Capstone Design ME/MSE/ID/BME/ECE

Common Lab Session #1

Date: 01/10/2024

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Plan for 1ˢᵗ lab on Wednesday, 10ᵗʰ January 2024

1 Pick a name tag that corresponds to your **major** per below, **write your name** and wear

- ME
- ECE
- BME
- MSE
- ID

2 If you are not in a team, then please seat on the round tables in rows corresponding to your topmost **strength/interest**

Podium

CAD Modeling

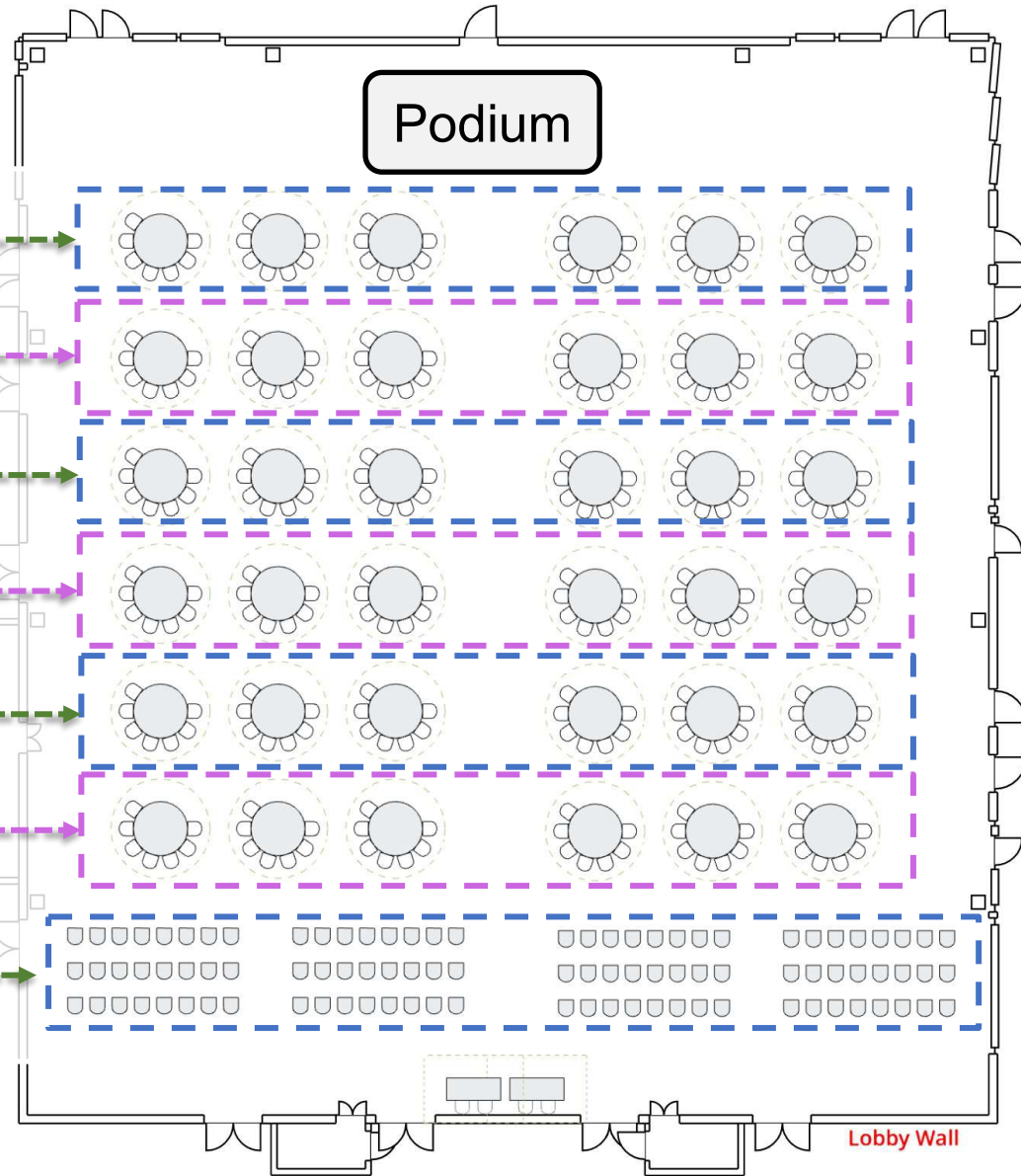Analysis/Simulations

Electronics/Circuits

Fabrication

Programming

Any/open

Partial or full teams

Lobby Wall

REMINDERS/AGENDA

- ALL Links and Slides are posted here: http://mecapstone.gatech.edu/students

1. Present your self-proposed project if looking to add team members
2. Meet with faculty and confirm if your team's backup project idea is appropriate for the course
3. Form your team/group on https://projects.gatech.edu/ latest by 5pm **TODAY**
   - How to guide: https://mecapstone.gatech.edu/howto

