

Team 13

Michael Marner, Saad Alajmi, Khaled Alanezi, Mobarak Alqenaei, Ahmad Alkhezzi

Team Meeting Minutes of Week 1/16/17

Date: 18th January 2017

Location: Engineering Building, NAU campus

Present: All

Agenda

Review deliverable schedule	[Completed]
Familiarize ourselves with Design of Experiments (DOE) process	[Completed]
Choose 3 design variables (DVs) and design parameter for project DOE	[Completed]
Draft procedure for DOE	[Completed]
Generate list of questions for instructor during next advisor meeting	[Completed]

[5:34]

PM Began team meeting

[5:35]

PM Discussed teammate availability over the coming semester. Decided Wednesdays to be the optimum meeting days.

[5:41]

PM Reviewed requirements for Progress Presentation to be given in two weeks' time. Discussed changes in slide format.

[5:53]
PM Reviewed requirements for Midpoint Review to be given in roughly two months' time. Discussed what was expected in the 'update' section of the presentation, and subsequently generated parameters that would constitute a 'change' to the design and require revision in the final report.

[6:02]

PM Created comprehensive list of all deliverables to be turned in between now and UGRADS

[6:10]
PM

Opened and reviewed lecturer's *Deliverables* powerpoint. No new information was gathered.

[6:19]
PM

Formulated a plan through the March and assigned roles to individual members. Michael Marner will rewrite sections 1-5 of report to past tense, Ahamd Alkhezzi will begin UGRADS application process. All members will begin construction of a final product after the Progress Presentation and will finish no later than March 3rd.

[6:36]
PM

Began discussing DOE. Opened lecturer's DOE powerpoint and painstakingly reviewed it as a team. Opened lecturer's sample DOE excel file to familiarize ourselves with the process. Generated list of clarification questions for instructor.

[7:03]
PM

Began planning DOE for our product. Decided the design parameter to be quantity of soil shovel head can move in terms of volume, and the DVs to be the shovel's depth, length, and width. Formulated plan to measure quantity of soil using a scale and density calculation.

[7:25]
PM

Rediscussed team member availability to submit preferred 30 minute blocks for weekly meetings with the instructor.

Tuesdays: 4:00 - 4:30 PM, 4:30 - 5:00

Wednesdays: 2:30 - 3:00, 3:30 - 4:00

[7:33]
PM

Discussed next steps. Decided to wait for email from professor with further instructions

[7:38]
PM

ADJOURNED

Total Meeting Time: 2h 4m

Team Meeting Minutes of Week 1/30/17

Date: 31st January 2017

Location: Engineering Building, NAU campus

Present: All

Agenda

Discussion of Progress Presentation	[Completed]
Generated schedule for next 30 days	[Completed]
Reviewed rubrics for upcoming reports and presentations	[Completed]
Draft Progress Presentation	[Incomplete]

[5:32]

PM Began team meeting

[5:33]

PM Obtained and reviewed Progress Presentation requirements and grading rubric

Assigned presentation roles to individual team members:

Ahmad – Updates since ME 476C

[5:44]

PM Mobarak – Materials and Manufacturing

Mike – Team roles and schedule for ME 486C

Khaled – Project description

Saad – Budget and expended spending

[6:18]

PM Discussed individual team member traits to be included in presentation

[6:32]

PM Reviewed and updated BOM with purchases made since ME 476C

[6:46]

PM Generated list of all purchases/changes in project description made since ME 476C.

**[6:59]
PM** Began discussing plan of action. Decided to begin construction of final product weekend following presentation (2/3) and ensure it is completed by 3/3. Hardware review 1 will be completed in team meeting next week.

**[7:14]
PM** Began drafting progress presentation slides. Each member offered input on the formatting and content of each slide. The team was not able to complete this draft during the meeting due to time constraints, and planned to finish the slideshow via online communication over the next 24 hours.

