Apply Lean Principles

• Specify **value**: Value is defined by customer in terms of specific products and services

• Identify the **value stream**: Map out all end-to-end linked actions, processes and functions necessary for transforming inputs to outputs to identify and eliminate waste

• Make value **flow** continuously: Having eliminated waste, make remaining value-creating steps “flow”

• Let customers **pull** value: Customer’s “pull” cascades all the way back to the lowest level supplier, enabling just-in-time production

• Pursue **perfection**: Pursue continuous process of improvement striving for perfection

Value Expectations

• **Student and family** - Well educated for life long career & ready for entry level employment

• **Employer** - Prepared for current workplace, including entry level lean six sigma knowledge

<table>
<thead>
<tr>
<th>LAI Lean Academy Self-Assessment Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>0  Unaware  To have no exposure to or knowledge of...</td>
</tr>
<tr>
<td>1  Aware    To have experienced or been exposed to...</td>
</tr>
<tr>
<td>2  Ready    To be able to participate in and contribute to...</td>
</tr>
<tr>
<td>3  Capable  To be able to understand and explain...</td>
</tr>
<tr>
<td>4  Skilled  To be skilled in the practice or implementation of...</td>
</tr>
<tr>
<td>5  Expert   To be able to lead or innovate...</td>
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</table>

...Lean Enterprise Knowledge Areas
Undergraduate Value Stream
Notional Based on MIT Calendar

Freshman Year
- Summer
- Fall Sem
- Vac
- IAP
- Spring Sem

Sophomore Year
- Summer
- Fall Sem
- Vac
- IAP
- Spring Sem

Junior Year
- Summer
- Fall Sem
- Vac
- IAP
- Spring Sem

Senior Year
- Summer
- Fall Sem
- Vac
- IAP
- Spring Sem

Where are opportunities to add Lean value?
Panelists

- **Including Lean in Capstone Courses**
  - Prof. Charles Eastlake, Embry-Riddle Aeronautical Univ

- **Deploying the LAI Lean Academy as a Special Elective**
  - Prof. Annalisa Weigel, MIT

- **Linking Lean Education to Summer Internships**
  - Richard Lewis II, COO Rolls Royce Indianapolis (retired) and MIT Senior Lecturer

- **Minor in Lean For Engineering Students**
  - Prof. Juan Carlos Ituarte Zarza, Tecnologico de Monterrey Campus Querétaro
Other Examples of Curriculum Integration

- UAH I&SE integrated lean material across their curriculum.
- Jacksonville developed a senior elective.
- USC I&SE integrated LAI Lean Academy content into Senior Capstone Design class.
- ASU Aero & Mechanical Engineering integrated material into senior elective on the Engineering Profession.
- U of Iowa Business School revamped an existing Operations Management course which had been primarily mathematical.
- Stanford, LMU, UI, USF, UVA and other have integrated into or developed graduate courses.
Undergraduate Value Stream
Notional Based on MIT Calendar

Where are opportunities to add Lean value?
Audience Participation

• Fill out the survey to help defined customer value
  • Please fill it out no matter what your role or background.

• What questions do you have for the panel?
• Do you have additional suggestions of strategies for integrating lean six sigma knowledge into undergraduate or graduate curriculum?