

Tuesday; 9/10; 1:15-1:30; All members attend; Cafeteria

- a. Quick introductory meeting- Met everybody, exchanged numbers, and filled out first two pages of the team coordination forms.

Wednesday; 9/11; 4:30-6:00; All members attend; A building computer lab

- a. Discuss code of conduct and create code of conduct form
- b. Create and share calendars to more easily establish meeting

Thursday; 9/12; 3:00-3:30; All members attend + Dr. Shih; Dr. Shih's office

- a. Meeting with Dr. Shih to discuss project details
 - i. Will need to completely design and build a working arcjet thruster (project is more R&D based than most others)
 - ii. Will be given solar panels + some other parts
 - iii. Must arrange meeting with Kurt, the engineer in charge of the project
 - iv. Melissa, an ME graduate, is also supposed to assist on project
 - v. \$500 budget (possibly more if needed)
 - vi. Vacuum pumps should be available
- b. Fill out final page of team coordination form

Tuesday; 9/17; 4:15-4:30; All member attend + Dr. Shih + Dr. Amin; B211

- a. Scheduled weekly meeting with Dr. Amin. Starting on 9/24, Dr. Frank will also attend bi-weekly
 - i. Main priority is to contact Kurt
 1. Will attempt to call him tomorrow since he hasn't responded to email
 2. Need to set up group conference call
 - ii. Will meet with Dr. Guo on Thursday
 1. He won't have any extra information for us

- 2. He just serves as technical adviser
- iii. Needs Analysis will be due next week
 - 1. 3 examples are already online
 - 2. Should split up sections

Thursday; 9/19; 2:30-3:15; All members attended + Dr. Guo; Mag lab

- a. Meeting with Dr. Guo to discuss technical details
 - i. The main technical details is Paschen's curve and circuit.
 - ii. Once breakdown of Argon is achieved, the thruster operates in steady state.
 - iii. Need to divide group up and start working on the thruster.

Thursday; 9/19; 3:20-3:50; All members attended + Dr. Polzin; A229 (conference call)

- a. Meeting with Dr. Polzin to discuss technical details
 - i. Will our design be qualified to operate in space?
 - ii. Test thruster with lab power supply, solar panels will come when the thruster operates.
 - iii. If we get the thruster operating correctly, there's a chance we will test it in a vacuum at Marshall Space Flight Center.

Thursday; 9/26; 5:30-6:50; All members attended; Computer lab.

- a. Meeting to work on and complete needs analysis report.

Friday; 9/27; 5:20-5:30; All members attended + Dr. Frank; A105

- a. Meeting with Dr. Frank to introduce ourselves.
 - i. Meet with Dr. Andrei and Dr. kwan.
 - ii. Send all advisors a link to Needs Assessment report.

Monday; 9/30; 4:20-4:30; Shane, Gerard + Dr. Kwan; Kwan's office

- a. Meeting with Dr. Kwan to introduce ourselves.

Tuesday; 10/1; 2:45-4:15; All members attended; A building computer lab

- a. Meeting to work on design project.
 - i. Sign code of conduct
 - ii. Go over project plans for each part of design project (mechanical, Electrical).
 - iii. Update Gantt chart
 - iv. Review project plans and product specs

Tuesday; 10/1; 4:15-4:30; All members attended + Dr. Shih + Dr. Amin + Dr. Frink; B211

- a. Biweekly meeting with staff.
 - i. Research existing Arcjet Thruster designs
 - ii. Add more detail to Needs Analysis
 - iii. Create link in group blog to our team website

Friday; 10/4; 1:30-2:30; All members attended + Guo; Mag Lab lobby

- a. Biweekly meeting with Dr. Guo.
 - i. Propose a circuit design and simulation to meet the required specifications.
 - ii. Gather more technical insight.

Tuesday; 10/8; 2:30-5:00; All members attended; A building computer lab

- a. Internal meeting to work on project plans and product specifications
 - i. Work on Gantt chart.
 - ii. Make dependency chart as well for clarification

Wednesday; 10/9; 2:30-5:00; All members attended; A building computer lab

- a. Internal meeting to finish project plans and product specifications report
 - i. Finish Gantt chart.
 - ii. Finish project as a whole

Thursday; 10/10; 2:30-4:15; All members attended + Dr. Guo; Mag lab lobby

- a. Scheduled advisor meeting with Dr. Guo
 - i. Clear up how we test the thruster
 - ii. Figure out what type of nozzle design we need

Tuesday 10/15; 4:15-4:30; All members attended + Dr. Amin + Dr. Frink; B211

- a. Biweekly meeting with staff.
 - i. Decide who and what will be presented next week.
 - ii. Webpage is due for ME

Monday 10/21; 2:00-3:30; All members attended + Dr. Polzin; A229 (conference call)

