

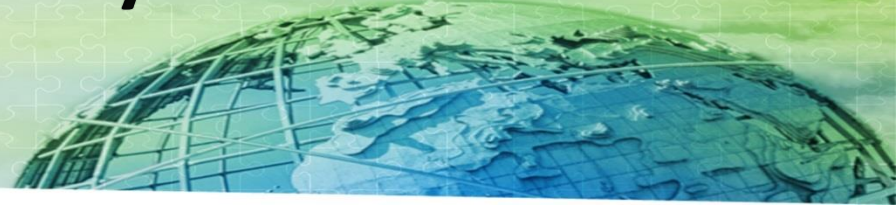
An Inspiring Definition of Engineering



Engineers **Create Solutions** for the
Welfare of Humanity and the
Needs of Society

Value Propositions – **Creation,**
Solutions, Humanity and Society

Competencies of GCSP directly emanate from the Definition of Engineering!



The 5 key “competencies” of GCSP program are

1. **Research/Creativity:** cutting-edge project experience on GC like topic *(Technical Depth)*
2. **Multidisciplinarity:** intellectual fusion of academic disciplines including social sciences *(Breadth)*
3. **Business/Entrepreneurship:** developing viable business models for implementation *(Viability)*
4. **Global/Multicultural:** understanding through global /local) experience *(Planetary Mindset)*
5. **Social consciousness:** Outreach & service learning *(Desirability)*

Engineering⁺

Attributes of the Engineer of 2020

- Strong analytical skills
- Practical ingenuity
- Creativity
- Communication competencies (oral, written, and cultural)
- Business, management, and leadership skills
- High ethical standards and professionalism
- Agility, resilience, flexibility

ABET Criterion 3. Student Outcomes

– Two of the required Outcomes

- an ability to apply engineering design to produce solutions that meet specified needs with consideration of **public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors**
- an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in **global, economic, environmental, and societal contexts**

Grand Challenges : A Global Movement

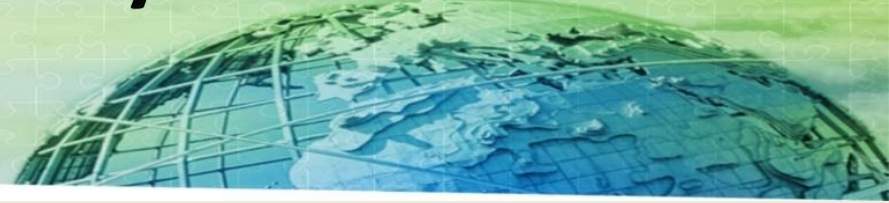
Outcomes-based and Flexible --- NOT Prescriptive!

A combined curricular, co-curricular, and extracurricular program.

Coherence and connectivity across five competencies and a Grand Challenge theme.

Program elements are driven by the Power of the Idea and each institution creates its own Unique Realization and Execution.

Significance of a Community and a Network



GCSP Ecosystem Metaphor

A Distributed Network of Diverse, Flexible and Individualistic University Nodes in a Symbiotic Relationship that Adapt and Evolve Over time.

Approved programs: 68 US schools 13 international schools
Exploring: 92 US schools and 46 international schools

Students completing all 5 GCSP competencies
obtain a GC Scholar Certification from the US
National Academy of Engineering and a letter of
commendation from the President of the US NAE



NAE Grand Challenges Scholars Program



The Role of the NAE

- Champion of the Vision
- Convener of the Stakeholders
- Community Influencer/Builder
- Change Agent

