January 20, 2015

ENGR110/210
Perspectives in Assistive Technology

David L. Jaffe, MS

Instructor

Questions or Concerns?

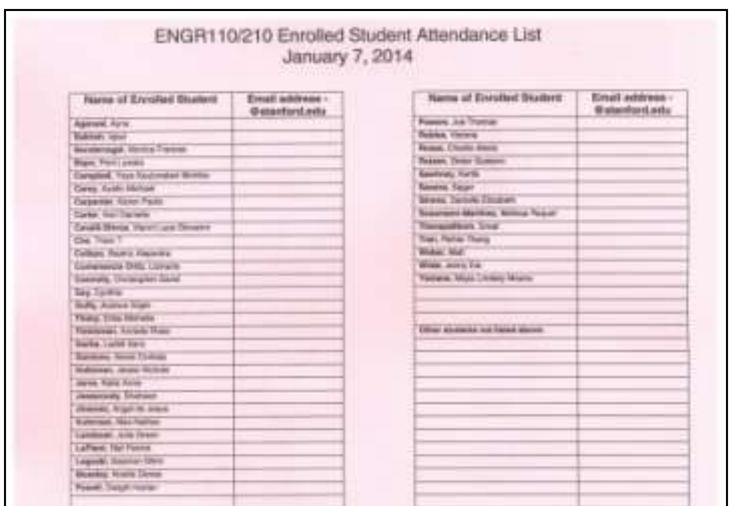
Today's Handouts, Signup Sheets, and Fillout Forms

For all students:

- Attendance Sheet - important to verify your attendance

For everyone:

- Class Session Evaluation Form



ENGR110/210 Enrolled Student Attendance List
January 7, 2014

Name of Enrolled Student	Email address - @stanford.edu

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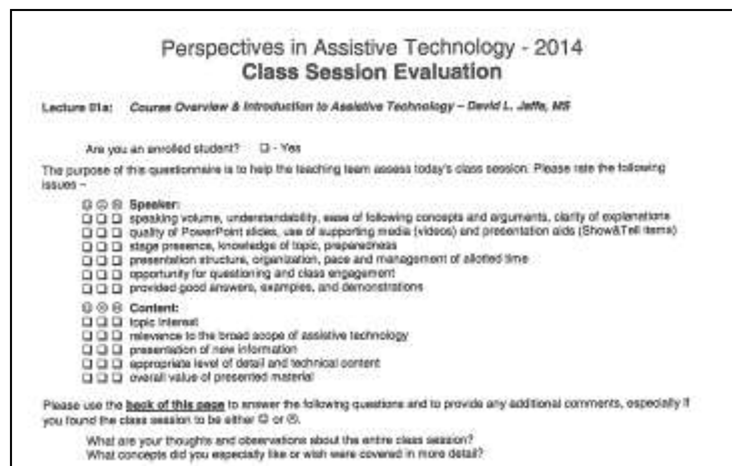


Perspectives in Assistive Technology - 2014
Class Session Evaluation

Lecture 01a: ***Course Overview & Introduction to Assistive Technology – David L. Jaffe, MS***

Are you an enrolled student? ☐ - Yes

The purpose of this questionnaire is to help the teaching team assess today's class session. Please rate the following issues –

☺ ☹ ☹ **Speaker:**
☐ ☐ ☐ speaking volume, understandability, ease of following concepts and arguments, clarity of explanations
☐ ☐ ☐ quality of PowerPoint slides, use of supporting media (videos) and presentation aids (Show&Tell items)
☐ ☐ ☐ stage presence, knowledge of topic, preparedness
☐ ☐ ☐ presentation structure, organization, pace and management of allotted time
☐ ☐ ☐ opportunity for questioning and class engagement
☐ ☐ ☐ provided good answers, examples, and demonstrations

☺ ☹ ☹ **Content:**
☐ ☐ ☐ topic interest
☐ ☐ ☐ relevance to the broad scope of assistive technology
☐ ☐ ☐ presentation of new information
☐ ☐ ☐ appropriate level of detail and technical content
☐ ☐ ☐ overall value of presented material

