GRAND CHALLENGE SCHOLARS PROGRAM

Key Components
Research Experience | Interdisciplinary Curriculum | Entrepreneurship
Global Dimension | Service Learning

The University of Idaho, College of Engineering is committed to developing a long-term program designed to prepare a minimum of 20 students annually to lead the way in meeting challenges identified by the National Academy of Engineering that are key to maintaining and improving quality of life across the globe.

SUSTAINABILITY
1. Make solar energy economical
2. Provide energy from fusion
3. Develop carbon sequestration methods
4. Manage the nitrogen cycle
5. Provide access to clean water

HEALTH
9. Advance health informatics
10. Engineer better medicines

SECURITY
6. Restore and improve urban infrastructure
7. Prevent nuclear terror
8. Secure cyberspace

JOY OF LIVING
11. Reverse-engineer the brain
12. Enhance virtual reality
13. Advance personalized learning
14. Engineer the tools of scientific discovery

uidaho.edu/grandchallenges

CORPORATE SUPPORTERS

[Logos of Avista Corp., Micron, and Idaho Power]
In a letter of commitment presented to President Barack Obama the University of Idaho joined 122 U.S. engineering schools to announce plans to educate a new generation of engineers expressly equipped to tackle some of the most pressing issues facing society in the 21st century.

1. Prevent Nuclear Terror
   Long before 2001, defenders of national security worried about the possible immediate death of 300,000 people and the loss of thousands of square miles of land to productive use through an act of terror.

2. Secure Cyberspace
   Personal privacy and national security in the 21st century both depend on protecting a set of systems that didn’t even exist until late in the 20th — the electronic web of information-sharing known as cyberspace.

3. Provide Access to Clean Water
   Today, the availability of water for drinking and other uses is a critical problem in many areas of the world.

4. Restore and Improve Urban Infrastructure
   In 2005, the American Society of Civil Engineers issued a report card, grading various categories of U.S. infrastructure. The average grade was D (Updated to D+ in 2013).

5. Advance Health Informatics
   When you dial 911 for a medical emergency, the outcome may very well depend on the 411 — the quality of the information available about your condition and ways to treat it.

6. Engineer Better Medicines
   Doctors have long known that people differ in susceptibility to disease and response to medicines. But, with little guidance for understanding and adjusting to individual differences, treatments have been standardized rather than individualized.

7. Engineer the Tools of Scientific Discovery
   In the popular mind, scientists and engineers have distinct job descriptions. Scientists explore, experiment, and discover; engineers create, design, and build.

8. Enhance Virtual Reality
   To most people, virtual reality consists mainly of clever illusions for enhancing computer video games or thickening the plot of science fiction films.

9. Reverse Engineer the Brain
   For decades, some of engineering’s best minds have focused their thinking skills on how to create thinking machines — computers capable of emulating human intelligence.

10. Energy from Fusion
    If you have a laptop computer, its battery probably contains the metallic element lithium. In theory, the lithium in that battery could supply your household electricity needs for 15 years.

11. Manage the Nitrogen Cycle
    It doesn’t offer as catchy a label as “global warming,” but human-induced changes in the global nitrogen cycle pose engineering challenges just as critical as coping with the environmental consequences of burning fossil fuels for energy.

12. Develop Carbon Sequestration Methods
    The growth in emissions of carbon dioxide, implicated as a prime contributor to global warming, is a problem that can no longer be swept under the rug. But perhaps it can be buried deep underground or beneath the ocean.