Vertically Integrated Projects (VIP)
ECE 27900, 37900, 47900
ENGR 17911, 17920, 29600, 39600, 49600

Introduction Session
Fall 2019

Prof. Carla Zoltowski
School of Electrical and Computer Engineering
Purdue University
August 21, 2019
VIP Leadership Team

Carla Zoltowski, Director

Jan Allebach

Yung-Hsiang Lu
TAs

● Each team will be assigned an administrative VIP TA:

Baekdu Choi - 1/2 time
Ryan Dailey
Yin Wang

● The Data Mine – VIP Learning Community TAs will help bridge Data Mine LC and VIP

Xiaoyu Xiang
Kent Gauen
iClicker Question

How many semesters have you participated in VIP?

A: this is my first one!
B: 2
C: 3
D: 4
E: 4+ and I’m never stopping
What are the goals of VIP?

▪ Provide undergraduate students an opportunity to work one-on-one with a faculty member and/or graduate student mentor
▪ Give undergraduate students exposure to faculty member’s research area
▪ Provide undergraduate students an opportunity to experience team-work
  ▪ Collaboration  ▪ Shared responsibility
  ▪ Mutual respect ▪ Teaching each other
  ▪ Communication ▪ Leadership
▪ Allow undergraduate students to stretch their imagination and express their creativity
VIP Team Course Structure

First-Year
ENGR 17911 or 17920

Junior
ECE 37900
ENGR 39600

Senior Design
- different section ECE 47900

Sophomore
ECE 27900
ENGR 29600

Senior
ECE 47900
ENGR 49600

Senior Design 2nd semester – in future will have unique numbers for 1st and 2nd semester

VIP Team
Different sections for each team/Crosslisted in myPurdue and Blackboard
Typical elements of the VIP experience

• Weekly review meetings with the faculty advisor and/or graduate student mentor
• Weekly homework assignments to learn background for project during early part of semester
• Reading relevant research articles
• Independent learning
• Professional Development Sessions
• Participation in the Undergraduate Research Conference
• Final project presentations and review
Professional Development

• Technical Writing
• Poster Presentations
• Working on teams (managing conflict)
• Entrepreneurship
• Intellectual Property/ Patents
• Ethics
• LaTeX, Git, Linux shell

• And Advisor Approved!
Purdue Fall Undergraduate Research Expo

November 18, 2019 | Stewart Center & PMU Ballrooms | 8:30am-4pm

• Submission Deadline: October 31, 2019 at 11:59pm
• Submission Link: Coming in August 2019
• Expect all VIP students to:
  • Submit abstract
  • If accepted: Present poster (if accepted) for one hour and attend for 30 minutes
  • If not accepted: Attend for 1.5 hours
• VIP students will receive 1 PD credit for submitting abstract and 1 PD credit for presenting/attending poster session/2 for oral presentation
• Have PD sessions geared to prepare abstract and to prepare and present poster
Learning Objectives == new ABET outcomes

Students in VIP will make progress on each of the learning outcomes listed below:

i. an ability to apply engineering design to create a product\(^\text{1}\) that meets the specified needs of this engineering design experience with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

ii. an ability to develop and conduct experimentation, analyze and interpret data, and use engineering judgment to draw conclusions related to the development of the product of this engineering design experience.

iii. an ability to identify, formulate, and solve complex engineering problems arising from this engineering design experience by applying principles of engineering, science, and mathematics.