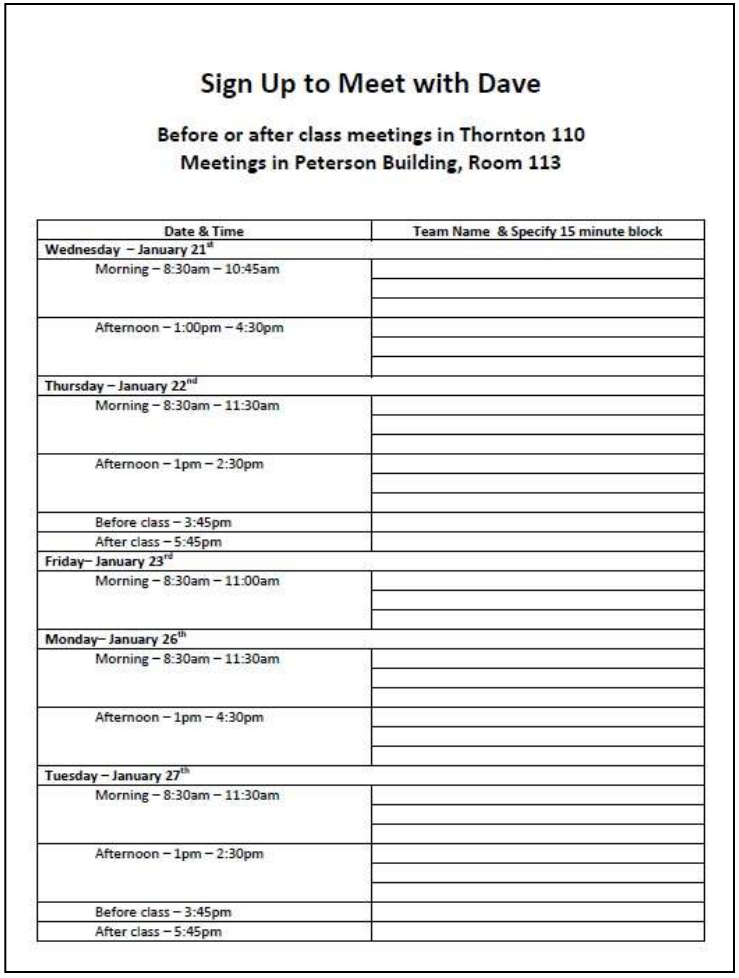
Please use the **back of this page** to answer the following questions and to provide any additional comments, especially if you found the class session to be either ☺ or ☹.

What are your thoughts and observations about the entire class session?
What concepts did you especially like or wish were covered in more detail?

Signup to Meet with Dave

- 15 minutes
- 1 spot before class
- 1 spot after class

- Report team project progress
- Make up missed lecture



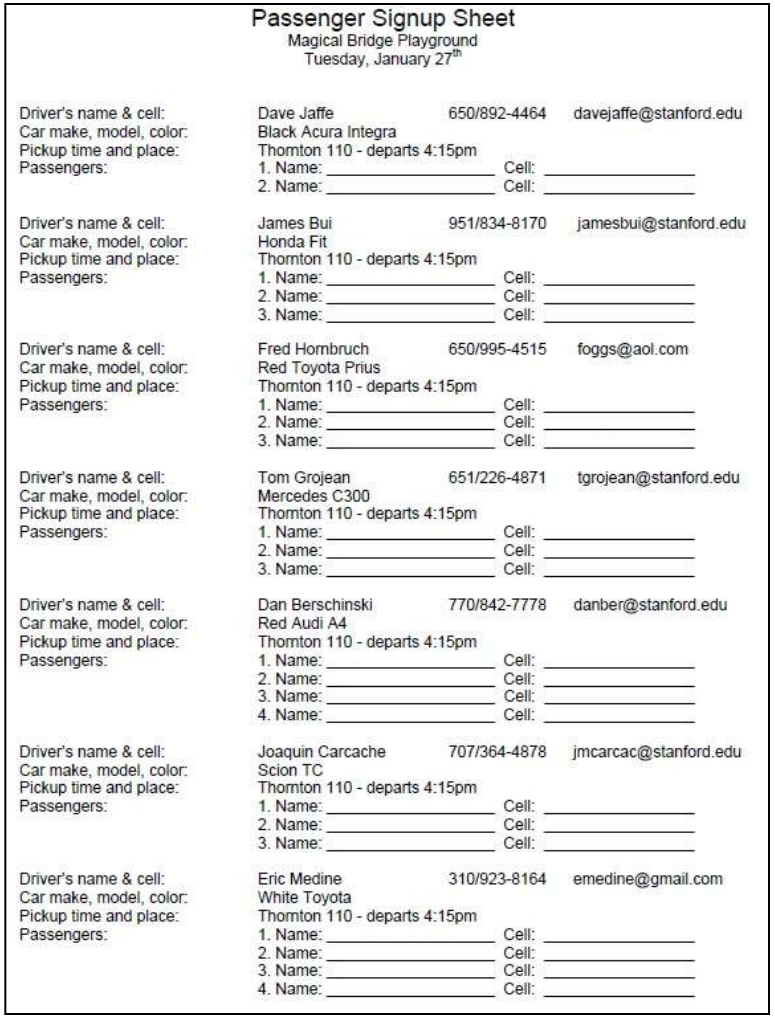
Sign Up to Meet with Dave

Before or after class meetings in Thornton 110
Meetings in Peterson Building, Room 113

