Overcoming Resistance: Integrating Vertically Integrated Projects (VIP) into University Curricula

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Industrial & Mechanical Engineering Department
Outline

A model of curriculum novelty: Introduction & Challenges

Proposed Integration of the VIP+ model into the LAU curriculum - Obstacles faced

VIP+ current program at LAU

Conclusion
1) Introduction

2) Liberal Education Program

3) VIP+ Current Program

4) Conclusion
1) Introduction

- The VIP+ model is a transformative approach to enhancing higher education by engaging students in long-term, industry-scale, and multidisciplinary projects.

- The proposed program encapsulates an initiative to instill entrepreneurial confidence in students and empower them to launch successful startups.
1) Introduction

- **VIP+ Academic Module (Fall 2021- Spring 2023)**
  - VIP+, is a VIP program combined with Create-X workshops that run in parallel, offered across ranks and in various credit modes

- **VIP 201/202 Vertically Integrated Projects (1-2 cr.)**
  - Pre-requisite: Sophomore standing

- **VIP 301/302/303 Vertically Integrated Projects (1-3 cr.)**
  - Pre-requisite: Junior standing

- **VIP 401/402/403 Vertically Integrated Projects (1-3 cr.)**
  - Pre-requisite: Senior standing

- **Start-up Lab I (required for all)**
- **Start-up Lab II (pre-requisite: Lab I)**

<table>
<thead>
<tr>
<th>Summer 2022</th>
<th>Fall 2022</th>
<th>Spring 2023</th>
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<tbody>
<tr>
<td>Internship with industry</td>
<td>VIP 302/402 Vertically Integrated Projects (2cr)</td>
<td>VIP 301/401 Vertically Integrated Projects (1cr)</td>
</tr>
<tr>
<td>Start-up Lab I</td>
<td>Start-up Lab II</td>
<td>Start-up Launch</td>
</tr>
<tr>
<td>Start-up Lab I</td>
<td>Start-up Lab II</td>
<td>Start-up Lab I</td>
</tr>
</tbody>
</table>
1) Introduction – Resistance & Challenges

- Sample quotes from departments’ faculty advisors & chairperson

Finance Department:
“One of the challenges we face in integrating VIP courses is the perception that they may divert students' focus from core finance concepts. Another concern is that they may increase the credit count or lack equivalency with traditional courses, …. Additionally, accurately estimating students' workload for VIP projects is crucial to ensure they can balance their responsibilities effectively. However, we believe that VIP projects can enhance students' practical skills and prepare them for real-world finance careers.”

Accounting Department:
“Some faculty members express concern that VIP courses might not cover all essential accounting topics. … concerns that VIP projects are integrated seamlessly into the curriculum without significantly increasing the credit load, complementing traditional accounting courses and providing students with hands-on experience.”
1) Introduction – Resistance & Challenges

- Sample quotes from departments’ faculty advisors & chairperson

**Economics Department:**

“Integrating VIP courses into our economics curriculum has met resistance due to concerns about the **time commitment required** and potential disruptions to existing courses.... resistance due to concerns about the **credit count, equivalency, and students' workload estimation**. On the other hand, we would like VIP projects to offer opportunities for students to apply economic principles to real-world problems.”

**Hospitality Management Department:**

“In the hospitality department, there is skepticism about whether VIP courses align **with industry demands and accreditation standards and still align with degree requirements**... we need to collaborate with industry partners to design VIP projects that address current trends and prepare students for successful careers in hospitality management.”
1) Introduction – Resistance & Challenges

- Sample quotes from departments’ faculty advisors & chairperson

Social Sciences Department:

“The challenge we face in integrating VIP courses into the social sciences curriculum is ensuring interdisciplinary collaboration while maintaining the integrity of disciplinary knowledge… can these projects encourage students to apply social science theories and methods to complex societal issues!!”.

Humanities Department:

“Some faculty members in the humanities department are hesitant to embrace VIP courses, fearing they may overshadow the importance of critical thinking and theoretical analysis. … questions on managing the total credit for graduation … concerned that VIP courses may increase the total course load … ”
1) Introduction – Resistance & Challenges

- Sample quotes from departments’ faculty advisors & chairperson

**Marketing Department:**

“Resistance to integrating VIP courses in the marketing department stems from concerns about whether projects will align with rapidly changing industry trends. … concerns about the overall workload, equivalency, and students' workload estimation… we look forward to initiate projects that reflect real-world marketing challenges and provide students with valuable experiential learning opportunities.”