**[7:37]
PM** ADJOURNED
Total Meeting Time: 2h 5m

Team Meeting Minutes of Week 2/6/17

Date: 7th February 2017

Location: Various

Present: All

Agenda

Purchase materials @ Home Depot [Completed] Completed second prototype construction [Completed] Identify additional required materials and order them online [Completed]

[5:06] PM

Began team meeting after meeting @ Home Depot

[5:12] PM

Consulted list of required parts for purchase. Found and purchased all parts available @ Home Depot. Receipts given to budget liason Saad Alajmi for record.

[5:59] PM

Moved to teammate Saad Alajmi's apartment.

[6:13] PM

Used purchased parts to begin construction of second prototype. Complications from said construction forced team to discuss possible changes to the Bill of Materials. BOM updated accordingly.

[7:07] PM

Team used online retailers to order remaining parts. Electronic receipts emailed to budget liason Saad Alajmi for record.

[7:38] PM

ADJOURNED

Total Meeting Time: 2h 32m

Team Meeting Minutes of Week 2/13/17

Date: 13th February 2017

Location: The Lodge Apartments, #116, Flagstaff AZ

Present: All

Agenda

Identify requirements for Hardware Review #1 [Incomplete] Complete construction for Hardware Review #1 [Completed]

[5:57] PM

Began team meeting

[6:15] PM

Team members Saad Alajmi, Mobarak Alqenaei, and Khaled Alanezi continued prototype construction previously started on 2/7 meeting. Team members Ahmad Alkhezzi and Michael Marnar searched for information on deliverables for Hardware Review #1.

[6:19] PM

Found online submission form for Peer Review #1 on NAU's BlackBoardLearn website. Briefly halted construction to discuss said form.

[6:22] PM

Failed to locate information on expected deliverables for Hardware Review #1. Team decided to wait for additional information from instructor and continue prototype construction.

[6:27] PM

Proactively decided to set milestones for Hardware Reviews #1 & 2. Discussed possible milestones as a team. Settled on:

#1 – Shaft, handle, and brace completed.

#2 – Wheelchair attachment and tool attachments completed.

[6:39] PM

Team failed to attach arm brace to main shaft using original method. Brainstormed alternatives before setting aside.

[7:08] PM

Discussed possibility of reconstructing forearm crutch as another prototype. The idea was favorably received, although the team decided to wait until after Hardware Review #1 before making a final decision due to the progress already made with current prototypes.

[7:28] PM

Returned to problem of connection of attaching the arm brace to the main shaft. After testing possible solutions, the team settled on the temporary solution of connecting the two using a flexible, rubber tube. This connection allowed the team to notice the possibility of changing the shape of the device to maximize comfort, although it's susceptibility to separation makes it a temporary solution.

[7:49] PM

Completed milestones of Hardware Review #1 with temporary solution in place.

Assigned tasks among team members to prepare the prototype for the review. Assigned tasks included painting the device and solving the temporary brace attachment problem.

[8:03] PM

ADJOURNED

Total Meeting Time: 2h 6m

Team Meeting Minutes of Week 2/20/17

Michael Marnar, Saad Alajmi, Khaled Alanezi, Mobarak Alqenaei, Ahmad Alkhezzi

Team Meeting Minutes of Week 2/20/17

Date: 24th February 2017

Location: Engineering Bldg, NAU, Flagstaff AZ

Present: All

Agenda

Review Feedback from Hardware Review #1 [Complete]

[4:02] PM Began team meeting

[4:04] PM

Project Manager Ahmad Alkhezzi lead discussion on feedback received from instructor Sara Oman during Hardware Review #1. Chief topic was the construction and implementation of device-wheelchair connection.

[4:19] PM

Reviewed design concepts for said attachment team had already created during concept generation phase. Discussed each alternative in great deal, focusing on pros v. cons.

[5:00] PM

Generated additional concepts individually and discussed each at length using Gallery Method.

[5:27] PM

After lengthy debate, decided to forego wheelchair attachment in favor of a simple stand, thereby allowing non wheelchair-bound customers to use device.

