

# Capstone Design Project Student Packet

## Spring 2020

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### 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.

### Contents of this document:

1. Why Industrial Projects?
2. Project Kick-Off Schedule (1/21/20) and Showcase Schedule (4/30/20)
3. Deliverables
4. Awards
5. Team Budget
6. Prototypes and Certain Materials
7. Site Visits to Sponsors
8. Intellectual Property and Non-Disclosure Agreements **PLEASE READ!!!!**
9. Course Meeting Time

Tips for Students – How to keep your sponsor happy

Emergency Contact Form – submit one per team

Conference Rooms to Conduct Calls to Sponsors – instructions found on the last page of this document

### 1. 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.

### 2. Project Kick-Off and Showcase Schedule and Dates

- |               |  |
|---------------|--|
| 1/16 & 1/17   | <b>Schedule meetings:</b> Teams must contact their sponsor and establish a meeting time at the Kickoff on Tuesday, January 21, 2020.   |
| 1/21 8am-7pm  | <b>Project Kickoff:</b> First technical meeting with your sponsor at the HUB. While your meeting will not last this long, 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. <b>129 Alumni Hall in the HUB</b> has been reserved and contains several tables in rounds of 8 seats for teams to use to meet with their sponsor. NOTE: There will be multiple teams meeting at the same time. It is first come, first serve and you do NOT reserve the tables through anyone. Teams may sit anywhere they like, however, your sponsor may already have taken a seat at a table. They will have a table tent on their table indicating who (Company Name) they are. If your sponsor is willing to give you his/her cell phone number, this might be helpful the day of the Kickoff. AV equipment will NOT be provided. <u>Come prepared knowing the name of your sponsoring company.</u> |
| 4/30 1-3:30pm | Project Design Showcase and Awards Ceremony – Arena of the Bryce Jordan Center   |

**3. Deliverables Agreement** - The Deliverables Agreement signed by students and sponsor must be given to your instructor and a copy to your sponsor. The deadline date in which to submit the deliverables will be determined by your instructor. The document is located on the LF website under the Student tab under Forms and Policies.

**4. Awards** - Awards will be given at the Showcase in the following categories: Best Project, Best Poster, and BP People's Choice. Judging criteria can be found on the Learning Factory website under Student Tab under Forms and Policies.

**5. Team Budget** - Each team is allotted up to \$1,000 for materials/supplies and travel expenses that are **required** to complete the project. The guidelines for purchases and reimbursements will be provided separately from this document. The guidelines be found on the Learning Factory website under the Student tab under Forms and Policies.

**6. Prototypes and certain materials** - Prototypes become the property of the sponsors, subject to limitations outlined in [PSU Policy BS07 Authority and Procurement](#). Any materials that are purchased by PSU or you have purchased and received reimbursement from PSU are the property of PSU. There may be items that can be given to the sponsor. Read the details below.

**IMPORTANT! IMPORTANT! IMPORTANT!**

- Teams cannot purchase items in the last two weeks of classes that are not REQUIRED for completion of the project. Last minute requests must go through the Learning Factory staff and may or may not be approved.
- Sponsors may ask you to buy 'extra' materials/supplies to 'use up the budget.' This is NOT PERMITTED and the purchase/reimbursement request will be denied.
- Sponsors and instructors cannot give approval for last minute purchases, however, they may be consulted by the Learning Factory staff, if needed.
- Items purchased by the LF staff, or something you purchased and received reimbursement for, are the property of PSU. For example, if a cell phone, a monitor, or even as simple as an extension cord not permanently attached to a prototype is purchased, they must be returned to the LF staff at the conclusion of the semester. They do not belong to anyone on the team and they do not belong to the sponsor.
- Prototypes become the property of the sponsor, subject to limitations outlined in PSU Policy BS07 Authority and Procurement. <https://policy.psu.edu/policies/bs07> A good example of this would be a monitor that is purchased for testing but not a component of the final prototype. The prototype would, but the monitor would not, become the property of the sponsor.

**7. Site Visits to Sponsors/Emergency Contact Form** - Prior to the first site visit, each team must complete an Emergency Contact form and give it to your instructor and Cindy Winkelblech [ckb2@psu.edu](mailto:ckb2@psu.edu). (One form per team.) The form can be found in this packet and also on the Learning Factory website under the Student tab under Forms and Policies.

