

# *ME463 SPRING '25 INFORMATION SESSION*



Mechanical Engineering

Senior Design  
ME463

# AGENDA

## 1. ME463 Overview

## 2. Project Types

A. Industry-sponsored

B. Research-sponsored

C. Student-Initiated

D. “Free Agents”

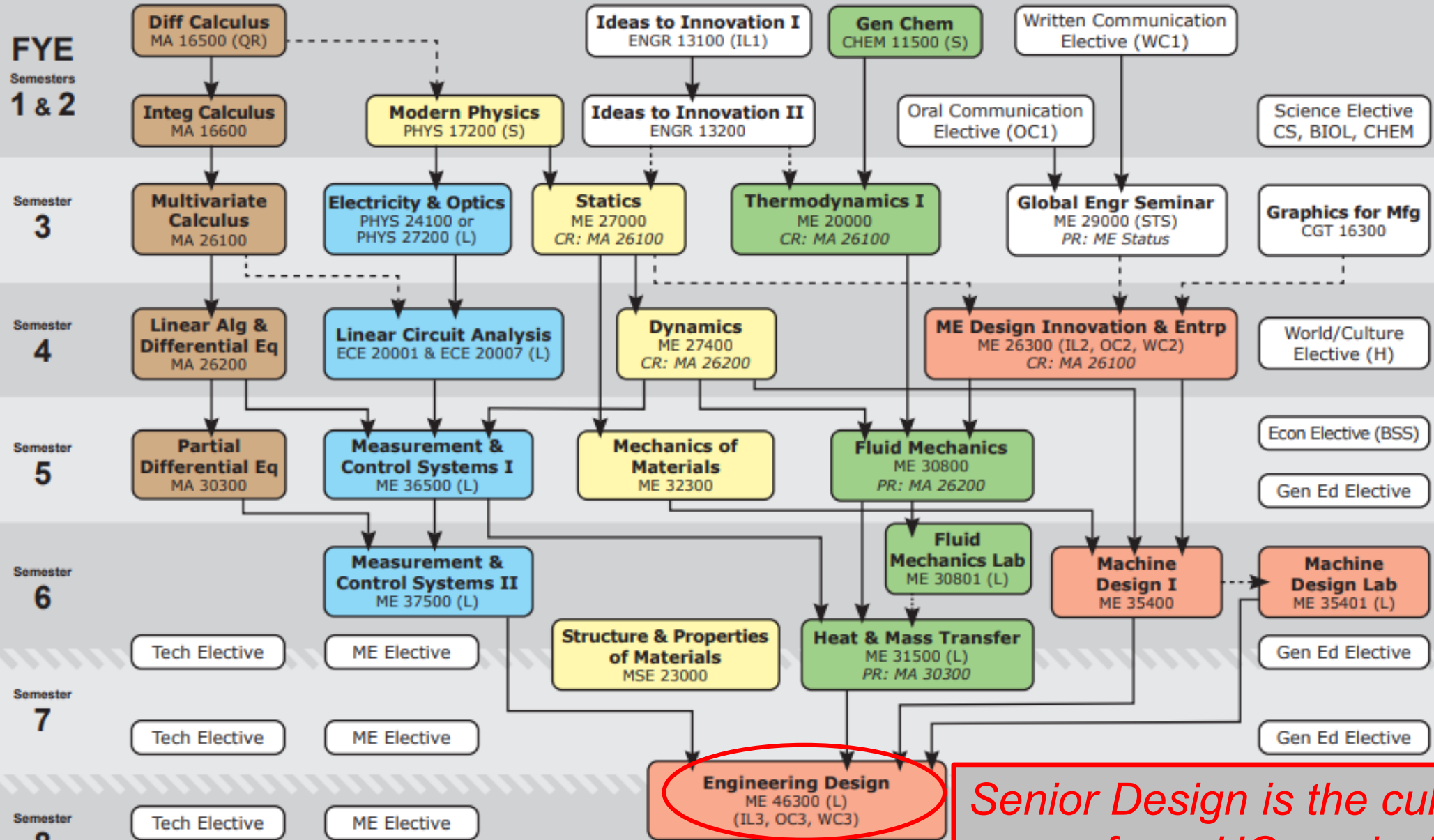
# 1. ME463 OVERVIEW



