Industry Perspective & Top Priorities for Engineering Education

Dora Smith, Senior Director, Global Academic Program
### Siemens sectors in need of digital talent

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Generation Services</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>People</td>
<td>372,000</td>
<td>200 countries</td>
<td>289 production and manufacturing plants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Digitalization changes everything
Including skills in future engineers

Changing the way products come to life
GENERATIVE DESIGN

Changing the way products are realized
SYSTEM OF SYSTEMS

Changing the way products evolve
MACHINE LEARNING

ADVANCED MANUFACTURING

CLOUD TECHNOLOGY

KNOWLEDGE AUTOMATION

INTELLIGENT MODELS

ADVANCED ROBOTICS

BIG DATA ANALYTICS

111001

00010101100111
001010110011
010110

001010110011
010110
Industrie 4.0 skills project revealed need to enhance competences of employees

Top 25 competencies affected by “Industrie 4.0”

**Information technology**
- Cloud Computing
- Databases
- Infrastructure and connection technologies
- IS/DS and security
- Serve- and memory-technologies
- Network protocols/ IP Addressing
- Network engineering
- Virtualization
- Software development
- Application engineering

**Soft skills**
- Lean management
- Media literacy
- Project management
- Process management
- Self-directed learning
- Self-management
- Systemic thinking
- Knowledge management

**Electronics / mechatronics**
- Embedded systems
- Identification systems
- Sensor technologies / actuating elements
- Robotics

**Business administration**
- Data analytics
- Planning and development of business models

**Mechanical engineering**
- PLM software
PLM TOPICS EDUCATORS MOST WANT TO COVER IN FUTURE COURSES

In order of importance from top to bottom:

1. Systems engineering or MBSE
2. Mechanical CAD
3. MBD or MBE
4. Data visualization
5. Data analytics
6. CAM & NC
7. Manufacturing planning
8. CAE
9. Electrical CAD
10. PLM processes
11. PDM
12. Digital manufacturing
13. Design for additive manufacturing
14. ALM

5 most important:

- Systems engineering or MBSE
- Mechanical CAD
- MBD or MBE
- Data visualization
- Data analytics

4 most important:

- CAM & NC
- Manufacturing planning
- CAE
- Electrical CAD

2 least important:

- ALM
- Design for additive manufacturing

1 least important:
Closing the engineering skills gap
State of Engineering

CLOSE THE ENGINEERING SKILLS GAP
Prepare the new graduates to be real-world ready

- Product cost management: 66%
- Manufacturability: 65%
- Specifics about my industry: 61%
- Project management: 53%
- PDM: 52%
- CAM: 51%
- PLM: 51%
- CAE: 46%
- Problem solving: 46%
- Systems Engineering: 45%
- Ideation: 44%
- CAD: 41%
Top priorities to prepare students for the digital future

Stronger cross-discipline digital skills

Continuous embedded real-world application

Expanded apprentice, co-op and intern engagement

New credentialing methods and models
Thank you.

Dora Smith
Senior Director
Global Academic Partner Program

dora.smith@siemens.com