- a. Meeting with NASA sponsor
 - i. Figure out more technical details
 - ii. Send Dr. Polzin copy of midterm report.
 - iii. Assign parts of report for presentation/report

Tuesday 10/22; 5:30-7:00; All members attended; A building computer lab

- a. Internal meeting to work on midterm presentation/report

Wednesday 10/23; 4:30-6:30; All members attended; A building computer lab

- a. Internal meeting to work on midterm presentation/report

Thursday 10/24; 12:00-1:15; Gerard, Griffin, Cory; A building computer lab

- a. Internal meeting to rehearse midterm I presentation

Thursday 10/24; 5:30-10:00; All members attended; A building computer lab

- a. Internal meeting to work on midterm report

Friday 10/25; 12:30-4:00; All members attended; A building computer lab

- a. Internal meeting to work on midterm report

Tuesday 10/29; 4:15-4:30; All members attended + Dr. Amin + Dr. Frank; B211

- a. Biweekly meeting with staff.
 - i. Request for an additional \$500 for the project.

Tuesday 11/5; 4:00-6:00; All members attended; A building computer lab

- a. Internal meeting to work on project

Tuesday 11/12; 4:00-6:30; All members attended; A building computer lab

- a. Internal meeting to work on project

Sunday 11/17; 5:00-8:30; All members attended; A building computer lab

- a. Internal meeting to work midterm II presentation

Wednesday 11/20; 3:00-4:00; All members attended + Dr. Guo; Mag lab lobby

- a. Scheduled advisor meeting with Dr. Guo

Wednesday 11/20; 4:20-6:00; All members attended; A building computer lab

- a. Internal meeting to work midterm II presentation

Thursday 11/21; 12:00-1:15; Shane, Tara, Christopher; A building computer lab

- b. Internal meeting to rehearse midterm II presentation

Tuesday 11/26; 4:15-4:30; Attended: Shane, Tara, Griffin + Dr. Amin + Dr. Frank; B211

- a. Biweekly meeting with staff.

Sunday 12/1; 3:30-7:30; All members attended; A building computer lab

- a. Internal meeting to work on final presentation/report

Tuesday 12/3; 5:30-7:30; All members attended; Computer lab portable

- a. Internal meeting to rehearse final presentation

Friday 12/6; 2:00-2:30; All members attended + Dr. Polzin; A229 (conference call)

- a. Meeting with Dr. Polzin to discuss overall design.

Spring 2014 Meeting Minutes

Thursday; 1/9; 3:20-4:20; All members attended; A building computer lab

- a. Internal meeting to map out our plans for this semester
 - i. Order remaining parts for the project and finish designs
 - ii. Figure out how to use spice for circuit simulation
 - iii. Email Dr. Polzin about our plans

Thursday; 1/16; 5:00-7:30; All members attended; A building computer lab

- a. Internal meeting to work on Restated Scope/Plan Report
 - i. NASA said they will let us know of any design concerns
 - ii. Finish Restated Scope/Plan Report
 - iii. Set up meeting with Dr. Guo

Tuesday; 1/21; 5:45-6:00; All members attended + Dr. Amin + Dr. Frank; B211

- a. Biweekly meeting with staff advisors
 - i. Calculate magnet strength and do PCB design soon
 - ii. Research the how the plasma may cause damage to bell jar
 - iii. Go over Restated Scope/Plan Report

Thursday; 1/23; 12:00-1:00; All members attended + Dr. Guo; mag lab lobby

- a. Internal meeting to work on Restated Scope/Plan Report
 - i. Mag lab doesn't have readily available electromagnets for our application so calculate the number of turns needed and field strength

- ii. Discuss vacuum fittings and may be able to use his

Thursday; 1/30; 2:45-4:30; All members attended; A building computer lab

- a. Internal meeting to further prepare for testing
 - i. Work on website
 - ii. Continue to order parts
 - iii. Look at the base plates a previous design team used and improvise

Tuesday; 2/4; 5:45-6:00; All members attended + Dr. Amin + Dr. Frank + Dr. Shih; B211

- a. Biweekly meeting with staff advisors
 - i. Ask to Dr. Zang if we can use Argon tank
 - ii. Use ORCAD to design PCB when circuit is finalized

Sunday; 2/9; 5:00-7:30; All members attended; A building computer lab

- a. Internal meeting to work on presentation
 - i. Ran working but inconsistent Multisim simulations
 - ii. Thruster will be completely constructed by 2/10/14
 - iii. Ask Dr. Weatherspoon if we can use his baseplate

Monday; 2/10; 4:00-5:30; All members attended; A building computer lab

- a. Internal meeting to work on presentation
 - i. Put all slides together and go over them
 - ii. Came up with test plan

