

Project Plan

To plan for the spring semester, we broke down the projects end goal into smaller goals and set them as milestones. This approach will make it easier and more efficient to track the progress of the project as we go along.

The milestones that we set are essential to hit on their specified dates to make sure all following milestones aren't being affected by previous milestone incompletions, as this will set us back and cause us to rearrange our timeline.

Our milestones consist of:

1. **Start of semester** - 1/6/2020
2. **InNOLEvation: Business Model Canvas Submission:** 11/1/2019 - 1/13/2020: Since our project is an Entrepreneurial one, we are required to complete a business model canvas. This is a breakdown of our project from a business standpoint. We will be required to complete this task at this time as it will be necessary to complete later InNOLEvation requirements to make the process easier.
3. **Munimod: Program Launch:** 1/6/2020: This will be the launch of the program where we find out more details on the competition and its requirements.
4. **Munimod: Virtual Work Sessions:** 1/6/2020 - 3/6/2020: As a requirement of Munimod, we will be expected to complete a series of virtual work sessions to prepare for the competition. These sessions are to be completed over a period of three months. This process will be essential in preparing our group for the competition and to win.
5. **InNOLEvation: Complete and Final Business Model Canvas:** 1/13/2020 - 2/4/2020: Although the business model will have been submitted at an earlier date, as we go through the project, updates to the engineering and business aspect of the project will be made. The final business model will allow us time to evaluate and update our previous thoughts and ideas. At this time, we are expected to have a final and complete business model.
6. **InNOLEvation: semi-final presentation judging:** 2/7/2020: At this time, the judges of the InNOLEvation competition will be deciding which groups move to the final stage based on presentation on business pitch. At this point we will know if we will be presenting in the final stage or not.
7. **Virtual Design Review 4:** End of January. This milestone will be the first presentation of the spring semester where we will be able to showcase our efforts creating a fully functioning prototype or device.
8. **InNOLEvation: Executive Summary:** 2/7/2020 - 3/2/2020: If our group makes it past the semifinal presentation judging, the InNOLEvation competition will require us complete an executive summary. This is a simplified document on the problem we are trying to solve and the solution we have come up with to solve that particular problem.
9. **InNOLEvation: Final Judging and Awards Ceremony:** 3/6/2020: At this time, if we make it to the final round, our team will be required to present our project from a business standpoint to judges.
10. **Spring Break:** 3/16/2020 - 3/20/2020
11. **Virtual Design Review 5:** End of February This will be the second presentation of the semester where our group will present on the new progress of our prototype and any updates we have made to the project as we have progressed through it.

12. **Munimod: Collab Experience:** 4/4/2020 - 4/4/2020 - This will be when the Munimod competition takes place. Two members of our group will present in front of judges and will be competing against other groups from various universities in Florida.

13. **Engineering Design Day:** 4/9/2020 - At this point we would have completed our project and will be presenting and showcasing the work that has been put in over the last two semesters.

14. **Shark Tank:** 4/9/2020 - Entrepreneurial engineering groups are required to take place in shark Tank where we are judged by our engineering efforts from a business standpoint. By this time, we would have had much practice with previous competitions and will be able to present our idea and pitch with confidence. It will also be our last presentation/pitch of the entire project.

15. **Finals Week:** 4/27/2020 - 5/1/2020

16. **Graduation:** 5/2/2020

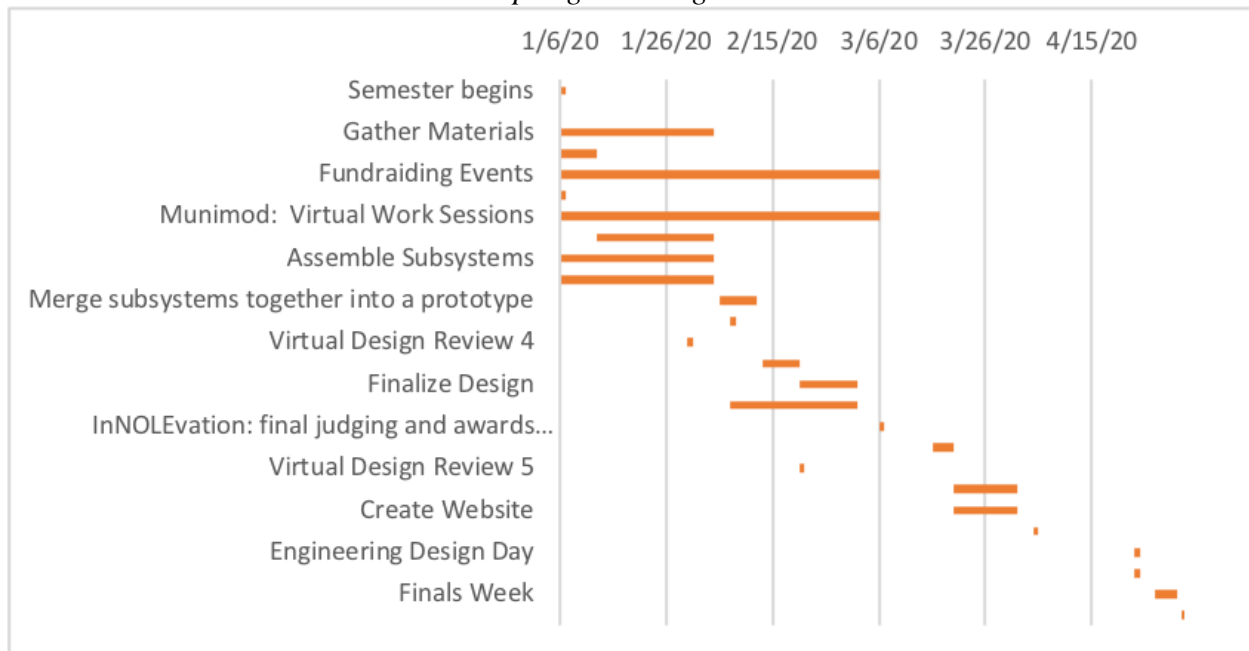
The milestones of our project are subject to change for various reasons. As part of being an Entrepreneurial team, more opportunities may present itself for us to enter competitions. Also, changes to the project may accelerate or slow down our timeline. In planning for the spring, this is the timeline we deem best to get all done that is essential to the completion of the project.

