

State University of New York College of Environmental Science and Forestry (ESF)  
National Academy of Engineering Grand Challenge Scholars Program Application

*\*Before completing the application, please read about the program and its requirements at  
[www.esf.edu/ere/gcsp](http://www.esf.edu/ere/gcsp) & [www.grandchallengescholars.org](http://www.grandchallengescholars.org).*

Last Name:

First Name:

Email:

ESF Degree Program:

ESF Grade Point Average:

A) Describe why you want to complete the ESF National Academy of Engineering (NAE) Grand Challenge Scholars Program (GCSP):

B) Name 1 of the NAE Grand Challenges that interests you (see list on next page) and briefly explain how your project or research on this topic might improve our world:

C) Give the name and date for your anticipated or completed activities that will satisfy the 5 curricular components of the ESF NAE GCSP (see list on the next page):

Name of Course or Non-Course Activity	Date [semester, year]
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1. Project | Research
2. Engineering +
3. Entrepreneurship
4. Global Dimension
5. Service Learning

Signature (digital is acceptable)

Date

### **NAE Grand Challenges available as a project or research topic:**

1. Energy & Environment: make solar energy economical | provide energy from fusion | develop methods for carbon sequestration | manage the nitrogen cycle | provide access to clean water
2. Health: advance health informatics | engineer better medicines
3. Security: prevent nuclear terror | secure cyberspace | restore urban infrastructure
4. Learning & Computation: reverse engineer the brain | enhance virtual reality | advance personalized learning | engineer the tools of scientific discovery

### **ESF NAE GCSP Curricular Components:**

1. Project | Research
  - a. Course activity: ERE 498 Research Problems in ERE; ERE 597 Research Methods for ERE; Equivalent course
  - b. Non-course activity: ESF Honors Program; Participate in National Science Foundation Research Experience for Undergraduates; Participate in the research and development of an Engineers Without Borders project; Participate in a Fink or Rosen Fellowship sponsored research project; Equivalent experience
2. Engineering +
  - a. Course activity: ERE 275 Ecological Engineering; ERE 412 River Form and Process; ERE 496 Humanitarian Engineering for Development Workers; ERE 496 Hydrology in a Changing Climate
  - b. Non-course activity: Equivalent experience
3. Entrepreneurship
  - a. Course activity: ERE 519 Green Entrepreneurship; Equivalent course
  - b. Non-course activity: Develop a business plan through one of the following - the Syracuse University Department of Entrepreneurship and Emerging Enterprises; the Green Campus Initiative's Student Sustainability Fund; the Yum! Sustainability Challenge, the D-Prize; the GrabCAD challenges; Equivalent experience
4. Global Dimension
  - a. Course activity: ERE 496 Appropriate Technology for Developing Countries; ERE 496 Humanitarian Engineering for Development Workers; ERE 311 Ecological Engineering in the Tropics; FOR 523 Tropical Ecology; GEO 374 Environment and Development in the Global South
  - b. Non-course activity: Participate in and report on a club (e.g., EWB) or conference pertaining to international development; Participate in and report on a study abroad program; Participate in and report on Operation Wallacea; Participate in and report on the Engineering for Change's programs; Equivalent experience
5. Service Learning
  - a. Course activity: ERE 489, Engineering Planning and Design; Equivalent course overseeing service learning
  - b. Non-course activity: Participate in and report on the service learning activities in the annual EPA Campus RainWorks Challenge Team; Participate in and report on the service learning activities in the EWB, ERE, NYWEA, and/or AWMA clubs on campus; Participate in and report on the service learning activities in the local Alpha Phi Omega or Alpha Xi Sigma service and honor fraternities; Equivalent experience