Tuesday; 2/11; 1:00-4:00; Shane and Gerard; A310 Power lab

- a. Internal meeting to test our circuit design
 - i. The IGBT wasn't turning off as expected
 - ii. The fluke meter wasn't reading any voltage spike

Tuesday; 2/11; 11:30-12:30; Shane, Tara, and Chris; A building computer lab

- a. Internal meeting to work on presentation
 - i. Rehearse slides to make sure we have it down
 - ii. Presentation at 5:40

Friday; 2/14; 11:30-3:00; Shane and Gerard; A310 Power lab and A314 Sn. Design lab

- a. Internal meeting to test our circuit design
 - i. We corrected how the IGBT turns off
 - ii. We used the oscilloscope instead of the fluke and observed our voltage spike

Wednesday; 2/19; 12:30-3:30; Shane, Gerard, Chris, Griffin; A314 Sn. Design lab

- a. Internal meeting to collect data from circuit
 - i. We connected the PWM instead of a selector switch to prove it works
 - ii. The thruster was tested and proven to conduct current correctly (no voltage spike was attempted, just steady state operation)

Friday; 2/21; 12:00-1:00; All members attended + Dr. Guo; Mag lab lobby

- a. Meeting with internal advisor
 - i. Discuss testing apparatus
 - ii. Electro-magnet needs more attention to details

Monday; 2/24; 10:00-12:30; All members attended + Dr. Polzin; B202

a. Meeting with NASA sponsor Dr. Polzin

- i. Ions are very collisional at the nozzle, making the field that confines the ions to a particular radius a much more complex calculation. Magnet wire should be used for the electro-magnet.
- ii. The ammeter needs to be placed so there is no floating ground reference.
- iii. The baseplate should be sanded down to reduce the leaks when it is vacuum sealed and also steel reinforced to reduce fluxing. Wires should be stripped of their insulation placed through the baseplate and epoxy placed around the wire.
- iv. The Oscilloscope should be properly rated for the correct voltage spike we produce. Also need a frequency compensated oscilloscope.
- v. The inductor saturation should be taken into account when high voltage spikes are desired.

Thursday; 3/6; 2:00-4:00; All members attended; A building computer lab

a. Internal meeting to work on test apparatus

- i. Send test design apparatus to machine shop
- ii. Wires should be welded rather than soldered to the steel thruster
- iii. Wires need to be stripped and insulated with epoxy going through the baseplate

Monday; 3/17; 2:00-5:00; All members attended; A building computer lab

a. Internal meeting to work on presentation

- i. Gerard is presenting electrical progress while Cory and Griffin are presenting Mechanical progress

Thursday; 3/27; 2:30-5:00; All members attended; A building computer lab

- a. Internal meeting to work on Operation Manual
 - i. All components within the system are briefly summarized
 - ii. The process for starting the Arcjet Thruster is written clearly

Thursday; 4/3; 3:00-5:00; All members attended; A building computer lab

- a. Internal meeting to work on presentation and final testing designs
 - i. Baseplate is almost complete, need to feed through wires
 - ii. Poster is almost complete

Monday; 4/7; 3:30-6:30; All members attended; A building computer lab

- a. Internal meeting to work on presentation and final testing designs
 - i. Completed the poster for ECE design fair
 - ii. Calculated and ordered permanent annular magnet
 - iii. Need six wire holes to feed through baseplate

Thursday; 4/10; 12:00-4:30; All members attended; A building atrium

- a. ECE Senior Design Fair
 - i. Learned there is a plasma research lab we can test our project in
 - ii. Baseplate may not be strong enough according to Dr. Zheng.

Friday; 4/11; 2:00-4:30; Shane, Tara, Gerard, Griffin; Mag lab

- a. Meeting with Jian Gao (Dr. Guo's TA) to learn how to use Stycast Epoxy
 - i. We inserted the six wires and applied the stycast
 - ii. Let it dry for 8 hours and came back and it was finished

Tuesday; 4/15; 4:30-7:30; All members attended; A building lab / machine shop

- a. Internal meeting to work on final presentation and report
 - i. Tested the vacuum in the baseplate (5 kPa absolute)
 - ii. Wrote final report/presentation

Wednesday; 4/16; 3:00-7:30; All members attended; A building lab / machine shop

- a. Internal meeting to work on final presentation and report
 - i. Tested the vacuum in the baseplate
 - ii. Tested the PCB design
 - iii. Tested the circuit with thruster

Thursday; 4/17; 10:00-7:30; All members attended; A building lab/ machine shop/ AME /HPMI

- a. Internal meeting to work on final presentation and report
 - i. Completed final report and presentation
 - ii. Presented from 11:10 – 11:40 in HPMI
 - iii. Presented prototype 4:30 – 6:30