\(^\text{1}\)“Product” refers to any device, system, process, software, etc. resulting from this VIP/design experience.
Learning Objectives, continued

iv. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives associated with this design experience.

v. an ability to communicate effectively with a range of audiences appropriate to this design experience in both a written report and oral presentation.

vi. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies to complete the engineering design experience associated with this course.

vii. an ability to recognize ethical and professional responsibilities associated with this engineering design experience and make informed judgments which must consider the impact of the product of this engineering design experience in global, economic, environmental, and societal contexts.
## Grading Criteria

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Overall, the student’s accomplishments and effort, documentation, and teamwork and interactions are excellent. All of the seven (7) requirements have been satisfied.</td>
</tr>
<tr>
<td>B</td>
<td>Overall, the student’s accomplishments and effort, documentation, and teamwork and interactions are good. Six (6) of the seven (7) requirements have been satisfied.</td>
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</tr>
<tr>
<td>D</td>
<td>Overall, the student’s accomplishments and effort, documentation, and teamwork and interactions are marginal. More than two of the seven (7) requirements are missing.</td>
</tr>
<tr>
<td>F</td>
<td>Overall, the student’s accomplishments and effort, documentation, and teamwork and interactions are unacceptable. More than three of the seven (7) requirements are missing.</td>
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Grading Process

At start of semester
- Set expectations

Mid-semester
- Student: self and peer evaluation
- Advisor: assess and provide formative feedback

Final
- Student: self and peer evaluation
- Advisor: assess and determine final grade
Mid-semester Evaluation

1. List your individual accomplishments to date
   Individual Accomplishments        Location of Evidence

2. List your individual accomplishments and achievements that you will complete by the end of the semester
   Accomplishment to be completed When will it be completed?

3. Describe anything that you are struggling with related to the project.

4. Describe at least one of your strengths that has contributed to the team.

5. Describe at least one of your weaknesses that you could try to overcome.

6. Describe your impact on the project overall.

7. Any additional comments you would like to add:
Evaluation Criteria

Accomplishments and effort:
- Quantity of project accomplishments
- Quality of project accomplishments
- Completion of team assignments
- Initiative
- Learning needed for the project
- Overall

Documentation:
- Individual documentation
- Contributions to team documentation
- Contributions to team poster
- Use of appropriate tools (e.g., Git)
- Overall

Teamwork and Interactions:
- Team/sub-team meeting attendance
- On-time attendance
- Team/sub-team meeting participation
- Contributes useful ideas
- Recognizes others’ ideas
- Focuses effort on achieving goals
- Involves others in efforts
- Assists others with their efforts
- Manages time and tasks well
- Leadership skills
- Written communication skills
- Oral communication skills
- PD participation/attendance (__/10)
- Overall
Seven (7) Requirements

1. Maintain a design notebook (individual documentation), either paper or electronic as required by your advisor

2. Contribute as appropriate to project documentation

3. Complete mid-semester individual performance evaluation by Monday, September 30\(^{th}\) at 5 pm in Blackboard.

4. Complete final individual performance evaluation by Friday, December 6\(^{th}\) at 5 pm in Blackboard.

Continued
Seven (7) Requirements, continued

5. Complete mid-semester (due Monday, September 30\textsuperscript{th} at 5 pm) and final peer evaluation of team members (due Friday, December 6\textsuperscript{th} at 5 pm)

6. Complete final Purdue course evaluation and submit screen shot of completion to Blackboard (due December 6\textsuperscript{th} at 5 pm).

7. Participate in at least ten (10) Professional Development (PD) opportunities, including the three (3) required activities (1. intro lecture; 2. paper or abstract submission; 3. Oral or poster presentation), and ensure attendance is recorded in Blackboard or PD form is submitted via email by Friday, December 6\textsuperscript{th} at 5 pm.*

*Except ENGR 17911 students, who only have to participate in the abstract and poster
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Senior Design Evaluation

- In addition to the above requirements and expectations, senior design students must complete the following documents (templates are posted on the VIP website):

- **VIP Senior Design Project Proposal**: Must be completed by individually by each senior design student during the first semester of Senior Design to ensure he/she has an appropriate project and role. This is to be submitted at the mid-semester and final evaluations during the first senior design semester instead of the Individual Performance Evaluation rubrics.

- **VIP Senior Design Project Description**: Must be completed during the second semester of Senior Design by each project team. This is to be submitted at the mid-semester and final evaluations during the second senior design semester instead of the Individual Performance Evaluation rubrics.
Senior Design Evaluation, cont.

