

TEAMWORK

CS/ECE 3992

SOME SLIDES BASED ON AL DAVIS' 3992 SLIDES FROM SPRING 2013

What's the point?

- * This class is really about two things:
 1. Finding, defining, planning, and proposing a senior project
 2. Finding and assembling a team to execute that project

Capstone Project

1. Computer Engineering Senior Project class
 - * CS/ECE 4710 in the fall
 - * Group project option
2. Senior thesis
 - * Individual project with faculty mentor
 - * ECE 4900/4910, CS 4991/4992 - year-long project
3. ECE clinic project
 - * ECE 4991/4992 year-long sequence
 - * Industrial projects - with industrial sponsorship

Logistics

- * We meet here on Wed 11:50-12:40
- * Course web page www.eng.utah.edu/~cs3992
- * I'm also trying out Canvas
 - * For assignment hand-in and announcements mostly

Grading

Four Assignments	16%
Quality and detail of web log	14%
Single-Page project proposal	5%
Initial proposal presentation and document	15%
Intermediate proposal presentation and document	20%
Final proposal presentation and document	30%

Assignments

1. Resume (for team building) (due Jan 15)
 - * Hand in through Canvas
2. Sketchbook Sensor Awareness (due Jan 15)
3. Sketchbook Linkage Awareness (due Jan 22)
4. Sketchbook Engineering Awareness (due Jan 29)
 - * Hand in physical sketchbook to me

Schedule (malleable)(look on web page)

Date	Topic / Agenda	Links, Assignments, and Due Dates
Jan 8	Introduction, Discussion Teamwork, Project Management	Teamwork slides (coming soon)
Jan 15	Project planning and scoping	Project planning and scoping slides (coming soon) Resume Assignment : Due Jan 15 (in Canvas) Sketchbook assignment #1: Sensors . Due Jan 15
Jan 22	Project Idea Discussion	Sketchbook assignment #2: Linkages . Due Jan 22
Jan 29	Project Idea Discussion #2	Sketchbook Assignment #3: Engineering . Due Jan 29
Feb 5	Anatomy of a Proposal	Proposal slides (coming soon)
Feb 12	Proposal Writing	Writing slides (coming soon) One-page project description + team due (in Canvas)
Feb 19	Organizational issues and parts sourcing discussion	
Feb 26	Initial Proposal Presentations	Three-page initial project proposal due (in Canvas)
Mar 5	Initial Proposal Presentations	Web site must be established, and meeting logs initiated
Mar 12	No Class: Spring Break	
Mar 19	Intermediate Proposal Presentations	5-10 page intermediate proposal due (in Canvas)
Mar 26	Intermediate Proposal Presentations	
Apr 2	Presentation critique and discussion	
Apr 9	Final Proposal Presentations	Final project proposal due (in Canvas)
Apr 16	Final Proposal Presentations	
Apr 23	Final Proposal Presentations	

Teamwork

- * A team is not a bunch of people with job titles, but a congregation of individuals, each of whom has a role which is understood by other members. Members of a team seek out certain roles and they perform most effectively in the ones that are most natural to them.
- * Dr. R. M. Belbin

Teamwork

- * One man alone can be pretty dumb sometimes, but for real bona fide stupidity, there ain't nothin' can beat teamwork.
- * Edward Abbey

Teamwork: Leadership Teams

- * **Common in the workplace**
 - * Clear cut leader - point of resolution
 - * Often sets and articulates goals and strategy
 - * Workload assignment
- * **Ideally (rarely?)**
 - * Spots problems early
 - * Leads through difficulty in fair and productive way
 - * Merits respect through ability rather than demands through position

Teamwork: Peership Teams

- * **Common in school settings**
 - * **No clear cut leader**
 - * Although one may emerge as the semester progresses
 - * Beware the yes-man underlings!
 - * Hopefully leadership is shared by most of the team
 - * Somebody has to be responsible for each and every aspect of the project



TEAM BUILDING

SOMETIMES, THE MOST IMPORTANT LESSON YOU CAN LEARN
IS THAT YOU'RE NOT A VERY GOOD TEAM.

Choosing Teams: Wish List

- * Talent to do the job (as opposed to talk/pretend)
- * Dependable
- * Honest
 - * Inform group of problems BEFORE they become critical
- * Efficient communicator
 - * This is easier if mechanisms are articulated by the group in advance
- * Committed to doing the job right
 - * Genuine enthusiasm for the project is an important marker
- * Others?



DISTINCTION
LOOKING SHARP IS EASY WHEN YOU HAVEN'T DONE ANY WORK.