Date & Time	Team Name & Specify 15 minute block
Wednesday – January 21st	
Morning – 8:30am – 10:45am	
Afternoon – 1:00pm – 4:30pm	
Thursday – January 22nd	
Morning – 8:30am – 11:30am	
Afternoon – 1pm – 2:30pm	
Before class – 3:45pm	
After class – 5:45pm	
Friday– January 23rd	
Morning – 8:30am – 11:00am	
Monday– January 26th	
Morning – 8:30am – 11:30am	
Afternoon – 1pm – 4:30pm	
Tuesday – January 27th	
Morning – 8:30am – 11:30am	
Afternoon – 1pm – 2:30pm	
Before class – 3:45pm	
After class – 5:45pm	

Passenger Carpool Signup

- Magical Bridge Playground
- Tuesday, January 27th
- Meet at Thornton Center
- Make your best effort to arrive on time – 4:15pm
- Contact Dave if you can't attend
- Early return option



Passenger Signup Sheet
Magical Bridge Playground
Tuesday, January 27th

Driver's name & cell:	Dave Jaffe	650/892-4464	davejaffe@stanford.edu
Car make, model, color:	Black Acura Integra		
Pickup time and place:	Thornton 110 - departs 4:15pm		
Passengers:	1. Name: _____ Cell: _____		
	2. Name: _____ Cell: _____		
Driver's name & cell:	James Bui	951/834-8170	jamesbui@stanford.edu
Car make, model, color:	Honda Fit		
Pickup time and place:	Thornton 110 - departs 4:15pm		
Passengers:	1. Name: _____ Cell: _____		
	2. Name: _____ Cell: _____		
	3. Name: _____ Cell: _____		
Driver's name & cell:	Fred Hornbruch	650/995-4515	foggs@aol.com
Car make, model, color:	Red Toyota Prius		
Pickup time and place:	Thornton 110 - departs 4:15pm		
Passengers:	1. Name: _____ Cell: _____		
	2. Name: _____ Cell: _____		
	3. Name: _____ Cell: _____		
Driver's name & cell:	Tom Grojean	651/226-4871	tgrojean@stanford.edu
Car make, model, color:	Mercedes C300		
Pickup time and place:	Thornton 110 - departs 4:15pm		
Passengers:	1. Name: _____ Cell: _____		
	2. Name: _____ Cell: _____		
	3. Name: _____ Cell: _____		
Driver's name & cell:	Dan Berschinski	770/842-7778	danber@stanford.edu
Car make, model, color:	Red Audi A4		
Pickup time and place:	Thornton 110 - departs 4:15pm		
Passengers:	1. Name: _____ Cell: _____		
	2. Name: _____ Cell: _____		
	3. Name: _____ Cell: _____		
	4. Name: _____ Cell: _____		
Driver's name & cell:	Joaquin Carcache	707/364-4878	jmcarcac@stanford.edu
Car make, model, color:	Scion TC		
Pickup time and place:	Thornton 110 - departs 4:15pm		
Passengers:	1. Name: _____ Cell: _____		
	2. Name: _____ Cell: _____		
	3. Name: _____ Cell: _____		
Driver's name & cell:	Eric Medine	310/923-8164	emedine@gmail.com
Car make, model, color:	White Toyota		
Pickup time and place:	Thornton 110 - departs 4:15pm		
Passengers:	1. Name: _____ Cell: _____		
	2. Name: _____ Cell: _____		
	3. Name: _____ Cell: _____		
	4. Name: _____ Cell: _____		

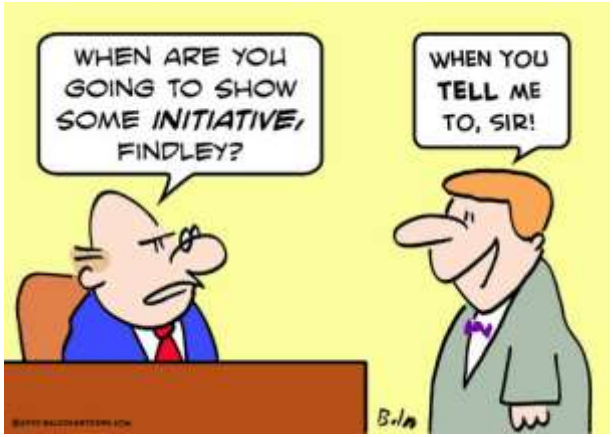
Response to Student Question

What's the process for how users 1) find and 2) buy the technologies? With whom do they interact?

