

The Capstone Design Project Student Packet

Spring 2024

Introduction:

The Learning Factory helps coordinate the College of Engineering's senior capstone design projects that are sponsored by industrial and professional clients. These projects fulfill the senior capstone requirements in Biomedical, Computer, Electrical, Energy, Industrial, and Mechanical Engineering, along with Computer Science and Material Science. Other departments offer the course, including Engineering Design, and these courses may satisfy other requirements in Data Science and Engineering Science and Mechanics.

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1. ACTION ITEMS BEFORE SEMESTER BEGINS

- a. **Onboarding - Refer to the email sent to you on 12/13/23 and 12/15/23 from Matt Parkinson.** From December 15, 2023 through January 7, 2024 you will have the opportunity to take a short course (<5 hours of work) that will prepare you for Capstone. You will learn about how the projects work, how to purchase materials (every team gets a budget of \$1250!), and other vital skills. Those that complete all of the work will be able to make or request purchases of materials and supplies for your project and will earn a special Penn State Micro-Credential Badge that you can post on your LinkedIn account. To join the course, follow this link: <https://lmstools.ais.psu.edu/userselfenrollment?selfenrollmentcode=YF58-9XUN-CWDR>
- b. **Picking Projects - Refer to the email sent to you on 12/13/23 from Matt Parkinson.** Your opportunity to indicate your project preferences will take place December 19-31, 2023. You will receive an email with instructions and you must submit your preferences by the evening of Sunday, December 31. There will be no extensions or exceptions. But don't worry: if you don't submit preferences, it isn't a problem--we will still place you on a team.

2. Why Industry Projects?

- Industry-sponsored senior design projects provide an excellent opportunity to apply your engineering talents to actual problems.
- You will get to build hardware and do real, hands-on engineering in state-of-the-art facilities.
- Most engineering efforts involve multidisciplinary teams. This project will give you experience in working in teams with professionals and students from many engineering disciplines.
- It will help you get a job! Corporate recruiters highly value teamwork and hands-on experience in design and manufacturing. In this competitive job market, you need all the advantages you can get.

3. Project Kick-Off and End-of-Semester Showcase

a. Project Kickoff Preparation - Thursday-Tuesday, January 4 through January 9, 2024

Schedule Meeting: Teams must contact their project sponsor/mentor beginning on Thursday, January 4 and no later than Tuesday, January 9 to introduce the team and to schedule time to have your first meeting at the Kickoff on Thursday, January 11. Your instructor will provide you with your project sponsor/mentor's contact information. SOME MENTORS MAY OPT FOR A VIRTUAL MEETING VERSUS ATTENDING THE KICKOFF IN-PERSON.

b. Project Kickoff Day - Thursday, January 11 – 8am to 5:00 pm – EDI Building

Project Kickoff - First technical meeting with your sponsor in the new Engineering Design and Innovation Building (EDIB) on West Campus. While your meeting will not last from 8am to 5pm, put a hold on your calendar during these hours until you've had your first initial contact with your sponsor and established an exact time to meet within this timeframe. Various rooms have been reserved in EDIB (see below) and some contain several tables for teams to use. **NOTE:** Depending on the room, there will be multiple teams meeting at the same time. It is first come, first serve and you do NOT reserve the rooms or tables through anyone. AV equipment will NOT be provided. Students should come to the first floor lobby of EDIB to meet your sponsor and then retreat to a meeting room. Come prepared knowing the name of your sponsoring company. Virtual meetings are also acceptable and can be conducted anywhere you like or on another day that you and your sponsor agree upon.

c. **Meeting Rooms for Kickoff**– Below are the rooms that will be available to meet with your sponsor. **These rooms are first come first served and cannot be used for anything other than meeting with your sponsor.** Due to the capacity of some of the rooms, there may be other meetings going on at the same time.

Rooms are only available during the times listed and must be vacated by the end time listed. You may also use any common area throughout the building although it won't be as private/quiet.

- 8am to 1pm - Classrooms 201, 202, 225, 226, 325
- 8am to 9:55 am – Classroom 302
- 1:30 to 5pm - Classroom 303
- 8am to 5pm – Classroom 326 (except 10am to 11am) and Conference Rooms 204, 213, 224, 324
- Additional space is available in the following building:
 - 8am to 9:45 am – 112 Walker Building (~2 blocks from the West Deck).

d. **Project Showcases** – There are two project Showcases. The *in-person* Showcase at the Bryce Jordan Center and the *virtual* Showcase. As part of the Showcases, awards will be given in the various categories to include but not limited to Best Project, Best Poster, Best Videos, and BP People's Choice. Additional information will be provided with details. You can view past virtual showcases [here](#).