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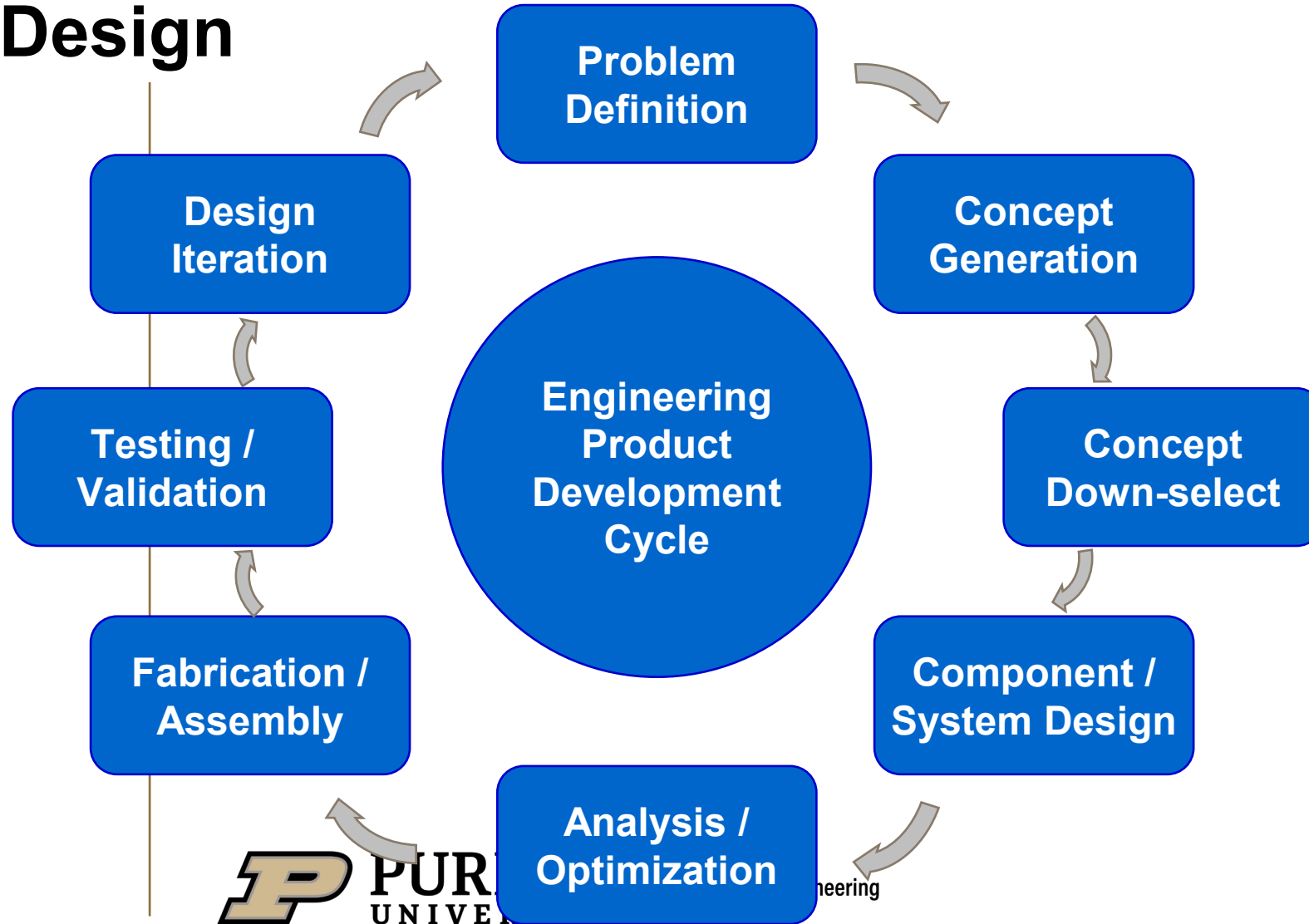
# UNDERGRADUATE PROGRAM MAP



*Senior Design is the culmination of you UG curriculum*

# WHAT YOU DO IN SENIOR DESIGN

## Design



Apply your engineering knowledge to create a unique solution to an open-ended design problem that is useful to the world.