Debbie's reply at:
http://engr110.stanford.edu/lecture02b-extra.html

Work with Diligence

- Personal & Team Initiative
- Meet with your team
- Meet with, interview project suggestors
- Research existing products, prototypes
- Brainstorm design concepts
- Prototype, test, analyze, repeat
- Document your efforts
- Report your activities
- Ask Dave, Project Resource People, PRL TAs



Comments from Last Year's Students

I would start the prototyping step much sooner and make more prototypes. This would be helpful to get more ideas out there and it would lead to a better final design. Another thing I would change, would be to make sure that our entire group was involved and be more assertive if they were not. I would also try and get more feedback from a wider variety of people so we could get more ideas, some of which we might not even have thought of.

In conclusion, I would advise future students of ENGR 110/210 to start early and do not be daunted if a project looks daunting. There are a lot of resources to get help: Dave Jaffe, the course TA's, the PRL TA's, the project suggestors, other students in the course, and community members. There is never a shortage of them. I would advise to actively seek help because you are going to need it. There are many ideas that you will not be able to see that a fresh pair of eyes can. Most of all, I would advice to pick a project that you really like even if it seems difficult because you're going to be working on it for a whole quarter. In the end, you will come out of the course feeling accomplished because you know that your design could possibly help makes someone's life better and that is always a great feeling.

Comments from Last Year's Students

I would have allocated more time to learning SolidWorks and actually output more designs. When I saw Kartik's face light up when feeling the structure of DNA for the first time, I was moved. I wish I had carved out time at the end to test the product with visually impaired students. The real magic from the course is actually coming into contact with disabled populations and seeing tangible improvements in their life.

Comments from Last Year's Students

If I were to do this again or make some modifications in the future, which I intend to, I would do some testing with Cathriona and get input from my parents to see if any parts need to be moved around or if the shape of the lap tray could be designed better.

Comments from Last Year's Students

As has been expressed through many quarters before us, and I'm sure in quarters after us, I wish that we had started earlier with our prototyping and designing of the swing. Though I was satisfied with our final product, I wish that we had had more time to work on the aesthetic of the swing itself, in order to really show the pirate theme we were going for, and making it look like an actual swing that kids would want to use. Nevertheless, I am very grateful that as Stanford students we have access to the product realization lab and the assistance of the staff who work there. The time we spent at the PRL building our swing was not only challenging as we worked out quirks and mistakes within our designs, but also very fun as we got to use different power tools and were taught many different techniques for working with wood. For a student like me who is not engineering-based and takes mostly "fuzzy" classes, I really appreciated the opportunity to do some hands-on work and meet and work with students of different disciplines within ENGR 110.

Comments from Last Year's Students

While I felt our project was highly successful, there were a couple of improvements our team could have made to have the perfect project. First, my advice to all students would be iterate early and often. Although our final project worked, we were under a lot less stress because we set up a time every week to work on and progress our project. It's amazing what a solid 2-3 hours of work per week can make when making a project over the course of a quarter. Our final prototype still had minor adjustments that could have been avoided with one or two more iterations in the manufacturing process to complete the project.

Finally, my last advice to any team is to pick a project you are genuinely interested in, regardless of how much work it may seem. Initially, we were worried about the difficulty of the project proposal but Alex and I chose the triathlon project because we both had a large interest in triathlons and cycling and decided we could make the most impact there. I think the resulting device speaks for itself because we cared about the problem we were trying to solve and we were able to find a relatively simple solution that allowed us to make a large improvement for Mohamed without getting out of the scope of a one quarter project.

Comments from Last Year's Students

I think it's enormously useful to just look at as many different resources as possible, because almost anything can be a source of inspiration.

Lastly, working on the project with my team was delightful. Because Luke had been a previous design class, he suggested we use a brainstorming process called "How Might We …" where we really narrowed in on specific objectives and how to accomplish them. After our initial brainstorming session, we had almost all our remaining meetings at or in front of Room 36, which was very useful because then if we ever had new ideas about a design we could immediately go and get the materials to see how it all fit together. We were also able to get instant feedback from the Room 36 TA, which was very helpful. One of the things we emphasized as a team was not holding back on ideas, and just throwing everything out, because even if we weren't sure how a piece might fit in, someone else might see how to build on it.

Comments from Last Year's Students

If I were to do this project again, I would pick a project that had a wider range of possible solutions and had easier access to the user group. I would recommend that students next year take both of these into consideration when choosing a project.

Comments from Last Year's Students

I learned a great deal within this course that I will take with me for the rest of my life. I find the need finding skills, interview techniques, and prototyping experience extremely valuable. I know what I have learned will continue to develop and be useful in my everyday life. The development of a different perspective on design, as well as a different perspective of people, that this class gave me is invaluable. Whether you're designing for a person with a disability or not designing anything at all. Not everyone has a similar path as you do, but at the same time not everyone with a disability is incapable of functioning at the level that you are, regardless of how difficult it may seem to you. Being sensitive to the broad spectrum of people that we interact with on a daily basis and having a solid appreciation for all people regardless of ability, is important in order to grow as a person. That being said I feel like I have developed a couple of new lenses that I can look through as I live my life and I know I have become a better person as a result of that.