[5:49] PM

Created timeline for construction of first stand prototype. Opted to have first prototype completed by 03/03.

[6:03] PM Meeting Adjourned. Total runtime, 1h 01m

Team Meeting Minutes of Week 2/27/17

Date: 3rd March 2017

Location: Engineering Bldg, NAU, Flagstaff AZ

Present: All

Agenda

Assign Tasks in Preparation for Midpoint Presentation [Complete]

Created Midpoint Powerpoint Presentation [Complete]

[2:19] PM Began team meeting

[2:22] PM

Document Manager Michael Marner lead discussion on requirements for the midpoint presentation.

[2:31] PM

Team identified what requirements had already been met and which still needed to be completed

[2:39] PM

Distributed remaining tasks among team members. Mobarak Alqenaei and Ahmad Alkhezzi discussed manufacturing, Michael Marner discussed implementation and schedule, Khaled Alanezi and Saad Alajmi discussed budget and testing.

[2:45] PM

Team created Google Slides file and simultaneously added content to their individual slides until presentation was completed

[4:43] PM Meeting Adjourned. Total runtime, 2h 24m

Team Meeting Minutes of Week 3/06/17

Date: 10th March 2017

Location: Lodge Apartments, rm #116, Flagstaff AZ

Present: All

Agenda

Revised Midpoint Slideshow to account for 1 week delay [Complete]

Complete construction of stand prototype in prep for Hardware Review 2 [Complete]

[6:27] PM Began team meeting

[6:33] PM

Project Manager Ahmad Alkhezzi lead discussion of what should be added to existing midpoint presentation. Team decided to add an updated gantt chart/timeline and

additional slide on the device's stand since construction of first prototype was nearing completion.

[6:51] PM

Team member Mobarak Alqenaei lead group construction of stand prototype. Completed assembly, and team member Khaled Alanezi volunteered to finish/paint prototype over spring break.

[8:43] PM Meeting Adjourned. Total runtime, 2h 16m

Team Meeting Minutes of Week 3/20/17

Date: 22nd March 2017

Location: The Lodge Apartments, Room #116, Flagstaff AZ

Present: All

Agenda

Reviewed instructor feedback from Hardware Review #2 [Complete]

Began construction of final prototype [Complete]

[3:57] PM Began team meeting

[4:05] PM

Project Manager Ahmad Alkhezzi lead group discussion concerning instructor feedback from Hardware Review #2. Primary concern was a lack of freedom in the device's main shaft, making it impossible for the user to perform an efficient digging maneuver when using the trowel tool.

[4:21] PM

Mobarak Alqenaei lead team brainstorming session of how to modify existing prototype to combat this problem. Team eventually decided to employ a hinge near the shaft's center, creating another degree of freedom.

[5:10]

Implemented hinge solution into existing prototype.

[6:16] Meeting Adjourned. Total time 2h 19m

Team Meeting Minutes of Week 3/27/17

Date: 27th March 2017

Location: Engineering Bldg, NAU, Flagstaff AZ

Present: All

Agenda

Reviewed Requirements for Poster Draft [Complete]

Scheduled in-field testing at Hozhoni Foundation Facility [Complete]

[10:00] AM Began team meeting

[10:03] AM

Document Manager Michael Marner lead group discussion on poster requirements. Team determined most of the written portion could be taken directly from midpoint report with Michael Marner filling in necessary written requirements. Remaining members assigned to photograph device and in-field testing for later implementation into the poster.

[10:47] AM

Khaled Alanezi created schedule for in-field testing at Hozhoni facility compatible with as many team members' schedules as possible. Team members Ahmad Alkhezzi, Mobarak Alqenaei, and Khaled Alanezi scheduled to visit facility next week TBD while Michael Marner and Saad Alajmi completed poster draft.