**Computer Science Department:**

“The main challenge in integrating VIP courses into the computer science curriculum is ensuring that projects remain relevant in the fast-paced field of technology… we are addressing this by continuously updating project topics and collaborating with industry partners to provide students with cutting-edge experiences.”
1) Introduction – Resistance & Challenges

- Sample quotes from departments’ faculty advisors & chairperson

**Life Sciences Department (Chemistry):**

“In the chemistry department, there is resistance to integrating VIP courses due to concerns about the feasibility of long-term projects and the availability of resources... VIP projects should also enhance student understanding of complex chemical concepts and techniques.”

**Education Department:**

“One challenge we face in integrating VIP courses into the education curriculum is ensuring that projects align with state standards and certification requirements.... ensuring that they do not add to the credit count. ... there is a challenge to designing projects that allow students to apply pedagogical theories in real-world classroom settings and address pressing educational issues.”
1) Introduction – Resistance & Challenges

- VIP+ program initiation and hosting
- Students interest vs. Schools Advisors interest
- Faculty & Advisors Awareness
- Credits count and institutional resistance
- Faculty skepticism
- logistical challenges
Outline

1) Introduction

2) Liberal Education Program

3) VIP+ Current Program

4) Conclusion
2) Liberal Education Program

- LAU proposition to integrate the VIP+ model integrated within the Liberal Education program.

- The VIP+ model aims to prepare Tomorrow’s leaders to the job market by increasing students' employability, entrepreneurship skills, and innovation.
2) Liberal Education Program

- What is Liberal Education?

An approach to whole-person development that teaches students how to:

- Think freely, creatively and critically
- Enhance their communication skills
- Become a more resourceful, innovative and confident person
2) Liberal Education Program

Innovative multidisciplinary liberal education structure

Courses and high impact activities focusing on local and global problems
2) Liberal Education Program

- What is unique about Liberal Education at LAU?
- A program emphasizing the UN’s 17 Sustainable Development Goals that capture the spirit of the major problems that our world is facing
2) Liberal Education Program

- What is unique about Liberal Education at LAU?
- The courses are designed along the pillars of sustainability
2) Liberal Education Program

- Learning and Teaching Activities

Source: An introduction to the six learning types from the Conversational Framework, Laurillard; www.study.com
2) Liberal Education Program

- VIP+: An integral component of the LAU Liberal Education
2) Liberal Education Program - Resistance

- VIP+ courses are professional type of courses

“Undergraduate degrees shall be distinguished, as follows, by the minimum amount of liberal arts content required for each degree. The required liberal arts core shall not be directed toward specific occupational or professional objectives.”

<table>
<thead>
<tr>
<th>Degree and minimum required total</th>
<th>Minimum Proportion of</th>
<th>Minimum Number of</th>
</tr>
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<tbody>
<tr>
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</table>
Outline

1) Introduction

2) Liberal Education Program

3) VIP+ Current Program

4) Conclusion
3) VIP+ Current Program

- Integration
  - [https://soe.lau.edu.lb/degree-programs/vip](https://soe.lau.edu.lb/degree-programs/vip)
  - Sophomore and Junior Courses (VIP 201-202-301-302-303) are integrated as Free Elective, or Signature
  - Senior Courses (VIP 401-402-403) transferred as Free Elective, Technical Elective or Engineering Elective
### 3) VIP+ Current Program

<table>
<thead>
<tr>
<th>School</th>
<th>Program</th>
<th>Current course</th>
<th>Substituted by/VIP credits</th>
<th>Vertically Integrated Project</th>
<th>Vertically Integrated Project</th>
</tr>
</thead>
</table>
| Adnan Kassis School of Business | Economics          | Free Elective(s): 12 credits                    | Vertically Integrated Project                   | * Petroleum Engineering  *  
|                                |                    |                                                 |                                                  | * Civil Engineering  
|                                |                    |                                                 |                                                  | * Mechanical Engineering  
|                                |                    |                                                 |                                                  | * Industrial Engineering  
|                                | Accounting         | Free Elective(s): 3 credits or Business Elective|                                                  | * Computer Engineering  
|                                | Banking and Finance| Free Elective(s): 7 credits or Business Elective|                                                  | * Electrical Engineering  
|                                | Hospitality & Tourism Management | Free Elective(s): 7 credits                      |                                                  | * Mechatronics Engineering  
|                                | Marketing          | Free Elective(s): 7 credits or Business Elective|                                                  |                                                                  |

### School of Engineering

- **Vertically Integrated Project**
  - VIP 201 [1–0, 1 cr.]
  - VIP 202 [2–0, 2 cr.]
  - VIP 301 [1–0, 1 cr.]
  - VIP 302 [2–0, 2 cr.]
  - VIP 303 [3–0, 3 cr.]