Being able to understand everyone has different needs and a different perspective on life can make you a better engineer, a better student, and overall a better person.

Comments from Last Year's Students

There were a lot of valuable lessons to take away from this class and the design process. I think the most valuable part of the class was working in a group. Life is a team game with individual results. Success is measured on an individual basis but is accomplished through the cooperation of many individuals. Being able to function well in a group is pivotal in almost every walk of life, and this class offers a superb opportunity to practice the skills necessary to be a successful member of a group. Having an open and adaptable mind during the group process of the course will be the greatest lesson I take away from this class. The lectures were also a great part of the course because of the unique insight they provided on the field of assistive technology. I am thankful for the opportunity to have taken this class and will advise my friends to take it in the future.

Comments from Last Year's Students

If I could do it all over again, I would start the design process early.

Comments from Last Year's Students

Dear Future Students,

START EARLY!! I cannot stress that enough. It was difficult for my team to find wheelchair users that were willing to work with us. Because of this it delayed our project process. Also make sure to make a clear list of what each team member's task is. This will keep you focused and on track. Also, you can use the list to make sure everyone else is completing their tasks and completing them on time.

Comments from Last Year's Students

I wish that we could have talked more and tested with potential users. While we got to talk with people who know a lot about these users and what they could benefit from, I know that we could have gained more insight from an actual kid. I also wish that we could have made more prototypes. I'm proud of our prototypes, but more iterations could have made them better. If someone asked me for advice on taking the class, I would tell them to prototype early and often, and to talk to as many relevant people as possible.

Comments from Last Year's Students

If I were to go back and do this again, I would take the class my junior year. I'm graduating after this quarter so I do not have the opportunity to continue working on my project next quarter. I would have liked to understand how much of our ideas the Playground was intending on using, or if we were just brainstorming for them. I definitely want to keep tabs on the progress of the playground and see if they end up implementing any of the designs that we (or our classmates) came up with. I'd recommend to future students that they pick topics that are a little different than what they have worked on before, but yet is one that they have a good gut reaction about during pitch day.

Comments from Last Year's Students

If I was going through this process again, there are a few things I would do differently. I would have begun reaching out to potential users to interview a lot earlier. I didn't realize how difficult it was to find a people to interview and get feedback from due to scheduling conflicts. I would have also begun prototyping a lot earlier. In general, I feel that the road from brainstorming to designing to prototyping that my team took was conducted at a good and reasonable pace.

Comments from Last Year's Students

I guess my rant is my attempt to share with future students my advice to not work on projects with friends. Work on it with people who are interested in the same topic, and seem to have the same intentions as you do. I learned the hard way by working with a friend and not only has it hurt my friendship but it hurt my grade as we struggled to complete so much work without a third group member.

Comments from Last Year's Students

If I were to go through this process again I would talk to more people sooner. Our design progressed rapidly from the advice and perspectives of others and I wish I had utilized the knowledge of others more.

My advice to future students is to really explore the problem you are trying to address. I realized that at first I was so focused on coming up with a solution that I failed to recognize where the need actually was. My product design improved significantly when revisited and better understood the problem. It is also important to be willing to do a lot of trial and error in your process. My partner and I had clear idea of the overall mechanism we needed in order to make our swing stabilizing system functional, but we had to consider various prototypes until we found an appropriate solution. Next, it is important to be in constant communication you're your fellow team members; my partner and I were able to cohesively work together because we were always on the same page. Finally, I think what made our design so successful was finding an effective yet simple solution for a product, especially if, like us, the intention is to eventually mass-produce the product. Overall, I had a great time in this class. I was able to learn about an interesting and innovative field, while gaining hands on experience in the design process. It is one of the few classes where I feel like the course has a direct impact outside the classroom.

Comments from Last Year's Students

My experiences working with them suggest to me that we should have had a more transparent relationship from the beginning. We should have shared our strengths, weaknesses, desires, apprehensions, and ideal roles as team members with one another before the start of the project. This lesson has proved almost as valuable to me as the educational experiences I gained from having worked on our catapult design from ideation to final prototype.

Comments from Last Year's Students

Overall, I think actually building the device was the most rewarding component of the class. I really appreciated being able to put my knowledge to practical use, and coming away from the experience with a somewhat working prototype makes me feel very proud. A lot of thought went into the design of all of the components, and the process really forced me to use every principle I've collected in my engineering education so far, from advanced motor control I learned in Mechatronics to the power transmission and motor characterization principles I learned in Mechanical Systems Design.

