

Team Aircap Meeting Minutes

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Lead Instructor and Technical Advisor Meeting

22 January 2015

Agenda for meeting:

1. Need to have agenda at meetings
2. Define roles for group
3. Confirm or set up future meetings
4. Requirements for semester
5. Minutes
6. Client interview
7. Other

There are technical and administrative roles-everyone will have some of each

- Reflector-reflects on things in the meetings
- Budget and supply-deals with money for project(only ONE person)
- Moderator-runs meeting

Gantt Charts – useful for timelines of milestones

Info for project:

- Walk into airport and gather enough energy in two minutes to charge a cell phone battery
- Wants to take advantage of our imagination for this project
- Will be writing a proposal for money from department
- Possibility of marketing product in future
- Need to make it better than the next guy
- Can restrict project if you want, i.e. android only

We should have a good idea of technical aspect by Snapshot day – March 10

Helpful to write specifications: determines if product is working

Specifications for a resistors

- Ohms
- Materials
- Voltage, current, power

Use specifications that already created to help

There will still be some that need to be created

Need major tasks by about week 6

Requirements for project on webpage

- Negotiate if necessary

Weekly meetings

- Thursday, 9:30
- ECE conference room

Need to reserve conference room for future meetings
Can use the Think Tank for group meetings
Can also check other rooms around campus for meetings

Client Interview

- Get info from web
- Hhess054 – google calendar

Go over webpage
Create questions for client
1 hour limit for meetings

Lead Instructor and Technical Advisor Meeting

30 January 2015

Agenda for meeting:

1. Minutes from last meeting
2. Roles assigned
3. Information for Stacy Rauch
4. Team Contract
5. Client Interview

Moderator – Darion Marlin

Budget and supply, reflector – Brooks Prather

Documenter – Brian Patterson

Need to write a proposal

- Dr. Johnson has rules for the proposal
- Two pages should be long enough

Meeting next week to discuss research ideas

Snapshot day on March 10

Should be approved by Dr. Hess before that

Went over group contract

- Documenter maintains wiki page
- Team meetings: review agenda, take a cursory look at timeline, budget report, contract is amended by unanimous consent

Client Interview

- Tuesday February 3 at 8:30 A.M.

Need portfolio (binder with all info of project)

Lead Instructor and Technical Advisor Meeting

6 February 2015

Agenda for meeting:

1. Minutes from last meeting
2. Review Client Interview
3. Questions compiled from group members research meeting
4. Project learning plan

Client Transcript

- Summarize with review
- 1 page
- Reflection of what we need to do

Questions

How would it be possible to do this without destroying battery?

Download energy and store it, tons of time on the plane to charge. Addition to phone. Can make it for other devices than phone, but depends on interface.

Don't be too ambitious.

Project Learning Plan

- Make on our own, our achievements
- Keep updating so it's a month ahead
- General outline for whole calendar year

Look at ultra-cap setup down in the lab

Figure out interface for this setup and minimize it

Write the proposal to turn in

Lead Instructor and Technical Advisor Meeting

13 February 2015

Agenda for meeting:

1. Minutes from last meeting
2. O'Connor Proposal
3. Corbett Proposal
4. Transcript and Specifications: bblearn assignment

Not currently using the Morgan for senior projects

Go ahead and move forward with proposal

Should be data sheets online for equipment in lab

Specifications:

- Look up battery chargers on the web
- Easy one is resistor
- Put tolerance on specification

Hold charge for at least 3 hours

Specifications for now are more general

Need something on the table for now

Action items:

Turn in proposals

Write specifications

Lead Instructor and Technical Advisor Meeting

20 February 2015

Agenda for meeting:

1. Minutes from last meeting
2. Specifications Analysis
3. Draft of the overall budget

Look at specifications

- Every number should have a tolerance – whatever is reasonable
- Will use specifications as check list to see if project is complete
- Specify in terms of c rates
- Might have problems getting energy through USB
- Should be able to buy rectifier
- Manufacturers have application notes - tell you how to use chip and give suggestions for other parts to use with it
- Can negotiate a change to specifications later

Budget Draft

- Look at specs of flyback converter to drop voltage down to 5 or 10 V
- Won't need as many capacitors this way
- Can find case for less
- Contact Google for test phones
- Reasonable to get started

Is there a preferred vendor?

Maxwell has been around for a long time, first place to look. Can look around but don't have time to do a detailed search.

March 3 – Logbooks due

Action Items:

- Turn in Client Transcript and Specifications
- Turn in budget for Corbett Proposal

Lead Instructor and Technical Advisor Meeting

27 February 2015

Agenda for meeting:

1. Minutes from last meeting
2. Endowment Proposal Progress
3. What is needed for Snapshot Day
4. Expo Registration

Corbett Proposal:

- Email was sent to check on it
- O'Connor proposal is still in process as well

Snapshot Day:

- Will be in the Power Lab
- Most groups use PowerPoint or poster
- Have not done a lot yet, so most teams try to present what they are planning to do
- Specifications will be useful
- Need to work on timeline
- Design Review about a month later; timeline needs to be finalized
- Send PowerPoint to Dr. Hess for review

Expo:

- Just want to make sure everything looks good
- Abstract should be reviewed by Dr. Hess
- Need to get in title

Think in terms of Energy Storage not capacitance
Can use sequential logic

Action Items:

- Create a timeline for the project
- Get registered for Expo
- Get a draft for the Snapshot presentation
- Proceed to make progress on technical part of project

Lead Instructor and Technical Advisor Meeting

6 March 2015

Agenda for meeting:

1. Minutes from last meeting
2. EXPO Registration
3. Timeline rough draft
4. Snapshot rough draft

EXPO:

- Got confirmation on EXPO registration

Timeline:

- Have dates from website down
- Have certain milestones for events
- Look up Gantt Chart
- Events are points
- Activities take a certain amount of time, look like a horizontal bar chart
- This type of chart is open to change
- Should have a Gantt Chart on poster for Snapshot Day

Snapshot Day:

- Have something about charging the battery
- Numbers in specifications should have tolerance
- Project learning should be what we learned

EXPO will use a similar poster as Snapshot Day

Action Items:

- Create poster for Snapshot Day with Gantt Chart
- Check progress of O'Connor proposal
- Make technical progress

Lead Instructor and Technical Advisor Meeting

27 March 2015

Review Meeting minutes from March 6th, 2015

Covered Snapshot likes and dislikes

Covered Gantt chart possibilities

Talked about Gantt chart (Showed Excel chart)

Talked about Sourcing Flyback Converter

Talked about Output for USB – response from Adafruit possible,

Talked about schedule

Deliverables for Next Meeting:

Update on parts acquisition

Decide on Design Review date

Schematic

Update Gantt chart/Timeline

Lead Instructor and Technical Advisor Meeting

3 April 2015

Agenda for meeting:

5. Minutes from last meeting
6. Design Review
7. Go over schematics
8. Part Acquisition

Design Review:

- Plan on Friday 17th April at 9:30 A.M.

Schematic:

- Found schematic of iPad charger
- Two circuit boards in design
- Main thing we are missing is energy storage
- Instead of filter out of the rectifier, want to store energy
- Don't need best solution, if that even exists

Part Acquisition:

- Contacted Fairchild, no response
- Will be checking other places

Design workshop next Tuesday in senior design lab at normal class time

Action Items:

- Prepare for Design Review
- Change schematic for our needs

Lead Instructor and Technical Advisor Meeting

10 April 2015

Agenda for meeting:

9. Minutes from last meeting
10. Updated Timeline
11. Capacitor Bank Schematic

Timeline:

- Changed to include cadence simulation
- Get a good schematic down for what we want for EXPO
- Would like to get as many parts as possible before summer break
- Building can take longer than expected for various reasons
- Helpful to put smaller circuits together first
- Building bigger is nice to have something physical to know it works

Schematic:

- Need to change resistors to change time constant
- Not far off – about 85% at 120 seconds
- Can get manufacturers together to change aspect ratio of capacitors
- Run it through simulation to see how close
- Worried about time to charge and performance on resistors
- Flyback to save energy in future
- Won't need a lot of the filtering included
- Just need to feedback output voltage to turn it on or off

Won't be able to get all energy in capacitors into battery

Action Items:

- Prepare for design review
- Run simulations of schematic

Lead Instructor and Technical Advisor Meeting

24 April 2015

Agenda for meeting:

12. Go over Design Review
13. Parts
14. Simulation

Design Review:

- Get Thermal imaging camera from JJ
- Want to design inductor before summer, don't know availability of inductor
- Want to make sure we get the parts so if they are back ordered we won't get in trouble

Parts:

- Adafruit trinket
- Buck converter
- USB mini b breakout board
- Panel current meter
- Volt meter
- Don't buy anything we don't need
- Within budget

Need to be able to start up the circuit

Simulation:

- Will get something done this weekend
- Adafruit supports devices
- Go back and just give square wave input if can't find buck converter
- Make them work for us
- Think first
- Matlab simulate

Meeting next week Wednesday, April 29

Action Items:

- Simulation
- Poster for EXPO, send idea to Instructors
- Get something built to test by next Friday

Lead Instructor and Technical Advisor Meeting

29 April 2015

Agenda for meeting:

15. Minutes from last Meeting
16. Poster Design for EXPO
17. Simulation Review
18. Prototype Progress

Poster Design:

- Made changes suggested by email
- Two diagrams seemed like overkill
- Added future goals – make this more specific, can be interpreted as being for another group after ours

Simulation Review:

- Need to do step input to get build up of capacitors

Prototype Progress:

- Showed video of first test
- Need to calculate power going through resistor
- Now looking into buck converter
- Can always roll our own inductor
- Need mosfet
- Need to get microcontroller working

Meeting next week on Wednesday May 29

Do simulation with Simulink

Nichrom wire

Action Items:

- Send in poster design
- Make progress on buck converter design
- Plan meeting for long lab session to get something working

Lead Instructor and Technical Advisor Meeting

6 May 2015

Agenda for meeting:

19. Minutes from last Meeting
20. Status of parts

Status of Parts:

- May need gate driver
- Feedback is going to be current controlled
- Calculated duty cycle wrong
- Need to figure out how long we want this thing to rise, then find how long it will fall
- Recalculate size of inductor
- Calculate inductor using maximum switching frequency
- Helps to do simple simulation to figure out time
- True balance will be thermal
- Need to find the losses on the mosfet
- Most of these things have readily available equations
- There will be tradeoffs, i.e. heat sink and inductor

Action Items:

- Get deliverables ready for Friday
- Get meeting set for finals week