**8. Intellectual Property (IP) and Non-Disclosure Agreements (NDA) Concerns** - Projects requiring either of these forms will be indicated in the far right column of the *Current Projects* list. 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.**

**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>

## 9. Course Meeting Times

### SPRING 2020

Course/Title/#	Day/Time	Classroom	Instructor	Email
<b>BME 450.001</b> (Schedule #11337) Biomedical Senior Design	T R 8:00-9:55 am	106 Boucke Bldg	Szczesny, Spencer 865-3284	ses297@psu.edu
<b>BME 450.002</b> (Schedule #11366) Biomedical Senior Design	T R 3:35-5:30 pm	101 Osmond Lab	Medina, Scott 863-4758	shm126@psu.edu
<b>BME 450.003</b> (Schedule #11919) Biomedical Senior Design	T R 3:35-5:30 pm	105 Wartik Lab	Liu, Tengxiao 863-7050	<a href="mailto:tql5160@psu.edu">tql5160@psu.edu</a>
<b>CMPEN 482</b> (Schedule #11243) Computer Engineering Project Design	T R 8:00-9:55 am	103 Leonhard	Bilen, Len 865-9505	lxb50@psu.edu
<b>CMPSC 483.001</b> (Schedule #11264) Software Design Methods	T R 8:00-9:55 am	323 Nursing Sciences Bldg	Steven Shaffer 863-1943	scs12@psu.edu
<b>CMPSC 483.002</b> (Schedule #11694) Software Design Methods	T R 11:15am-1:10 pm	203 EE East	Steven Shaffer 863-1943	scs12@psu.edu
<b>DS 440.001</b> (Schedule #14795) Data Sciences Capstone Course	T R 8:00-9:55 am	Westgate Bldg E208	Rigas, Marc 863-2632	<a href="mailto:mrx5307@psu.edu">mrx5307@psu.edu</a>
<b>DS 440.002</b> (Schedule #29351) Data Sciences Capstone Course	T R 3:35-5:30 pm	Westgate Bldg E201	Rigas, Marc 863-2632	<a href="mailto:mrx5307@psu.edu">mrx5307@psu.edu</a>
<b>E E 403W.001</b> (Schedule #11212) Senior Project Design	T R 8:00-9:55 am	301 EE West	Cubanski, David 863-9559	<a href="mailto:djc24@psu.edu">djc24@psu.edu</a>
<b>E E 403W.002</b> (Schedule #11213) Senior Project Design	T R 11:15 am-1:10 pm	301 EE West	Bregar, Mark 865-1722	<a href="mailto:mjb8@psu.edu">mjb8@psu.edu</a>
<b>EGEE 464.001</b> Schedule #9183) Energy Design Project	T R 8:00-9:55 am	123 EE East	Eser, Semih/Toraman, Hilal 863-1392/865-3437	sxe2@psu.edu <a href="mailto:hzt5148@psu.edu">hzt5148@psu.edu</a>
<b>EGEE 464.002</b> Schedule #9480) Energy Design Project	T R 8:00-9:55 am	373 Willard	Song, Chunshan 863-4466	<a href="mailto:cxs23@psu.edu">cxs23@psu.edu</a>
<b>EDSGN 460</b> (Schedule #11486) Multidisciplinary Capstone Design Project	T R 8:00-9:55 am	312 Hammond	Knecht, Sean 867-4863	<a href="mailto:sdk149@psu.edu">sdk149@psu.edu</a>
<b>I E 480W.001</b> (Schedule #11109) Capstone Design Project	T R 8:00-9:55 am	112 Walker Bldg	Purdum, Charlie** 865-5345	<a href="mailto:clp73@psu.edu">clp73@psu.edu</a>
<b>MATSE 493</b> (Schedule #9194) Research and Design Senior Group Project	T R 11:15am-1:10 pm	214 Hammond	Kimel, Allen 865-5397	<a href="mailto:rak189@psu.edu">rak189@psu.edu</a>
<b>M E 440.001</b> (Schedule #11204) Mechanical Systems Design Project	T R 8:00-9:55 am	122 Eng Svc Bldg	Neal, Gary 863-5468	gln103@psu.edu
<b>M E 440.002</b> (Schedule #11219) Mechanical Systems Design Project	T R 8:00-9:55 am	118 EES	Cortes, Daniel 863-3103	<a href="mailto:dhc13@psu.edu">dhc13@psu.edu</a>
<b>M E 440.003</b> (Schedule #11220) Mechanical Systems Design Project	T R 8:00-9:55 am	316 Leonhard	Manogharan, Guha 863-7273	<a href="mailto:gum53@psu.edu">gum53@psu.edu</a>
<b>M E 440.005</b> (Schedule #11221) Mechanical Systems Design Project	T R 11:15 am-1:10 pm	316 Leonhard	Wang, Donghai 863-1287	<a href="mailto:duw13@psu.edu">duw13@psu.edu</a>
<b>M E 440.006</b> (Schedule #11222) Mechanical Systems Design Project	T R 3:35-5:30 pm	122 Eng Svc Bldg	Neal, Gary 863-5468	gln103@psu.edu
<b>M E 440.007</b> (Schedule #11223) Mechanical Systems Design Project	T R 3:35-5:30 pm	316 Leonhard	Belegundu, Ashok 863-2115	<a href="mailto:adb3@psu.edu">adb3@psu.edu</a>
<b>M E 440.009</b> (Schedule #12128) Mechanical Systems Design Project	T R 11:15am-1:10 pm	122 Eng Svc Bldg	Vonlockette, Paris 865-2761	<a href="mailto:prv2@psu.edu">prv2@psu.edu</a>
**Addl IE Faculty				
Cannon, Dave				Cannon.robotics@gmail.com
Li, Jingjin				jul572@psu.edu
DeMeter, Ed				ecd3@psu.edu
Basu, Saurabh				sxb514@psu.edu