[11:29] AM Meeting Adjourned. Total time 1h 29m

Team Meeting Minutes of Week 04/03/17

Date: 3rd April 2017

Location: Hozhoni Foundation Facility, Rt. 66, Flagstaff AZ

Present: Khaled Alanezi, Mobarak Alqenaei, Ahmad Alkhezzi

Agenda

Allow customers to perform in-field testing of existing prototypes [Complete]

Receive and record all feedback from customers [Complete]

(Saad Alajmi and Michael Marner complete final poster) [Incomplete]

[11:00] AM Began team meeting

[11:12] AM

Team members present met with customers in the facility's garden and gave them

every prototype constructed thus far to test and play with. Each customer was given the opportunity to use each prototype at least once, then provide project manager Ahmad Alkhezzi with their thoughts and feedback concerning the predetermined CRs. All feedback was transcribed for later discussion with entire capstone team.

[2:27] PM Meeting Adjourned. Total time 3h 27m

Team Meeting Minutes of Week 04/10/17

Date: 10th April 2017

Location: The Lodge Apartments, Rm #116, Flagstaff AZ

Present: All

Agenda

Reviewed Feedback from Customers after first round of testing [Complete]

Decide what changes must be made for final device [Complete]

Finish Constructing Final Device [Incomplete]

[1:20] PM

Began team meeting

[1:22] PM

Project Manager Ahmad Alkhezzi read transcription of customer feedback and lead group discussion of what steps should be taken for the final device. Team decided to shorten device and increase the height of the stand for customer comfort.

[2:27] PM

Mobarak Alqenaie lead group effort to make these changes. Team managed to shorten device but did not finish adjusting the height of the stand. Team members Mobarak Alqenaie and Khaled Alanezi volunteered to work on it at home in preparation for the second round of testing the following week

[3:01] PM Meeting Adjourned. Time 1h 41m

Team Meeting Minutes of Week 04/17/17

Date: 19th April 2017

Location: The Hozhoni Foundation Facility, Rt. 66, Flagstaff AZ

Present: All

Agenda

Allowed customers to use final device and provide feedback [Complete]

[11:25] PM

Began team meeting

[11:34] PM

Every customer was given a chance to use/play with the final device and offer any feedback concerning comfort or other concerns. All feedback was transcribed by document manager Michael Marner. Device was a rousing success and suggestions were minimal.

[1:41] PM Meeting Adjourned. Time 2h 16m

Team Meeting Minutes of Week 04/24/17

Date: 25th April 2017

Location: Engineering Bldg, NAU, Flagstaff AZ

Present: All

Agenda

Create final powerpoint presentation [Complete]

Make final preparations for UGRADS [Complete]

[2:27] PM

Began team meeting

[11:34] PM

Michael Marner lead team discussion of what was to be added to the final presentation. Decided on additional images of testing at the Hozhoni facility and a conclusions slide. Additional changes to preexisting slideshow were minimal.

[1:41] PM

Team rehearsed final presentation and critiqued one another on what should be improved. Any remaining concerns were addressed and the team left feeling prepared for Undergrad Symposium

[3:46] PM Meeting Adjourned. Time 1h 19m

Team Meeting Minutes of Week 05/01/17

Date: 2th May 2017

Location: Engineering Bldg, NAU, Flagstaff AZ

Present: All

Agenda

Work on Final Report [Complete]

Discuss CAD Package [Complete]

[4:32] PM

Began team meeting

[4:35] PM

Member Ahmad Alkhezzi gave the team a brief reminder of the Agenda for the meeting

[4:50] PM

Team identified the requirements for the final report by checking the rubric.

[4:55] PM

Team started assigning different parts of the report to each member.

[5:10] PM

Team started a Q and A session that each individual had about his parts.

[5:30] PM

Team took a 5-minute break

[5:35] PM

Team started discussing the CAD package

[5:50] PM

The team created a list of the needed parts and improvements on the current CAD Package.

[6:15] PM

List was given to Ahmad Alkhezzi and Saad Alajmi to implement in the CAD Package