→ Innovate, Design, Build, & Test

# WHAT YOU DO IN SENIOR DESIGN



Teamwork



Project Management

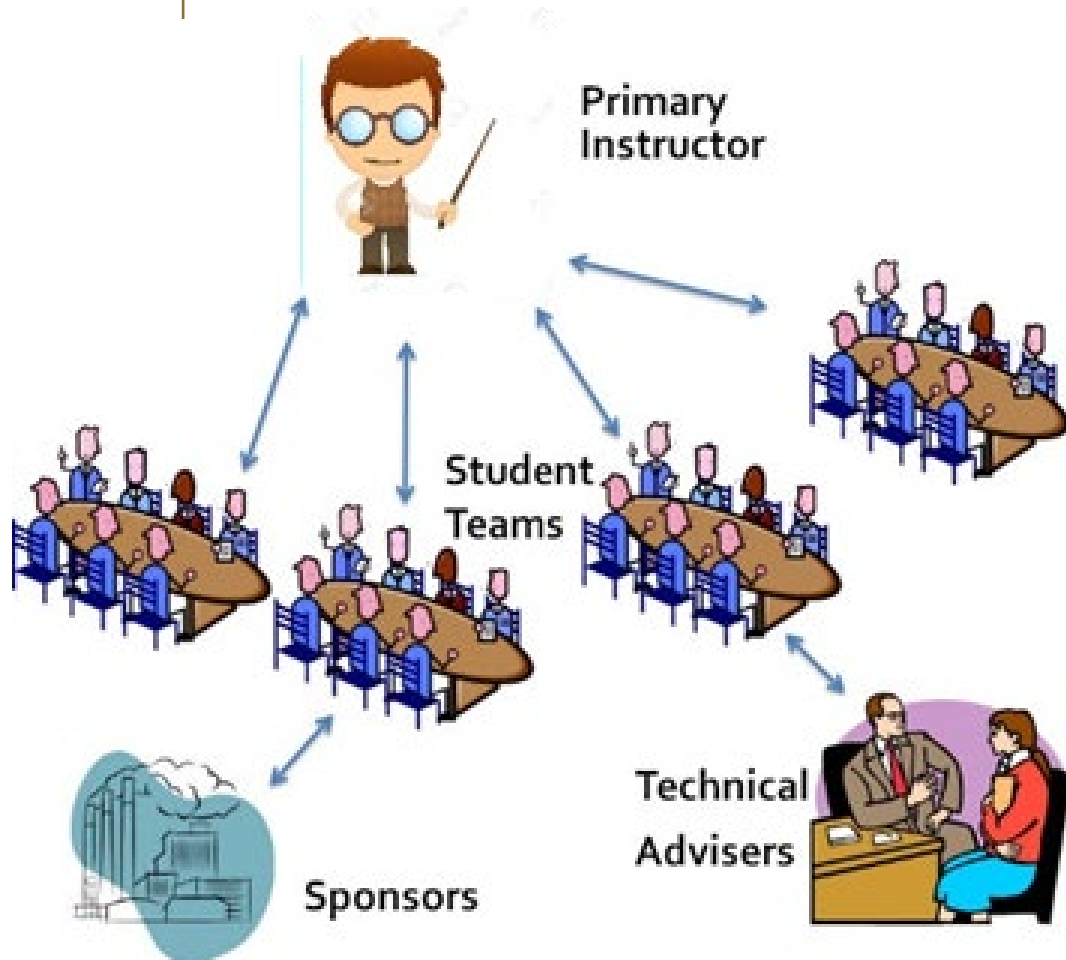


Business Acumen



Craftmanship

# COURSE STRUCTURE



- Instructor serves as “coach” to provide overall guidance
- When sponsored, industry provides technical liaison
- Students are encouraged to seek technical advice from mentors, professors, and shop managers
- Teams determine and self-manage the roles & responsibilities of each member

