc.)? If yes, how?

We have created value by finding a way to do our mechanical testing that can work for single fibers. The mechanical properties of the fibers are important for the final properties of fabrics made from them, which significantly impacts the user experience.

10. What feedback did you obtain from the instructor or TA last week that you addressed in your work this week?

We received feedback that we should keep doing what we are doing.