- Common MS Teams Support Network: https://mecapstone.gatech.edu/support

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Upcoming Dates/Milestones

- 1/10 @ 5:00pm – Deadline to form groups
- 1/12 @ 5:00pm – Deadline to submit your team's backup project idea
- 1/13 @ 5:00pm – Deadline to submit bids online

- 1/16 @5:00pm
  - Learn which project and faculty advisor was assigned to your team (Via CANVAS announcements)

- 1/17 @ 12:30pm
  - First lab time with your assigned faculty advisor
  - Plan to present an overview of the [problem statement and organization](#)

Clarifications

1. You may form teams with any majors of ME, BME, MSE, ID or ECE
   a. We will administratively move your registered section next week
   b. Teams follow **one** set of deliverables dictated by the School represented in the team's majority composition

2. On projects.gatech.edu
   a. Click on "Edit Profile" to ensure that you have selected some capstone design section and **not** the "Not Registered" section
   b. For any technical issues with the site, please email webmaster@capstone.gatech.edu ASAP

3. $ support for project prototypes
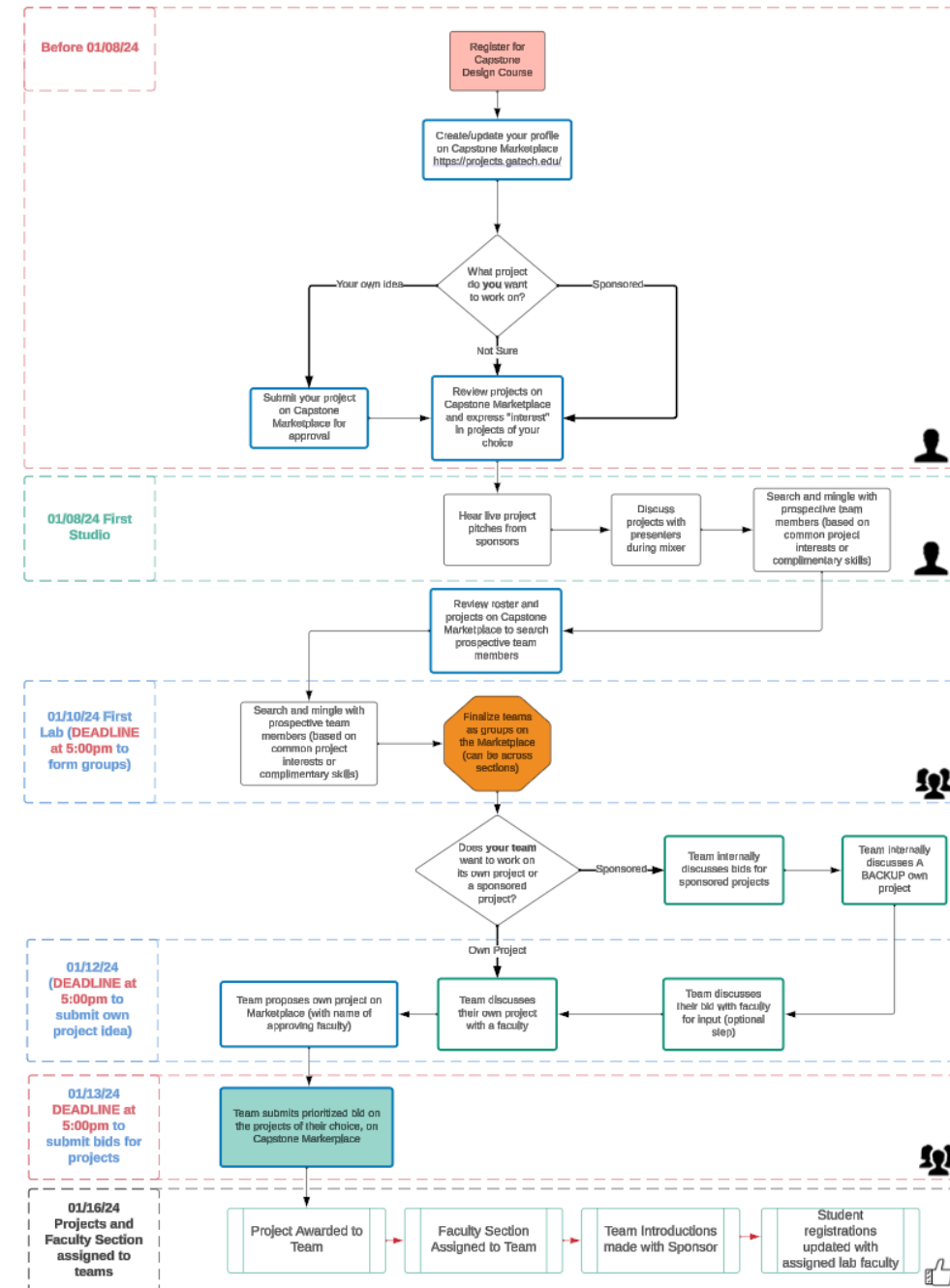
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Barriers to success