## 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.

**Visit:** Visit the sponsor at their plant as soon as feasible. Be prepared for the visit. Prepare a specific agenda prior to the visit. Have a list of questions and information needs. Bring a camera, video camera or other electronic devices as needed to collect information about products or processes (but be sensitive to their security concerns). Be curious, ask questions, and don't be afraid to ask additional questions if you do not understand the sponsor's response to your inquiries. Arrange for a second visit.

**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 will 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, the 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.

**ONE PER TEAM**

This form is also on the Learning Factory website <http://www.lf.psu.edu/students/forms.aspx>

**PSU Capstone Sponsor Team Travel Itinerary & Emergency Information**

<b>Sponsor Company</b> e.g. Boeing 1, Boeing 2	
<b>Sponsor Address</b>	
<b>Sponsor Contact Name</b>	
<b>Instructor Name</b>	

Team Member Info	Emergency Contact Info
<b>Team member name</b> _____ <b>Team member Cell #</b> _____ <b>Team Member Email</b> _____ @psu.edu <b>PSU ID #</b> 9- _____	<b>Relationship</b> _____ <b>Name</b> _____ <b>Home contact #</b> _____ <b>Cell contact #</b> _____
<b>Team member name</b> _____ <b>Team member Cell #</b> _____ <b>Team Member Email</b> _____ @psu.edu <b>PSU ID #</b> 9- _____	<b>Relationship</b> _____ <b>Name</b> _____ <b>Home contact #</b> _____ <b>Cell contact #</b> _____
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## Instructions for Reserving Meeting Rooms

Meeting rooms are available throughout the University and can be reserved using 25Live/CollegeNet and through the Libraries. **\*\*First Time Users of 25live/CollegeNet\*\*** will need to log into 25live/CollegeNet and allow one business day for your account to be verified, populated, and updated with your appropriate campus access.

- Libraries URL: <https://libraries.psu.edu/services>
- 25 Live URL: <https://25live.collegenet.com/psu>
- 312 Leonhard Building (capacity 16) - conference phone only – Reserve through 25Live/Collegenet providing these details in your submission request.
  - *Event Name* – Enter your **sponsor company name** (e.g. Central PA, Ford 2, PSU MNE)
  - *Event Title* – Enter your **capstone course number and section**
  - *Event Type* – Choose “Meeting”
  - *Sponsoring Organization* – Choose Types → Academic Department → Your undergrad department or whatever is available to you.
  - *Occurrence* – Follow the instructions based on your needs. You may reserve a room for the entire semester and will need to provide the start and end date.
  - *Comments Section* – Enter any relevant information you feel the approver needs to know.
  - You will receive email confirmations as the request goes through the approval steps