• **VIP Senior Design Reflection, Outcomes Matrix, and Rubric document**: An index of how the course outcomes have been met over the two semesters and where evidence for this mastery can be found (notebook, project documentation, etc.). This is to be submitted at the mid-semester and final evaluations both senior design semesters instead of the Individual Performance Evaluation rubrics.

Both the Senior Design Project Proposal/Description and the Senior Design Reflection, Outcomes Matrix and Rubric document will be used by the advisor(s) and VIP admin to approve the satisfaction of the course outcomes and in determining the course grade.
# Senior Design Grading

<table>
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<th>Indicators</th>
<th>Overall Rating for Outcome</th>
<th>Weight</th>
<th>Rating x Weight</th>
</tr>
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<td>(rate each indicator on a scale from 1 to 4, where 4 is “Excellent”, 3 is “Good”, 2 is “Adequate/Acceptable”, and 1 is “Inadequate/Unacceptable”)</td>
<td></td>
<td></td>
<td></td>
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<td>i. An ability to apply engineering design to create a product that meets the specified needs of this engineering design experience with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.</td>
<td></td>
<td>30%</td>
<td></td>
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<td>ii. An ability to develop and conduct experimentation, analyze and interpret data, and use engineering judgment to draw conclusions related to the development of the product of this engineering design experience.</td>
<td></td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>iii. An ability to identify, formulate, and solve complex engineering problems arising from this engineering design experience by applying principles of engineering, science, and mathematics.</td>
<td></td>
<td>15%</td>
<td></td>
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<td>iv. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives associated with this design experience.</td>
<td></td>
<td>10%</td>
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<td>v. An ability to communicate effectively with a range of audiences appropriate to this design experience in both a written report and oral presentation.</td>
<td></td>
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<td>vi. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies to complete the engineering design experience associated with this course.</td>
<td></td>
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<td>vii. An ability to recognize ethical and professional responsibilities associated with this engineering design experience and make informed judgments which must consider the impact of the product of this engineering design experience in global, economic, environmental, and societal contexts.</td>
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<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
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General Expectations

• Lectures:
  • Participate in activities/discussion
  • Not on laptop/phone unless the activity requires it
  • Bring laptop
  • Bring your iClicker (we have paper forms today, but will not in the future
• Team:
  • Your team advisor(s) will provide an “Expectations” document that will detail their expectations for the team
• Syllabus
Other Information

- Card access
  - Initially configured of those registered on Sunday, 8/18 at 7:30 pm and updated first 4 Fridays of the semester

- You have two **Blackboard** sections
  - Lecture: general course announcements and resources (except for ENGR 17911 students)
  - Lab: your VIP team specific info/assignments and PD attendance
    - Any errors need to be reported to the course staff within 2 weeks of the session.
    - Forms for alternate PD opportunities can be submitted via Blackboard within 72 hours of the qualifying event
VIP Meeting Space (EE 013)

*In Basement of EE Building around corner from HKN Lounge
VIP Hardware Laboratory (EE 238)

- VIP Hardware Lab provides space and facilities for hardware development
Rules for Use of the VIP Suite

• It is **ONLY** for use by VIP students, and **ONLY** for VIP-related activities.

• It is **NOT** to be used as the personal study space for VIP students.

• **No** food or drink is allowed. (Water in closed container)

• **PLEASE** keep the room neat at all times. Keep the table surfaces **CLEAN**. Pick up any litter that you drop.
Planning your PD...once they are all posted

- Review the PD session opportunities, and identify a plan to meet the 10 PD requirement.
- What sessions help you be successful on your VIP team/project?
- Does your team have special opportunities (e.g., company site visit)?
- What sessions help you prepare for the Undergraduate Research Conference?
- What weeks do you have exams and/or conflicts and can’t participate? Or a topic you are not interested in---then do not come that week!
How did you learn about VIP?

A. Class presentation or email
B. Learning Community
C. Friends
D. Team Advisor Recruited Me
E. None of these
Questions?