- **SOE signature course** [3–0, 3 cr.]

### Mechanical Engineering

- **Technical Elective** [3–0, 3 cr.]
- **Engineering Elective** [3–0, 3 cr.]
- **Undergraduate Research Project** [3–0, 3 cr.]; or
- **Technical Elective** [3–0, 3 cr.]

### School of Engineering

- **Substituted by VIP credits**
  - VIP 201 [1–0, 1 cr.]
  - VIP 202 [2–0, 2 cr.]
  - VIP 301 [1–0, 1 cr.]
  - VIP 302 [2–0, 2 cr.]
  - VIP 303 [3–0, 3 cr.]

- **Vertically Integrated Project**
  - VIP 201 [1–0, 1 cr.]
  - VIP 202 [2–0, 2 cr.]
  - VIP 302 [3–0, 3 cr.]
  - VIP 303 [3–0, 3 cr.]
## 3) VIP+ Current Program

### School of Arts and Sciences

<table>
<thead>
<tr>
<th>Department</th>
<th>Course(s)</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arabic Language and Literature</td>
<td>Free Elective(s) 10 credits</td>
<td>VIP 201 [1–0, 1 cr.]:</td>
</tr>
<tr>
<td>History</td>
<td>Free Elective(s) 16 credits</td>
<td>VIP 202 [2–0, 2 cr.]:</td>
</tr>
<tr>
<td>Philosophy</td>
<td>Free Elective(s) 22 credits</td>
<td>VIP 301 [1–0, 1 cr.]:</td>
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<tr>
<td>Translation</td>
<td>Check with your department</td>
<td>VIP 302 [2–0, 2 cr.]:</td>
</tr>
<tr>
<td>Applied Physics</td>
<td>Check with your department</td>
<td>VIP 303 [3–0, 3 cr.]:</td>
</tr>
<tr>
<td>Biology</td>
<td>Check with your department</td>
<td>VIP 401 [1–0, 1 cr.]:</td>
</tr>
</tbody>
</table>

### School of Arts and Sciences

<table>
<thead>
<tr>
<th>Department</th>
<th>Course(s)</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>Free Elective(s) 7 credits</td>
<td>VIP 201 [1–0, 1 cr.]:</td>
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<tr>
<td>Multimedia Journalism</td>
<td>Free Elective(s) 7 credits</td>
<td>VIP 202 [2–0, 2 cr.]:</td>
</tr>
<tr>
<td>Performing Arts</td>
<td>Free Elective(s) 7 credits</td>
<td>VIP 301 [1–0, 1 cr.]:</td>
</tr>
<tr>
<td>Television &amp; Film</td>
<td>Free Elective(s) 4 credits</td>
<td>VIP 302 [2–0, 2 cr.]:</td>
</tr>
<tr>
<td>Bioinformatics</td>
<td>Check with your department</td>
<td>VIP 303 [3–0, 3 cr.]:</td>
</tr>
<tr>
<td>Computer Science</td>
<td>Free Elective(s) 3 credits</td>
<td>VIP 401 [1–0, 1 cr.]:</td>
</tr>
<tr>
<td>Mathematics</td>
<td>Free Elective(s) 7 credits</td>
<td>VIP 201 [1–0, 1 cr.]:</td>
</tr>
<tr>
<td>English</td>
<td>Free Elective(s) 10 credits</td>
<td>VIP 202 [2–0, 2 cr.]:</td>
</tr>
</tbody>
</table>

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## 3) VIP+ Current Program

<table>
<thead>
<tr>
<th>School of Arts and Sciences</th>
<th>Chemistry</th>
<th>Free Elective(s) 3 credits</th>
<th>SIP:</th>
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<tbody>
<tr>
<td></td>
<td>Nutrition</td>
<td>Check with your department</td>
<td>VIP 402 [2–0, 2 cr.]:</td>
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<tr>
<td></td>
<td>Nutrition &amp; Dietetics Coordinated Program</td>
<td>Check with your department</td>
<td>VIP 403 [3–0, 3 cr.]:</td>
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<tr>
<td></td>
<td>Political Science</td>
<td>Free Elective(s) 10 credits</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Political Science/International affairs</td>
<td>Free Elective(s) 7 credits</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Psychology</td>
<td>Free Elective(s) 18 credits</td>
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</tr>
<tr>
<td></td>
<td>Social Work &amp; community Development</td>
<td>Free Elective(s) 4 credits</td>
<td></td>
</tr>
</tbody>
</table>
3) VIP+ Current Program