Comments from Last Year's Students

Because user feedback and multiple iterations is a crucial part of the design process, I would definitely recommend that future students aim to find a balance between starting design work as soon as possible and doing adequate interview research. For this specific project, multiple iterations were not totally feasible because of the cost required to 3D print, but perhaps user feedback based on paper models would have been valuable.

Comments from Last Year's Students

If I were to go through the process again, I would have interviewed more people in our specified target audience and their caretakers earlier in the process. While we created a product that Anna would find valuable should she ever come across it, it would have been great to collect different perspectives of asthma management from different people. It would have greatly informed our decisions and helped us create something that could appeal to a larger audience. Additionally, I would have utilized Dave and the rest of the teaching staff to a greater extent. There were a few times during the quarter when my team fell into a creative slump. In those situations, it would have been beneficial to reach out to a teaching staff member who could have helped us through that slump.

My advice to future students is to be as engaged as possible. ENGR110 is a course where you will take out exactly what you put in. If you dedicate time and energy, you will most likely emerge with a prototype that you are proud of. Additionally, you will gain so much out of the experience simply by interacting with community members and those with disabilities.

Comments from Last Year's Students

Life can get hectic for Stanford students, yet Team ChairPacx unfortunately decided to spend the majority of the actual prototyping during the last couple of weeks of the quarter. Had we spread it out more, we would have been less stressed and pressed for time, and even might have been able to play with a few other design ideas. So with that, a word of advice for future students would be to focus on time management.

Comments from Last Year's Students

If I were to go through the process again, I would have waited to choose what kind of game to make until we had the Kinect working and therefore a better understanding of the technology. In the end, though, the game turned out well, and I'm proud of what Team Kinect developed this quarter.

Comments from Last Year's Students

If I could do it all over again, I would have focused on marketing and branding. I had always thought that marketing was just a tactic vendors would use to trick clients into buying a product. However, I learned through the course that it plays a big part in altering the perception of a device, and this perception is something that really matters to the user!

Comments from Last Year's Students

One key lesson that I will carry with me is *universal* design, and not just creating for a select group of people. I wish I had taken this course last year – this was one of the few Stanford classes that have honed my understanding for and passion for engineering and design, and it will no doubt continue to guide my future work.

Comments from Last Year's Students

If we had not been as proactive in pursuing different design concepts and meeting regularly to continue to work on our progress, Kori and I would have likely not arrived at the idea to use seat belts in time to actually assemble a working model by the end of the quarter. The long design process of continually coming up with ideas and modifying them certainly was not an easy one and could be strenuous at times, but going through the process and having ideas that didn't work is ultimately what led us to our seat belt solution.

Comments from Last Year's Students

The interactive learning that occurred through creating the project, interviewing people who were disabled, and the technology faire was truly unique. This class not only opened my eyes to the full spectrum of disabilities and the needs that come with them, but also promoted interpersonal, experiential learning, which I now believe is invaluable.

Comments from Last Year's Students

If I could do something different, I would make sure that all my team members were on-board with the expected dedication to the project. I would also consult with the TAs in the PRL about my intended prototype to gain advice and ideas from them BEFORE actually starting to build. The TAs are extremely helpful and can provide valuable ways of achieving certain design qualities.

Comments from Last Year's Students

If I were to do this course all over again, there would be a few things that I would do differently. I think I would try to do more interviews at the beginning of the quarter. I would also work on more prototypes early on. I think time is always a valuable thing at Stanford and I would try to make better use of it if I could do this quarter over again.

I think the main advice that I would give to next year's students is to pick something you'll enjoy even if it doesn't sound as cool. Because my project was very simple but I enjoyed working on it. Although most people want to pick the project that will sound the most impressive, I would suggest that they just go with something that they would have fun working on.

In Summary

1. Start early, be as engaged as possible
2. Don’t wait until the last couple weeks to prototype, focus on time management
3. Make more prototypes (early and often), including paper models
4. Make sure that the entire team is fully involved and be more assertive if they were not; be in constant communication; share strengths, weaknesses, apprehensions
5. Get feedback and ideas from a wide variety of people, including community members
6. Understand the technology
7. Actively seek help
8. Meet with and test the prototype with users
9. Employ all resources, including Dave and project resource people
10. Meet in Room 36 to get instant TA feedback
11. Don’t hold back ideas
12. Understand that everyone has different needs and perspectives
13. Have an open and adaptable mind
14. Make a clear list of what each team member is responsible for
15. Explore and fully understand the problem
16. Realize that it is a trial and error process
17. Find an effective, yet simple solution
18. Aesthetics matter
19. Pick a project you’ll enjoy and have fun working on

MLK

How might the teachings of Dr Martin Luther King Jr. relate to people with disabilities?