# 2. *PROJECT TYPES*



# WHAT MAKES A GOOD ME463 PROJECT?

- It requires application of your engineering education
- It is the right size – the full design cycle (Design, Build, Test) can be completed by a 5 person team in 16 weeks  
(expected work load is 18-20 hours/person/week)
- It can be built and tested safely with resources available to Senior Design
- The final product will add unique value to a business and/or society
  - ➔ More details on ME463 website:  
[https://engineering.purdue.edu/ME463/project\\_selection](https://engineering.purdue.edu/ME463/project_selection)

**Note:** Course policy prohibits projects involving weapons or significant safety risk.

See <https://engineering.purdue.edu/ME463/criteria> for more info

# PROJECT TYPES

Pre-arranged

Industry sponsored

Student initiated

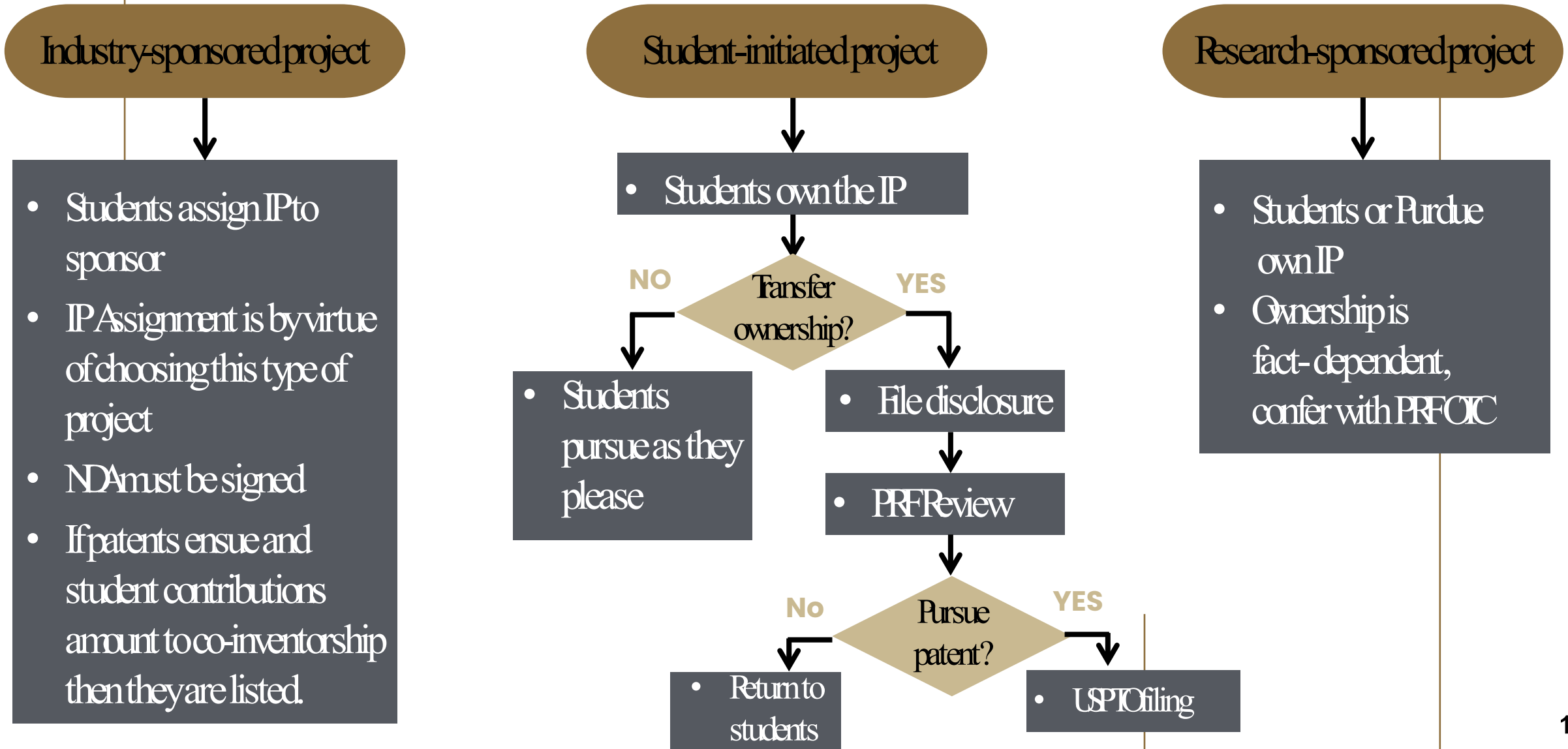
Research sponsored

“Free Agent”



**Pre-arranged projects:** Projects and project teams that are approved before course registration so that team members are scheduled into the same ME463 section.

# PROJECT TYPES AND IP (GENERAL RULE)



# *INDUSTRY-SPONSORED PROJECTS*



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# INDUSTRY-SPONSORED PROJECTS

If you'd like to nominate a company, complete the Qualtrics survey by **MIDNIGHT Sept. 11th**

[https://purdue.ca1.qualtrics.com/jfe/form/SV\\_eaCKsMB15mKP5NI](https://purdue.ca1.qualtrics.com/jfe/form/SV_eaCKsMB15mKP5NI)

When speaking with employer, provide the following from ME463 website