- **Milestone**

  - **Call for New Projects**
    - March and November

  - **Syllabus**
    - (Faculty)

  - **Workshop/Seminar**
    - (Faculty)

  - **Presentation + Video**
    - (Students 10-15/group)

  - **Rubrics**
    - (Notebook + Presentation + Contribution)
    - Submit/student scanned notebook, presentation, video, Gantt Chart

  - **Selection Process**
    - 1 week after call deadline

  - **Dissemination Session**
    - Registration period - Video

  - **Recruitment Phase**

  - **Presentation + Timeline**
    - Recorded Presentation/video 2'
    - Update/follow-up – 3 times
    - (Faculty)

  - **Best Project**
    - (Faculty)
    - VIP Consortium

- **Semester**
  - Start
  - End

- **Start**
  - Recruitment Phase

- **End**
  - Best Project
  - VIP Consortium
# 3) VIP+ Current Program

## Rubric

### VIP+ Grading Rubric

https://soe.lau.edu.lb/degree-programs/vip/

<table>
<thead>
<tr>
<th>Student Name</th>
<th>VIP Team</th>
<th>Semester</th>
<th>Assessment done by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xxx Xxx</td>
<td>Xxxxxxx</td>
<td>Spring 2024</td>
<td>Xxx Xxx</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Documentation/Notebook/Project Management skills (40%)</th>
<th>Poor (50/100)</th>
<th>Intermediate (75/100)</th>
<th>Exemplary (90/100)</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very little explanation of work, progress or interactions/meeting notes for each week. To-do list not consistently created each week.</td>
<td>Adequate explanation of work, progress and interactions/meeting notes for each week. Someone knowledgeable/skilled in the field would be able to: - Understand decisions student made - Repeat what was done</td>
<td>Same as previous AND Includes reflections on: - What did/didn’t work - Next steps</td>
<td>50</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Communication/Presentation (20%)</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Member weakens team unity by not participating in team communications and obstructing the work of others. Presentation not well organized and incomplete details.</td>
<td>Member works with others, shares ideas, and positively contributes to team progress. Presentation well organized but some incomplete details.</td>
<td>Member promotes collaboration with other team members, fills gap in team performance, and communicates to maintain the team’s progress. Presentation very well organized and complete details.</td>
<td>50</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contribution/Deliverables (40%)</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Very few contributions. OR The work was too simple. OR The work did not advance the project or help the student gain skills that would advance the project.</td>
<td>Adequate contributions. AND The work advanced the project and/or helped the student gain skills needed to advance the project.</td>
<td>Same as previous AND Outstanding contributions</td>
<td>75</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Overall</th>
<th>D</th>
<th></th>
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</thead>
</table>

Assessment done by
Xxx Xxx
VIP+ Grading Rubric
D
### Gantt-Chart

#### VIP+ Current Program

**Lebanese American University - SOE**  
[https://soe.lau.edu.lb/degree-programs/vip/](https://soe.lau.edu.lb/degree-programs/vip/)

#### Phase 1 Title

<table>
<thead>
<tr>
<th>TASK</th>
<th>ASSIGNED TO</th>
<th>PROGRESS</th>
<th>START</th>
<th>END</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task 1</td>
<td>m</td>
<td>25%</td>
<td>1/1/24</td>
<td>1/4/24</td>
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<tr>
<td>Task 2</td>
<td>m</td>
<td>75%</td>
<td>1/4/24</td>
<td>1/6/24</td>
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<tr>
<td>Task 3</td>
<td>m</td>
<td>70%</td>
<td>1/6/24</td>
<td>1/10/24</td>
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<tr>
<td>Task 4</td>
<td>m</td>
<td>1/10/24</td>
<td>1/15/24</td>
<td></td>
</tr>
<tr>
<td>Task 5</td>
<td>m</td>
<td>1/5/24</td>
<td>5/30/24</td>
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</table>