Team Destroyers

- * **Lack of open communication**
 - * Should be no difference in what group knows
 - * Personal design and implementation is OK
 - * Group review, problem solving, moving past sticking points, etc.
 - * Look out for cliques and sub-group formation!!
- * **Anything that delays clarity**

Team Destroyers

- * **Anything that takes more time than it should**
 - * Disputes and competition are healthy if resolved in a timely manner
 - * It's not a contest
 - * Individuals don't win or lose here – the group wins or loses together
 - * Differences of opinions help evolve the best answer
 - * Criticize ideas – not people
- * **Any negative emotion**
 - * Engineers design, philosophers emote
 - * Disagree and commit

Engineering

- * Art without engineering is dreaming; engineering without art is calculating.
- * Steven Roberts

Team Roles

- * Describing the key roles in management groups, researcher Meredith Belbin used terms such as:
 - * Originator, driver, coordinator, resource investigator, specialist, implementer, finisher
- * Most of us have preferences for the role we play in a group, but change and adapt as the group needs become apparent.
- * Some resist the need for flexibility, usually to the detriment of group performance.
- * Belbin's research demonstrated that the best work groups were balanced, where members took on a broad range of roles, or adapted when required.

Collaboration

- * Collaboration, it turns out, is not a gift from the gods but a skill that requires effort and practice.
- * Douglas B. Reeves

Getting Started

- * Social psychologist Bruce Tuckerman noted four key stages:
 - * **Forming:** group members get to know each other, establishing guidelines, goals and processes, assessing and breaking down the task at hand
 - * **Storming:** individuals assert themselves and develop preferences, with arguments or disagreements potentially arising about how to proceed
 - * **Norming:** work begins in a more organized and coordinated manner, rules and processes are established and progress is made
 - * **Performing:** the team as a whole focuses entirely on the task and its completion
- * These stages may not be universally applicable, but the idea is to recognize group work as a process, and find ways to progress to the **'performing'** stage as quickly as possible.

Effective Teams

- * **Common goal:** the members have negotiated shared aims and goals
- * **Social organization:** the group develops or actively negotiates functional norms, roles, and relationships
- * **Interdependence between members:** members succeed only if all succeed
- * **Productive involvement:** all members are supported to contribute equally to the workload; resources and skills are identified early on and used effectively. Decisions are made by consensus.
- * **Effective communication and interaction:** face-to-face and other modes of communication help to monitor group processes and dynamics, drive creativity and enable productive work practices

Adapted from Maughan & Webb, *Lawyering Skills and the Legal Process*; and Hay Dungey & Bochner *Making the Grade: A Guide to Successful Communication and Study*, by the Melbourne Law School

<http://www.law.unimelb.edu.au/lasc/professional-skills/tips-for-effective-teamwork>

Effective Teams

- * **Mutual interest:** members focus on the interests of the group as a whole, and avoid personalizing problems or differences of opinion
- * **Collective consciousness:** members perceive themselves as belonging to the group even when the group is not together
- * **Mutual trust:** members listen to each other, respect contributions, help each other to clarify ideas, and show interest in each other
- * **Cohesion:** group processes function smoothly without need for intervention, members are able to contribute equally to produce something greater than the individual parts, individual contributions are brought together seamlessly and within nominated deadlines, and members feel they have learnt something from the process and from the other group members.

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Team Dynamics

- * If two men on the same job agree all the time, then one is useless. If they disagree all the time, both are useless.
- * Darryl F. Zanuck

Ground Rules

- * **Communication processes**
 - * Exchange contact details, establish rules and limits on communication forms (email, text message, mobile, Facebook)
- * **Decision making processes**
 - * How will decisions be made? By consensus? What will you do if there is an even split of preferences?

Ground Rules

- **Task analysis and distribution of workload:**

- Be wary of dividing up questions into even portions, going off to work individually to return the day before the task is due to put it all together. This approach rarely works well.
- Think creatively about how different group members might work together on separate tasks, and how roles might be distributed among the group according to individual strengths.
- Above all, be sure that workloads are evenly distributed. Monitor the workload as a group. Some of the tasks may require more work than first assumed.

- **Meeting schedule:**

- Be clear from the start how often you will meet, and decide on the purpose of the meetings.
- Record meetings in a log - very important for keeping on track and not forgetting things

<http://www.law.unimelb.edu.au/lasc/professional-skills/tips-for-effective-teamwork>



TEAMWORK

ENSURING THAT YOUR HARD WORK CAN ALWAYS BE
RUIED BY SOMEONE ELSE'S INCOMPETENCE.

<http://www.despair.com/demotivators.html>

Feedback

- * Good, constructive feedback is difficult to give; but it is essential for smooth and productive (and confidence building) teamwork. Remember the sandwich approach:
 - * Start by focusing on the positives – what was well put, well argued, a good idea or a useful point
 - * Then you can point out faults or flaws, but tactfully, and without assuming that you have all the answers
 - * End with something positive
- * Effective feedback is specific rather than general. Likewise, offering an alternative is far more constructive than simply disagreeing.

<http://www.law.unimelb.edu.au/lasc/professional-skills/tips-for-effective-teamwork>

Criticism

- * To avoid criticism say nothing, do nothing, be nothing.
 - * Aristotle

Criticism

- * It is much more valuable to look for the strength in others. You can gain nothing by criticizing their imperfections.
- * Daisaku Ikeda

Finale

- * Getting the right team in place is important
 - * But, actively working on team dynamics and collaboration is much more effective than just hoping you get the right magic mix of people from the start