

# Engineer of 2020 - E2020 Scholars Program

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## Overview

The E2020 Scholars Program provides scholarships to first-year and transfer students who have demonstrated academic potential, an interest in solving the challenges engineers of 2020 will face, and financial need. Scholarship award amounts total \$2,500 per year, renewable up to four years, for a potential \$10,000.

## E2020 Scholars Program Expected Outcomes:

- Provide academic and professional development opportunities to greater numbers of students and create learning outcomes consistent with the National Academy of Engineering's (NAE) E2020 vision.
- Improve educational opportunities for students, faculty, and student support staff.
- Increase retention of students to degree achievement.
- Improve student support programs at institutions of higher education.
- Increase numbers of well-educated and skilled employees in technical areas of national need.

*"Scholarships are vital to bringing students into STEM fields of study and broadening participation in engineering. The E2020 scholarship recognizes not only the academic accomplishments of the Scholars, but also the vision these Scholars have for creating a better world. Each Scholar brings unique experiences and talents, and collectively, they represent the promise of engineering to society."*

Dr. Diane Rover, E2020 Principal Investigator and Professor, Electrical and Computer Engineering.

## Program Development

### First Semester:

Focus on transitioning to Iowa State

### Second Semester:

E2020 Scholars Program Seminar – Overview of E2020 Pillars (ENGR 110X)

### Third Semester:

E2020 Scholars Program Seminar – Leadership & Systems Thinking (ENGR 210X)

### Fourth Semester:

E2020 Scholars Program Seminar – Innovation/ Entrepreneurship & Global Awareness/Understanding (ENGR 210X)

### Remaining Semesters:

Capstone Experiences

## Program Pillars

Programming has been developed around the NAE's vision of the Engineer of 2020. Four areas of focus have been identified within this vision and transformed into the four pillars of the program.

## Student Demographics

2009-2010 Cohort	Gender	Ethnic Minorities	Scholars Retained
14 First-Year	4 Women, 10 Men	5	12 First-Year*
7 Transfer	7 Men	None	6 Transfer**
<b>21 Total</b>			<b>18 Total</b>

\*One student was retained in STEM, but not College of Engineering. One student is deceased.  
\*\*Student left school.

2010-2011 Cohort	Gender	Ethnic Minorities	Scholars Retained
12 First-Year	7 Women, 5 Men	4	12 First-Year
14 Transfer	5 Women, 9 Men	None	14 Transfer
<b>26 Total</b>			<b>26 Total</b>

E2020 Scholars represent nine different states.

## Student Success

### An overwhelming majority of E2020 Scholars agree the Program

- was a positive experience.
- supported their growth as a person.
- enhanced their educational experience.
- fit well with their courses.
- helped them feel better prepared to succeed in college.

## Students expressed that the pillars had

- expanded their perspective on the field of engineering
- gave them a greater appreciation for the complexity of engineering
- allowed them to see common threads across their classes

Students agreed the peer mentor, program coordinators, and faculty were helpful and appreciated the sense of community created by the program.

*Based on the E2020 Scholar survey administered by Iowa State's Research Institute for Studies in Education (RISE).*



## Leadership

Includes teamwork, communication and service



*"I now understand that leadership is not just about leading other people, but being able to lead myself through teamwork, communication, and service."*  
E2020 Scholar



## Systems Thinking

Includes interdisciplinary engineering design



*"I came to realize just how many things you have to consider when you are working on a project. Not only the dimensions of the project and how something works, but also how it is going to affect the surrounding environment and those who use it."*  
E2020 Scholar



## Innovation and Entrepreneurship

Includes creativity and planning



*"Innovation is not just thinking of new ideas, but working together in a team, taking initiative, accepting criticism, and being creative."*  
E2020 Scholar



## Global Awareness and Understanding

Includes cultural adaptability



*"I never realized the importance of culture and customs in designing a product to meet a country's needs. This class has helped me to realize that there is more to engineering than just building something that works for us."*  
E2020 Scholar

## E2020 Team

Principal Investigator  
Diane Rover

Co-Leaders  
Paul Castleberry  
Joel Johnson  
Mark Laingen

Peer Mentors  
Brenda Klutke  
Ethan McGuire  
Ana Williams

Co-principal Investigators  
Tom Brumm  
Monica Bruning  
Steven Mickelson  
Mack Shelley

Faculty Leaders  
Beth Hartmann  
Chris Rehmman  
Doug Jacobson  
Amy Kaleita

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