"I have a dream that my four little children will one day live in a nation where they will not be judged by the color of their skin but by the content of their character."

10 Commandments for Making

Adam Savage took a few minutes on Sunday, May 18th at the 2014 Maker Faire Bay Area to share what he feels are the 10 Commandments of Making. Braving the somewhat precarious elevated stage of the crowd favorite Life-Sized Mousetrap, Adam addressed the audience with bits of wisdom and jewels of experience. It was obvious from the laughter that many of these insights and observations struck close to home.

Adam Savage's 10 Commandments of Making – 10:03

10 Commandments for Making

Here is the short version of the commandments according to Adam:

1. Make something
2. Make something useful
3. Start right now
4. Find a project
5. Ask for help, advice, and feedback
6. Share
7. Recognize that discouragement and failure is part of the project
8. Measure carefully
9. Make things for other people
10. Use more cooling fluid

Pre-Lecture Discussion Topics

Selected preferences from Evaluation Form

- **Antique Technology** – check out some old assistive technology products and research
- **New technology** – recent research and products
- **AT device review** – examine an assistive technology product

- **Who is Disabled?** – making a determination with limited information
- **The Upside of Failure!** – why Failure is good
- **Video theater** – watch selected videos
- **In the News** – recent articles and products
- **Students' Choice** – class determines topic

Miscellany

1. PRL Safety Orientation & Shop Passes
2. Aging in Place Meetup – Beam Smart Presence System –
   Wednesday, January 21st – 6:30pm (7:15 presentation)
   Suitable Technologies Robot Show Floor
   425 University Ave.
   Palo Alto

Thursday, Jan 22nd

Katherine Strausser, PhD

The Design and Control of Exoskeletons for Rehabilitation

Tuesday, Jan 20th





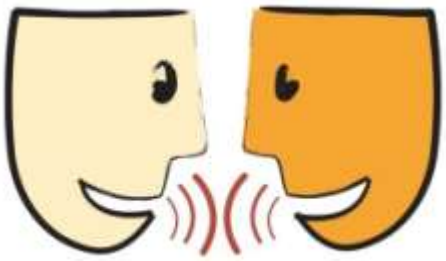

Kartik Sawhney, Aubrie Lee, Zina Jawadi, Dillon Leet, Dan Berschinski, Alexander Barbe

Perspectives of Stanford Students with a Disability

Short Break

Break Activities

- Stand up and stretch
- Take a bio-break
- Text message
- Web-surf
- Respond to email
- Talk with classmates
- Reflect on what was presented in class



Tuesday, Jan 20th






Kartik Sawhney, Aubrie Lee, Zina Jawadi, Dillon Leet, Dan Berschinski, Alexander Barbe

Perspectives of Stanford Students with a Disability

Tuesday, Jan 20th

Kartik Sawhney

Perspectives of Stanford Students with a Disability

Tuesday, Jan 20th

Aubrie Lee

Perspectives of Stanford Students with a Disability

Tuesday, Jan 20th

Zina Jawadi

Perspectives of Stanford Students with a Disability

Khattiyya!

Zina Jawadi

January 2015

Highlights

- FM System
- Captioning
- Hearing Aids
- Safety Assistive Technology
- Hearing Loss Association of America