([https://engineering.purdue.edu/ME463/project\\_selection](https://engineering.purdue.edu/ME463/project_selection)):

- [Industry Sponsored Projects Brochure](#)
- [Industry Sponsorship Information](#)
- Next steps: Francisco Montalvo will email employer to inquire their interest. If interested, a meeting will be scheduled. If a project is pursued and approved, Francisco will notify students by November 4th.
- ME point of contact: Francisco Montalvo [fmontalv@purdue.edu](mailto:fmontalv@purdue.edu)



Questions? Contact Francisco Montalvo ([fmontalv@purdue.edu](mailto:fmontalv@purdue.edu))

# INDUSTRY-SPONSORED PROJECTS

## Industry Sponsored Projects

Industry-sponsored projects are sponsorships arranged with a student's intern/co-op employer, or are ME Corporate Partners, or are Companies who have brought a technical Design/Analyze/Build/Test challenge to the Senior Design Faculty.

Information on setting up an Industry Sponsored project can be found in the "Pre-Arranged Projects Information" files linked above.

You may also find the files below helpful when discussing a potential sponsorship with your employer.

- [Industry Sponsored Project Brochure](#)
- [Industry Sponsorship Information](#)

## Industry Sponsored Projects - Sp'25, each looking for a team of 5 students to take them on.

- Soft actuation synchronized augmenting motion generation by analyzing the heartbeat patterns: [View Now // Download](#)
- Trade Show Pinball Machine: [View Now // Download](#)

Contact Professor Montalvo [fmontalv@purdue.edu](mailto:fmontalv@purdue.edu) with questions or to set-up a sponsorship.

