William (Bill) Oakes, Director
Purdue University

https://engineering.purdue.edu/EPICSU
http://www.purdue.edu/epics
Opportunities

Needs of the underserved offer opportunities

Solutions improve lives of fellow citizens
Multi-Disciplinary, Community-Based Design

400+ students per semester
~500 students, spring 2015

70 majors

1st Year – 4th Year Students

90+ Active Community Projects

300+ deployed

3000+ alumni

19 years
# EPICS Program

<table>
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<tr>
<th>Purdue University</th>
<th>University</th>
<th>EPICS Pre-University</th>
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<tr>
<td>• Headquarters</td>
<td>EPICS University Consortium</td>
<td>EPICS High</td>
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<tr>
<td>• Academic Program</td>
<td>• 24 Universities</td>
<td>• 50+ High Schools</td>
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<td>• Multidisciplinary, Engineering-Centered Design Course</td>
<td>• U.S., Canada</td>
<td>• 12 U.S. States</td>
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<td>• Community-based</td>
<td>• Colombia,</td>
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<tr>
<td>• Local and Global</td>
<td>• Ireland,</td>
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<td></td>
<td>• Korea,</td>
<td>IEEE-EPICS</td>
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<tr>
<td></td>
<td>• India</td>
<td>• 50+ projects</td>
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</tbody>
</table>

- NAE Gordon Prize
- Signature Program

IEEE
Advancing Technology for Humanity
EPICS Decouples Timescales

Student Learning

Semester/Quarter

Project

Partnerships
Long-Term Community Support
Access & Abilities

Education & Outreach

Human Services

Environment

- Local and Global Partnerships
  - Local university and community partners
  - EWB-USA chapter integrated with EPICS

- Immersive Experiences
  - Camp for Children with Disabilities

- Entrepreneurship Integration
EPICS Programs

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<th>Disciplinary Knowledge from Departments</th>
<th>EPICS Curriculum Provides</th>
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<td>Projects and Problems from Local Community</td>
<td>Service-Learning</td>
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Adapted to Local Institutional Culture
EPICS and Women

Percent of Women in Electrical/Computer and Mechanical Engineering in the Major and in EPICS

20+ semesters, average participation rates of women in EPICS were more than 70% higher than in their respective majors.

EPICS First Year Learning Community

- 54% Female
- 120 Students
- Fall 2014

Why Students Chose the EPICS Learning Community

- Experience & Community
- Experience
- Learning Community
- Community

Female
Male
Retention in Engineering/CS Column = Semester Began EPICS (Through 2007)

"What Impact has the EPICS Program had on your resolve to continue in your major?"
Research on EPICS Alumni

Findings:
EPICS Prepared students for leadership roles in a wide range of industries

524 Surveyed
27 Interviewed
EPICS K12: Attracting Diverse Students

55% Male
44% Female

Affordably Addressing Underrepresentation

Affordably Addressing Underrepresentation
Motivation to Pursue a STEM Major

- Favorable: 37%
- Really Favorable: 19%
- Extremely Favorable: 15%
- Unfavorable: 21%
- Extremely Unfavorable: 8%

~30% start with no interest in engineering or computing
~1/2 change to strong interest
Educating Citizens

• Connecting engineering/computing to community, human and environmental needs is consistent with diversity literature

• Benefits to learning engineering
  – Experiences with real users

• Engineering’s responsibility to educate future professionals and leaders
  – Corporate, government and community leaders

• Lifelong impact
  – Career choices
  – Interests and activities
  – Civic Engagement
Resources

**Web Resources:**
- Purdue EPICS Program (www.purdue.edu/epics)
- EPICS University Program (https://engineering.purdue.edu/EPICSU)
- EPICS Pre-College (https://engineering.purdue.edu/EPICSHS) and (www.EPICSk12.org)
- Campus Compact (www.campuscompact.org)

**Service-Learning**

**EPICS Papers**