Highlights

- **FM System**
- Captioning
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- FM System
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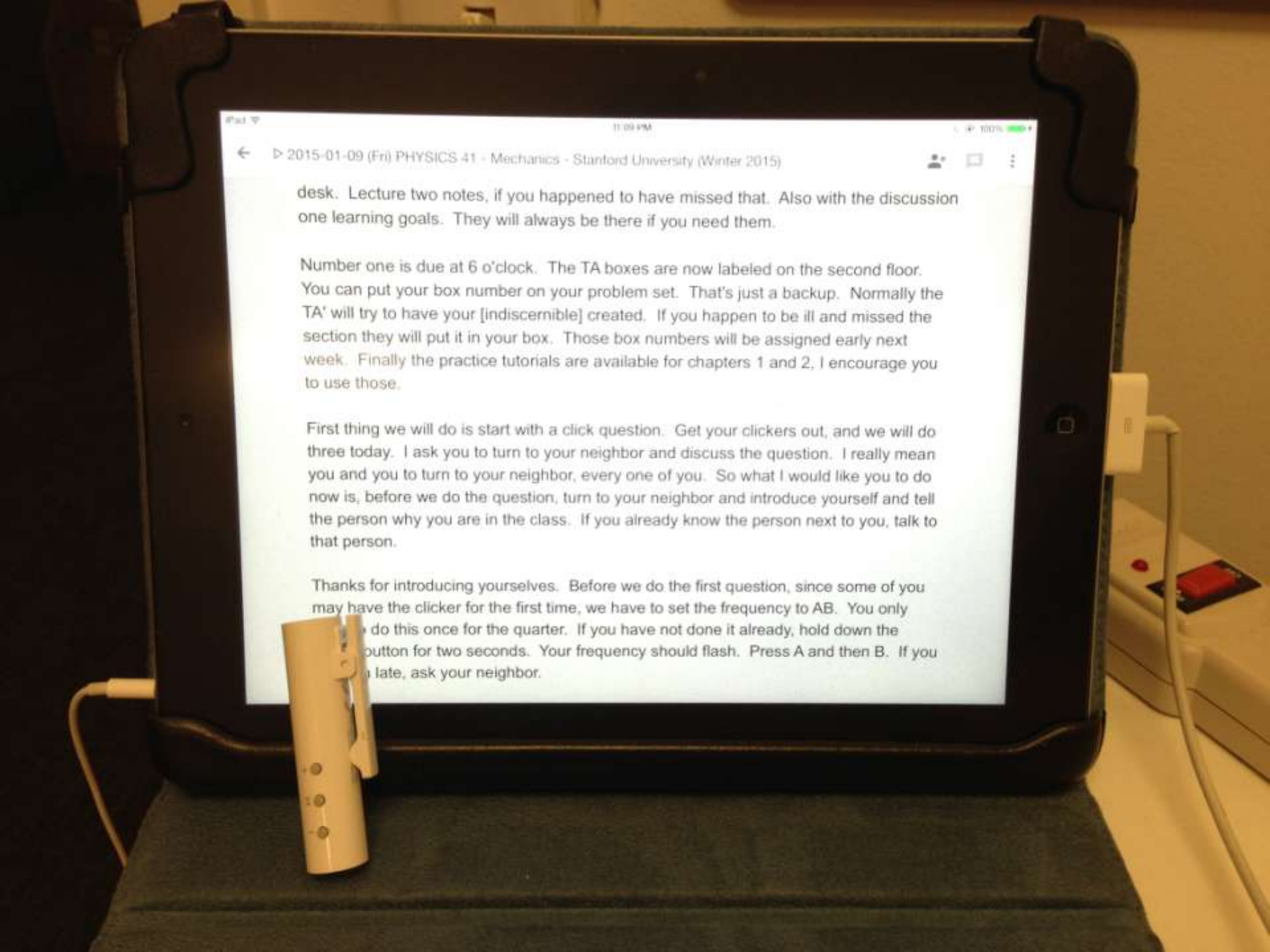
2015-01-09 (Fri) PHYSICS 41 - Mechanics - Stanford University (Winter 2015)
desk. Lecture two notes, if you happened to have missed that. Also with the discussion one learning goals. They will always be there if you need them.
Number one is due at 6 o'clock. The TA boxes are now labeled on the second floor. You can put your box number on your problem set. That's just a backup. Normally the TA' will try to have your [indiscernible] created. If you happen to be ill and missed the section they will put it in your box. Those box numbers will be assigned early next week. Finally the practice tutorials are available for chapters 1 and 2, I encourage you to use those.
First thing we will do is start with a click question. Get your clickers out, and we will do three today. I ask you to turn to your neighbor and discuss the question. I really mean you and you to turn to your neighbor, every one of you. So what I would like you to do now is, before we do the question, turn to your neighbor and introduce yourself and tell the person why you are in the class. If you already know the person next to you, talk to that person.
Thanks for introducing yourselves. Before we do the first question, since some of you may have the clicker for the first time, we have to set the frequency to AB. You only do this once for the quarter. If you have not done it already, hold down the button for two seconds. Your frequency should flash. Press A and then B. If you late, ask your neighbor.

Highlights

- FM System
- Captioning
- **Hearing Aids**
- Safety Assistive Technology
- Hearing Loss Association of America

Highlights

- FM System
- Captioning
- Hearing Aids
- **Safety Assistive Technology**
- Hearing Loss Association of America


RFI
RFI
DEVICE IS:
OUT-OF-SERVICE
FOR MORE
INFORMATION CALL:
650-725-1602
Do not remove by order of:
Stanford Fire Marshal's Office
FIRE

Highlights

- FM System
- Captioning
- Hearing Aids
- Safety Assistive Technology
- **Hearing Loss Association of America**

Highlights

- FM System
- Captioning
- Hearing Aids
- Safety Assistive Technology
- Hearing Loss Association of America

Mazel Tov!

Tuesday, Jan 20th

Dillon Leet

Perspectives of Stanford Students with a Disability

Tuesday, Jan 20th

Dan Berschinski

Perspectives of Stanford Students with a Disability

Tuesday, Jan 20th

Alexander Barbe

Perspectives of Stanford Students with a Disability

Alexander’s assistive tech

The old

The current

The mundane?


Class
Dismissed!