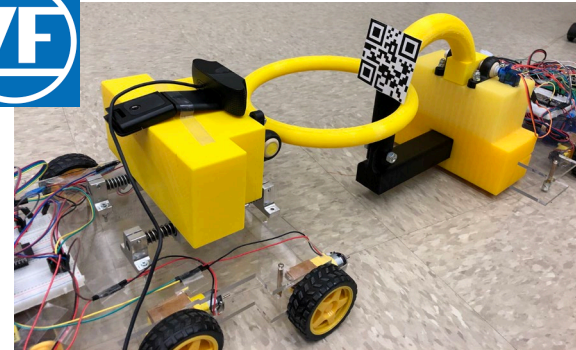
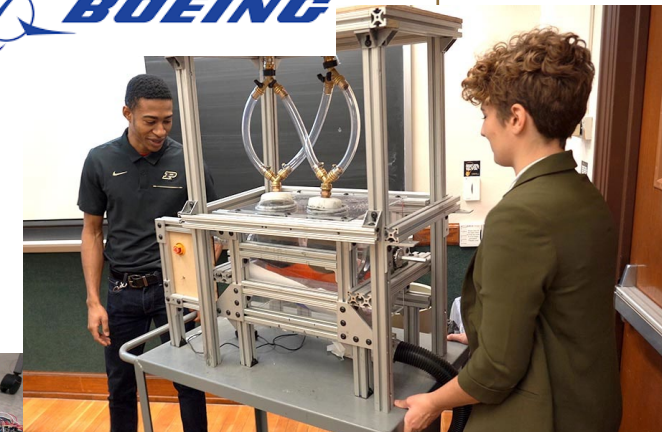
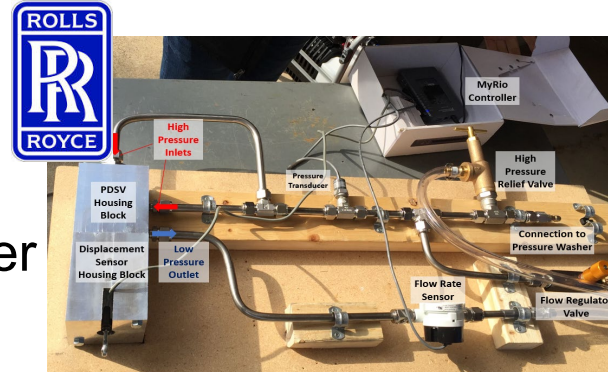
# INDUSTRY-SPONSORED PROJECTS

- **Student benefits**

- Additional mentoring
- Strengthens your relationship with an employer
- Industry experience

- **School benefits**

- Greater industry support and involvement
- Enhances the relevance of Senior Design
- Better/More well-defined projects



# *RESEARCH-SPONSORED PROJECTS*



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# RESEARCH-SPONSORED PROJECTS



- **Looking for students who**
  - Had/Is having an excellent research experience
  - Believes their research faculty would sponsor a project
  - Research group would provide a liaison for the project
  - Research group would help reinforce research practices
- **If you would like to nominate your research group for a Senior Design project, complete the Qualtrics survey by MIDNIGHT Sept. 11<sup>th</sup>**

[https://purdue.ca1.qualtrics.com/jfe/form/SV\\_emO6L5Pvg7ZZI2O](https://purdue.ca1.qualtrics.com/jfe/form/SV_emO6L5Pvg7ZZI2O)

**Questions? Contact Professors Jensen ([jensen23@purdue.edu](mailto:jensen23@purdue.edu)),  
Hirleman ([hirleman@purdue.edu](mailto:hirleman@purdue.edu)), and/or  
Bae ([ebae@purdue.edu](mailto:ebae@purdue.edu))**

# RESEARCH-SPONSORED PROJECTS

## Research Sponsored Projects

Faculty and students interested in proposing their own research project should look over the Pre-arranged project presentation linked above, scan the appropriate QR code and complete the Qualtrics survey.

### Research Sponsored Projects - Sp'25 , each looking for a team of 5 students to take them on.

- SICK Lidar Challenge: [View Now // Download](#)
- DoD Capstone Design Marketplace Projects: [View Now // Download](#)
- Marine Energy Collegiate Competition 2025: [View Now // Download](#)
- Hydropower Collegiate Competition: [View Now // Download // More Info](#)

Contact Professor Jensen [jensen23@purdue.edu](mailto:jensen23@purdue.edu) with questions or to set-up a sponsorship.

# *STUDENT-INITIATED PROJECTS*



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# STUDENT-INITIATED PRE-ARRANGED PROJECTS

- **Process for approval of Student Initiated Projects:**

- Fill out *Project Submission Form* from ME463 website ([https://engineering.purdue.edu/ME463/submit\\_project](https://engineering.purdue.edu/ME463/submit_project))
- By **midnight October 2<sup>nd</sup>**, use the link below or QR code to submit your project submission form.