- Lack of commitment, initiative and anticipation
- "Is this what you want?" – expecting to be told what to do, rather than acting independently
- Lack of consideration and systematic evaluation of alternatives
- Dithering over alternatives and not selecting a final design
- Lack of questioning assumptions, preconceived notions, etc.
- Team Dysfunction
    - Lack of leadership
    - Lack of a shared and coherent vision
    - Lack of accountability and progress
    - Personality conflicts
    - And on and on…
- Confusion between role of student team, sponsors and faculty

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Are you stressed already?

- Follow the process, and the rest will follow

- We believe in you, all 334 of you!

- https://mentalhealth.gatech.edu/

https://mecapstone.gatech.edu/flowchart

First Week of Classes for Capstone Design

What % of the class has created a profile on projects.gatech.edu?

93.4%

What % of the class do you think is already on a team?

43.4%

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How to form a team?

We asked AI Chatbot

https://chat.openai.com

Projects will be assigned next week through an open bidding process

How to form a team for the senior capstone design class?

Forming a team for a senior capstone design class typically involves the following steps:

1. Identify the members of the class who are interested in working on a project together. This can be done through class announcements, online forums, or direct communication with classmates.

2. Assess the skills and experience of each potential team member to determine how they can contribute to the project. This will help ensure that the team has the necessary expertise to complete the project successfully.

3. Create a list of potential project ideas, and discuss them with the potential team members to gauge their interest and expertise in each area.

4. Select a project idea that the team is excited about and that leverages the strengths of each team member.

5. Finalize the team by agreeing on roles, responsibilities, and expectations for each member. It is also important to establish a clear communication plan and schedule for regular team meetings.

6. And finally, keep everyone aligned with the project goals and make sure all the team members are on the same page, and all the work is divided in a way that is fair, clear and manageable for everyone.

What should you include in a bid?

We asked AI Chatbot

https://chat.openai.com

Do not present your solution, rather focus on how well you understand the project and why your team is best suited for the project

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What things should I include in a bid for a capstone design project?

When submitting a bid for a capstone design project, it is important to include the following key elements:

1. ~~Project summary: A brief overview of the project, including the problem or challenge~~ being addressed, the proposed solution, and the expected outcome or deliverables.
2. ~~Project scope: A detailed description of the work that will be done, including the specific~~ tasks and milestones that will be completed during the project.
3. Team qualifications: An overview of the skills, experience, and qualifications of the team members, including relevant education, work experience, and any relevant certifications.
4. ~~Timeline: A proposed project schedule, including key milestones, expected completion~~ date, and any critical deadlines.
5. ~~Resources: A list of the resources that will be required for the project, including~~ equipment, software, materials, and any other necessary supplies.
6. ~~Budget: An estimate of the costs associated with the project, including any expenses for~~ materials, equipment, or other resources.
7. ~~Risk assessment: A brief assessment of the risks associated with the project and a plan~~ for mitigating those risks.
8. ~~Sign-off page: A page where team member and mentor sign off on the proposal and are~~ aware of the expected workload and deliverable for the project.
9. ~~Any additional deliverable: Including but not limited to test plan, user manual, technical~~ report, etc. that is requested by the department or the class.

It is also important to present the proposal in a clear, professional, and well-organized manner that demonstrates the team's understanding of the project and the resources needed to complete it successfully.

What is a Good Bid?

Basically, convince us that you are the best group for the project.

- What is your understanding of the project?
- Why do you want the project?
- What are your skills, talents, experiences relevant to the project?
- Anything else that is relevant