4. Deliverables Agreement – If your team will be completing a Deliverables Agreement signed by students and sponsors, it must be given to your instructor and a copy to your sponsor. The document and deadline date in which to submit the deliverables will be determined by your instructor.

5. Team Budget and Onboarding- Each team is allotted up to \$1,250 for materials/supplies and limited travel that are **required** to complete the project **THIS** semester. The guidelines for purchases and reimbursements will be provided separately from this document and can be found on the Learning Factory website under the Student tab under Forms and Policies. **Onboarding:** In order to use the \$1,250, students must complete the Onboarding requirement. **Numerous emails about the Onboarding will be sent to students beginning with the first one sent on 12/13/23 from Matt Parkinson so check your email regularly.**

6. Intellectual Property (IP) and Non-Disclosure Agreements (NDA) Concerns - Projects requiring either of these forms will be indicated with the project description. The agreements can be found on the Learning Factory website <http://www.lf.psu.edu/sponsors/IPandConfidentiality.aspx> Please read them carefully. **If you have any**

problems with the conditions within these documents, you must pick projects that have no confidentiality and/or intellectual property restrictions. Cindy Winkelblech will prepare the documents.

- **Confidentiality (Non-Disclosure) Agreement:** In order to protect their competitive positions, some sponsors may require each team member to sign a confidentiality agreement as a condition for working on their project. These projects tend to be on the cutting edge of technology. By signing this document, you are obliged to protect the confidentiality of information provided by the sponsor for up to two years starting with the first day of the current semester.
- **Intellectual Property Agreement:** Sponsors may require that they retain exclusive ownership rights to any intellectual property that is developed during the course of the project. Projects in this category require students to assign their intellectual property rights over to the sponsor.
<https://guru.psu.edu/policies/IPG02.html>

7. Learning Factory Shipping Address - Sponsors may want to ship materials to you for your project. They must send them at the sponsor's expense to the address below and notify someone from the team with tracking numbers. Someone from the team must contact Cindy Winkelblech (ckb2@psu.edu) to let her know packages are in transit so she can contact the recipient when they arrive.

Address for Shipping to the Learning Factory

Your Name
 Penn State University
 405 EDI Building
 University Park, PA

8. Tips for Students – Keeping Your Sponsor Happy

Your dealings with your sponsor are an excellent opportunity to learn and practice the skills that will keep your future bosses happy – and get you promotions and raises.

Communicate: Keep your sponsor and instructor informed – communicate regularly by phone or email and solicit response. Use E-mail and the Web for posting of information when possible.

Have a Positive Attitude: Don't get frustrated if your sponsor does not answer your calls immediately or provide requested information instantly. Just be positive, patient, and persistent. Keep in mind that they have full-time jobs in addition to sponsoring this project. They are offering these projects as a favor to Penn State and to benefit your education.

Be Professional – Treat your sponsor as both a valued customer and your future boss. If you give your sponsor only what they ask for, they may be satisfied; if you give them more, they will be delighted. Take pride in the completeness and professionalism of your work. Don't make excuses. Part of your grade may be determined by your sponsor's evaluation of your performance.

Plan Ahead: Time is short – 15 weeks will be gone before you know it. Keep in mind that it takes time to send out purchase orders and receive parts. Therefore, start your project ASAP, develop a plan for its completion and submit regular progress reports to your instructor and sponsor.

Expect Change: The project description you were given at the start of the semester may change with time as you and your sponsor delve deeper into the problem. Moving targets are a fact of life, for a number of reasons, including new insights into the problem, changing business environment, or politics. Accept it and learn how to deal with it.

Be a Team: Your success depends on how well you can work together. The best teams have a diverse mix of personalities and skills. Often, human interactions are more challenging than the technical aspects of a problem. All team members must participate. Responsibilities must be divided among team members and each member is held accountable for accomplishing the agreed tasks. Do not let team problems fester, if you cannot solve them, talk to your instructor. It is especially important in dealings with your sponsor to have one consistent voice. Never blame, disagree with, or criticize each other in public. This is extremely unprofessional.