[https://purdue.ca1.qualtrics.com/jfe/form/SV\\_8jBMAWHm9StCgcu](https://purdue.ca1.qualtrics.com/jfe/form/SV_8jBMAWHm9StCgcu)

- Senior Design committee will review submissions, ask follow-up questions, and respond with approval or denial by **Nov. 4<sup>th</sup>**
- **Projects must have 5 team members at submission.**



# STUDENT-INITIATED PRE-ARRANGED PROJECTS

- We encourage students to develop original and innovative ideas.
- Certain project ideas have been used repeatedly used through out multiple semesters.
  - Bicycle project – motorizing the unit, Indoor greenhouse/hydroponic system
  - Automatic/autonomous lawnmower, Automatic/autonomous snow blower
  - Smart-cane, automatic spice dispenser, and many more...
- These proposal ideas will be automatically rejected by the senior design reviewers unless students can persuade the reviewers that they have significant innovative components.
- A quick way to verify your idea is to conduct a Google search. If similar concepts already exist, it may be difficult to get your proposal accepted, unless it involves significant innovation.

# STUDENT-INITIATED PRE-ARRANGED PROJECTS

- Contact Professors Jensen (jensen23@purdue.edu), Hirleman (hirleman@purdue.edu), and/or Bae ([ebae@purdue.edu](mailto:ebae@purdue.edu)).
- For this semester, Prof. Bae will hold an extra office hour (POTR 316B) if your team wants to discuss whether your project idea is appropriate for the senior design class. Please note that this discussion is NOT the actual review process but rather an informal discussion about the validity of your candidate project ideas. Your team still needs to submit the formal project form.
  - Dates:
    - Monday (9/16, 9/23) 8-9 am, 2-3 pm
    - Wednesday (9/18, 9/25) 8-9 am, 10:30-11:30 am

# PRE-ARRANGED PROJECTS SCHEDULE

Date	Student-initiated projects activities	Industry-sponsored projects activities	Research-sponsored projects activities
9/9/24	<b>Information Session</b>		
9/11/24	N/A	<b>Company contacts DUE</b>	<b>Research contacts DUE</b>
9/18/24	N/A	Companies contacted	Research faculty contacted
10/2/24	<b>STUDENT Project submission forms DUE</b>	Initial discussion with company completed	Initial discussion with faculty completed
10/23/24	Project Problem Statements refined/finalized	<b>INDUSTRY Project submission DUE</b>	<b>RESEARCH Project submission DUE</b>
11/4/24	Finalize list of pre-arranged projects & teams to approve/deny		
<b>11/8/24</b>	<b>Deadline to send pre-arranged list of student teams to Karen Hurtubise</b>		
11/11/24	Registration instructions sent to pre-approved students		
11/11/24	<b>Pre-arranged overrides deadline</b>		
11/26/24	<b>Batch Registration</b>		

# ***“FREE AGENTS”***



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# **“FREE AGENTS”**

- **What if I am not part of a pre-arranged project?**
  - **You simply register for ME463 as you would any other course.**
  - **Once the semester begins, your instructor will ask students to submit project ideas and your instructor will use their own methodology for determining projects and teams.**

# CONTACT INFORMATION

**ME 463 Course Web Site:**

<https://engineering.purdue.edu/ME463/>

**Student-initiated, Research-sponsored, General questions:**

Professor Jensen ([jensen23@purdue.edu](mailto:jensen23@purdue.edu))

Professor Hirleman ([dhirleman@purdue.edu](mailto:dhirleman@purdue.edu))

Professor Bae ([ebae@purdue.edu](mailto:ebae@purdue.edu))

**Industry-sponsored:**

Professor Montalvo ([fmontalv@purdue.edu](mailto:fmontalv@purdue.edu))

**This session presentation will be posted on the ME463 website:**

[https://engineering.purdue.edu/ME463/project\\_selection](https://engineering.purdue.edu/ME463/project_selection)

# *QUESTIONS?*



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