- Your team can…
  - Only assign one priority rank per project bid. Rank of "1" means your first choice
  - Submit bids for as many projects as available for your team
  - Your team will be required to work on the project for which a bid was submitted and was awarded by faculty
  - You are required to submit a bid for your own project idea as well
  - Create/Edit/Cancel bids anytime until **5:00pm on Saturday, 13th January**
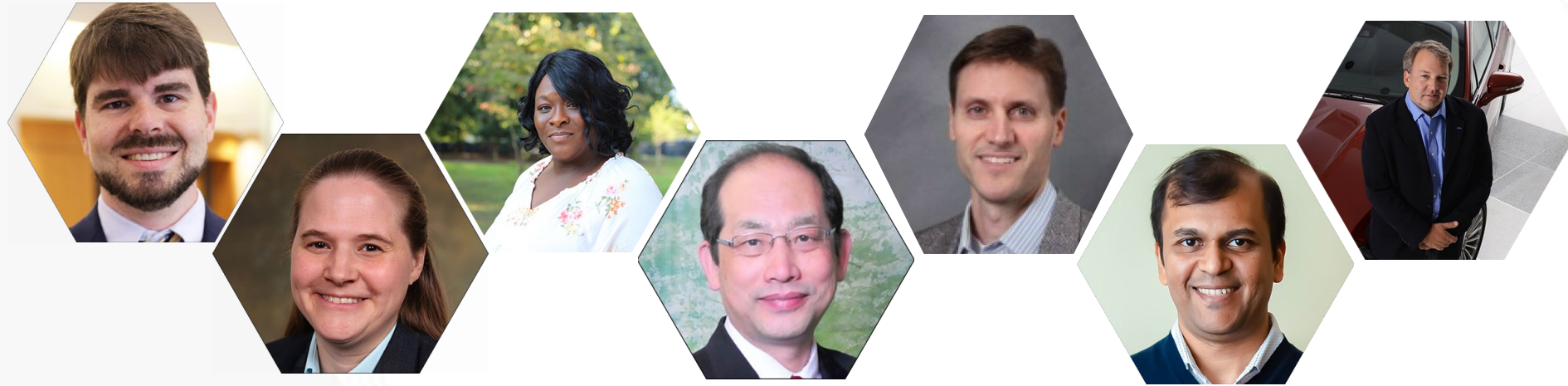 - Add/remove team members anytime until the same deadline as above

This is an open competition communication exercise!
Write concisely to stand out from the competition without overburdening the reader

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Elements of a Good Student Project

- What's the problem?
  - NOT "We're going to design a better mousetrap"
- Creative/Innovative - not just an assembly of off-the-shelf parts (room for concept exploration and evaluation)
- Lends itself to analysis
- Sufficient scope for senior design
- Team should have or acquire the skills to complete the project.
- Produce a proof-of-concept and learn from it
  - Design revisions
  - Validate design decisions
- Discuss your backup project with faculty today (one per team)!
- Submit your own project idea on the marketplace website before **5:00pm on Friday, January 12**
- NOTE that it takes a few hours before the project is made visible to the entire class, including yourself.

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Capstone Design Faculty

Role of the Capstone Design Team Advisors/Instructors

- Supervise the design process
  - Map the expectations & outcomes to each unique project
  - Ask good questions
  - To require alternatives and implications
  - To require analysis
  - To be a resource
  - Challenge you
- Advice on project scoping and expectation management with stakeholders/sponsors
- **Not** designers; **not** decision makers
  - Help guide you to answer the questions yourselves
- Design Process Experts
  - But you're to try to answer/solve the problem first!

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Past CIOS Comments from Students?

Best Aspect

- *The most I learned was basically more interpersonal skills like teamwork, rather than technical skills. Which both are important*

- *I really enjoyed the feedback and the presentations forced us to step back and evaluate our progress in relation to our goals.*

- *The ability to choose your own project / choose amongst given topics made it possible to learn something new or choose something in which we had knowledge about.*

- *Meetings with the advisor were the most helpful in preparing for course deliverables; in terms of what was the most enjoyable aspect of the course, building a prototype of our product and conducting analyses of it was certainly a very rewarding experience.*

Past CIOS Comments from Students?

Student Effort

- *6-9 hours is probably a fair average of my team's work every week, but it was always concentrated over a few days; 10-12 hours, spread out over 6-7 days, probably would've felt like a much lighter load.*

- *It's capstone, so was expecting it to take up any and all free time*

- *The expected and expended effort was appropriate for the course. I did expect to spend more time in this class compared to others and it was true.*

Past CIOS Comments from Students?

Course Improvements

- *Push for teams to do the analysis as soon as possible during the semester.*

- *The report projects, while helpful, were not always the correct format or required the right information we needed to be focused on at that moment. I believe a more flexible or variable deliverable would help teams. There needs to be something that facilitates their design process, decisions, and documentation while they are working so that there isn't a feeling of stopping progress to write a report.*

How are teams matched to projects?

1. Two avenues
   - Bid for an existing project from the marketplace site
   - Propose your own project on the site and then bid on it

2. Teams are matched to projects and then to faculty

Even if you plan on bidding for sponsored projects, should have a "Plan B (C, and D)" project idea of your own

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Additional Project Pitches

- Any student projects?

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