Table 14 *Senior Design Spring Work Breakdown Structure*

Events	Start Date	End Date	Classification	Duration
1. Semester Begins	1/6/20	1/7/20	Milestone	1
2. CAD Final Design	11/15/19	12/13/19	Action	28
3. Gather Materials	12/6/19	2/4/20	Action	60
4. InNOLEvation: Business Model Canvas Submission	11/1/19	1/13/20	Milestone	73
5. Fundraising Events	1/6/20	3/6/20	Fundraising	60
6. Munimod: Program Launch	1/6/20	1/7/20	Milestone	1
7. Munimod: Virtual Work Sessions	1/6/20	3/6/20	Milestone	60
8. InNOLEvation: Complete and Final Business Model Canvas	1/13/20	2/4/20	Milestone	22
9. Assemble Subsystems	12/6/19	2/4/20	Action	60
10. Test Subsystems	12/6/19	2/4/20	Action	60
11. Merge subsystems together into a prototype	2/5/20	2/12/20	Action	7
12. InNOLEvation: Semi-Final Presentation Judging	2/7/20	2/7/20	Milestone	0
13. Virtual Design Review 4	1/29/20	1/29/20	Milestone	0

14. Prototype Assembly Testing	2/13/20	2/20/20	Action	7
15. Finalize Design	2/20/20	3/2/20	Action	11
16. InNOLEvation: Executive Summary	2/7/20	3/2/20	Milestone	24
17. InNOLEvation: Final Judging and Awards Ceremony	3/6/20	3/6/20	Milestone	0
18. Spring Break	3/16/20	3/20/20	Milestone	4
19. Virtual Design Review 5	2/28/20	2/28/20	Milestone	0
20. Final Documentation	3/20/20	4/1/20	Action	12
21. Create Website	3/20/20	4/1/20	Action	12
22. Virtual Design Review 6	3/28/20	3/28/20	Action	0
23. Munimod: Collab Experience	4/4/20	4/5/20	Milestone	1
24. Engineering Design Day	4/9/20	4/9/20	Milestone	0
25. Shark Tank	4/9/20	4/9/20	Milestone	0
26. Finals Week	4/27/20	5/1/20	Milestone	4
27. Graduation	5/2/20	5/2/20	Milestone	0

Table 15 Spring Planning Gantt Chart



Build Plan

To ensure that our project is completed on time, we plan to have our prototype completed by early March 2020. This will be completed by creating the device's subsystems individually

and then integrating the subsystems into the final prototype where we will continue with testing and debugging. Our prototyping process is shown in Table 15.

Our first week of the Build Plan will consist of creating the enclosing of the device. An inner frame will be cut and assembled as well as the respective body-plates that will secure the internal hardware that will need to be secured and protected. This will be done by laser cutting, band sawing, drilling, and welding the components. The second week will be focused on creating the detection subsystem for the device. A fingerprint scanner will need to be wired and programmed correctly with a Raspberry Pi. This is also where the facial recognition will be programmed and integrated. The third week is where the tracking subsystem will be assembled. The GPS circuitry will be created and programmed accordingly with a Raspberry Pi. The fourth week of the build plan will entail the mechanical subsystem. The dispensing mechanism will be assembled and programmed. This will be done by water jetting and tapping the internal components as well as assembling and programming the internal actuators. The fifth week involves the integration of all previous subsystems. This is also where the communication between all subsystems will be created. Bluetooth will be used to create a connection between subsystems. The sixth and following weeks will consist of testing and debugging any issues within the final prototype.

Table 16 *Build Plan Table*

Date:	Subsystem:	Description:
1/6-1/10	Enclosing	Cut and assemble inner frame and body-plates of device
1/13-1/17	Detection	Assemble fingerprint scanner circuitry and program artificial intelligence
1/20-1/24	Tracking	Assemble GPS circuitry and program
1/27-1/31	Mechanical	Create dispensing mechanism
2/3-2/7	Integration	Combine subsystems and program communication between subsystems
2/10-2/28	Test	Test, debug, and finalize aesthetics