#### Phase 2 Title

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</thead>
<tbody>
<tr>
<td>Task 1</td>
<td>m</td>
<td>25%</td>
<td>1/6/24</td>
<td>1/10/24</td>
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<tr>
<td>Task 2</td>
<td>m</td>
<td>50%</td>
<td>1/8/24</td>
<td>1/13/24</td>
</tr>
<tr>
<td>Task 3</td>
<td>m</td>
<td>20%</td>
<td>1/13/24</td>
<td>1/16/24</td>
</tr>
<tr>
<td>Task 4</td>
<td>m</td>
<td>1/13/24</td>
<td>1/15/24</td>
<td></td>
</tr>
<tr>
<td>Task 5</td>
<td>m</td>
<td>1/13/24</td>
<td>1/16/24</td>
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#### Phase 3 Title

<table>
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<th>PROGRESS</th>
<th>START</th>
<th>END</th>
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</thead>
<tbody>
<tr>
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<td>1/16/24</td>
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<td>Task 3</td>
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<td>2/1/24</td>
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<td>2/2/24</td>
<td>2/6/24</td>
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<td>Task 5</td>
<td>m</td>
<td>2/2/24</td>
<td>2/15/24</td>
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#### Phase 4 Title

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<th>START</th>
<th>END</th>
</tr>
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<tbody>
<tr>
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<td>1/21/24</td>
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<td>1/25/24</td>
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<tr>
<td>Task 3</td>
<td>m</td>
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<td>1/29/24</td>
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<td>Task 4</td>
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<td>Task 5</td>
<td>m</td>
<td>1/25/24</td>
<td>5/5/24</td>
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</tbody>
</table>

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3) VIP+ Current Program

- https://soe.lau.edu.lb/degree-programs/vip/projects/

VIP+ Projects

- Smart Irrigation System
- Water Desalination at Very Low Cost
- Developing an AutoCAD tool for automatic generation of excavation drawings based on user-defined inputs
- Exploring the Viability of Sustainable Concrete Mix Design using Recycled Materials: A Study on the Effects of Mixed Waste and Recycled Materials on Concrete Properties and Performance of Structural Members
- Cost-effective soil improvement and seepage control techniques in congested urban areas
- Towards Smart and Green Municipalities
- Reducing greenhouse gases emissions by Carbon capture and storage
- Towards the end of period poverty
- A Lean Approach to Designing Sustainable Value Chains in Food, Pharmaceutical, and Chemical Industries
- Early diagnosis of land damage
- Business model development and technical design of shared renewable energy systems in urban areas
- Risk, intelligence, and decision-making in renewable energy projects

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3) VIP+ Current Program

- Students Enrollment

![Students Enrollment Chart]

- 2021 - 2024

- Number of Students

- Fall 2021: 30
- Spring 2022: 20
- Fall 2022: 40
- Spring 2023: 80
- Fall 2023: 100
- Spring 2024: 120

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3) VIP+ Current Program

Number of Projects 2021 - 2024

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Projects</th>
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<tbody>
<tr>
<td>Fall 2021</td>
<td>8</td>
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<tr>
<td>Spring 2022</td>
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<tr>
<td>Fall 2022</td>
<td>9</td>
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<tr>
<td>Spring 2023</td>
<td>10</td>
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<tr>
<td>Fall 2023</td>
<td>12</td>
</tr>
<tr>
<td>Spring 2024</td>
<td>14</td>
</tr>
</tbody>
</table>
Outline

1) Introduction

2) Liberal Education Program

3) VIP+ Current Program

4) Conclusion
4) Conclusion

- Challenges to implement within departments to emphasize interdisciplinary collaboration
- Challenges to recruit students

- Students Enrollment is increasing
- Number of VIP Projects is increasing
- SOE pioneered the program - 75% of the projects are initiated by the SOE
Thank You
Program Measurement

- Did the program fulfill its preset goals?
- A comparison between what would have happened differently in the absence of this program
- Measure the level of interdisciplinary knowledge for students in different schools
- Student personality development in terms of communication skills, self-confidence, and professional ethics
- Students’ interaction with the industry
3) VIP+ Current Program

- Students’ evaluations and feedback
  - 88.23% believe that their participation in this course enhances their chances of future success and employment
  - 85.3% of students who feel confident about applying what they learned in their career
  - 91.18% agreed that the VIP+ team members were helpful and supportive
  - 75.93% of them agreed that the VIP+ course concepts were well explained
  - 94.12% agreed that they are committed and feel the necessity to apply what they learned in their future career
  - 86% of the VIP+ cohort are Employed (2023)