to Catalyze a Global Movement



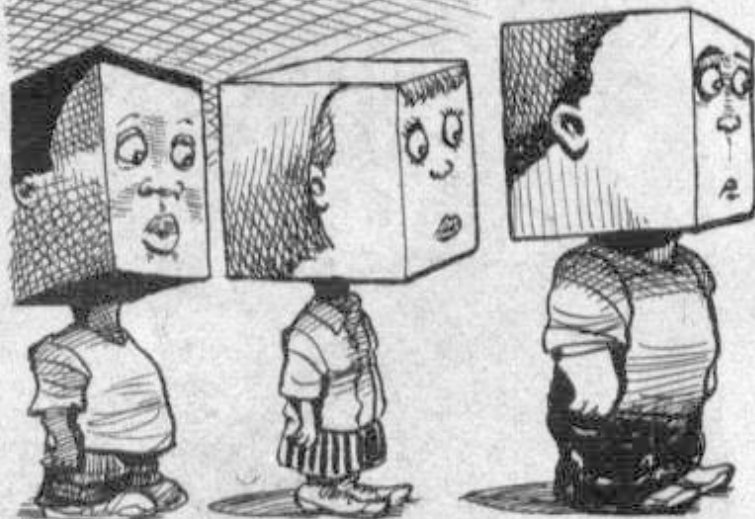
NAE Grand Challenges Scholars Program



Vision Mandates Global Solutions

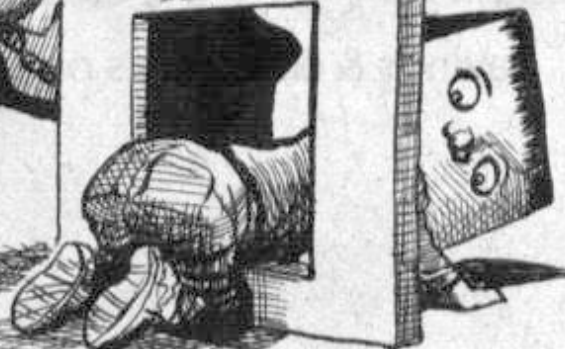
- Captures needs of people and society
- Solutions depend on locale
- **Students are inspired by the Grand Challenges**
- **Grand Challenges Scholars Program – Key to “Talent Building”**
 - An entrée for all as it is uniquely designed by each institution
- Employers everywhere are looking for GCSP-type students
- **“We” are all in this together**

SHAPING HIGH SCHOOL STUDENTS

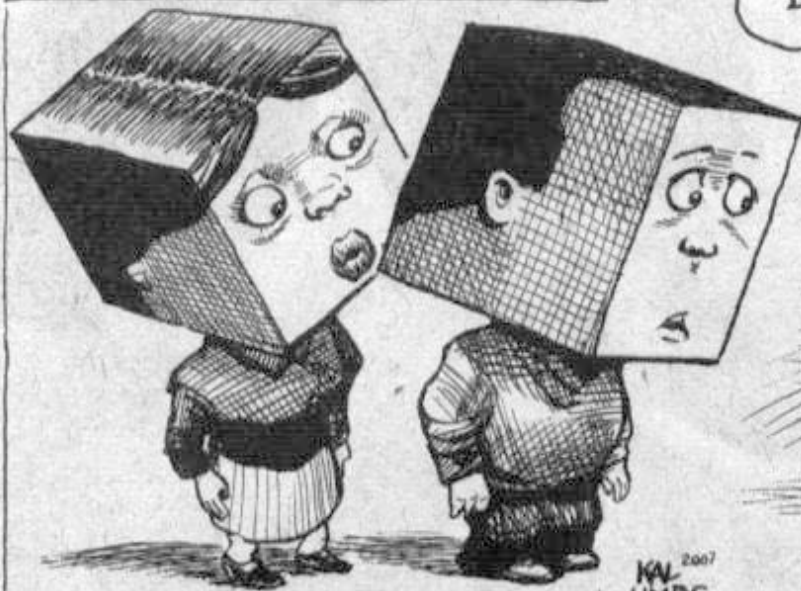


STATE
STANDARDIZED
TESTS

EVERYONE NEEDS TO
FIT IN!!

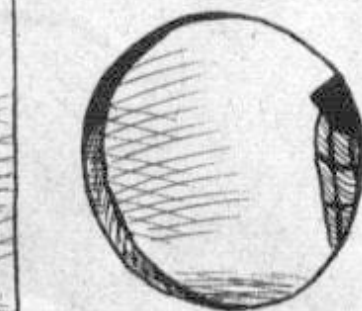


SHAPING COLLEGE STUDENTS



WE WANT YOU TO
BE WELL-ROUNDED

College Tests



Panelists will address

- Brief introduction of the university
- Challenges faced in launching GCSP
- Expectations from the GCSP program for students and faculty mentors
- Supporting, mentoring and assessing the progress of students in achieving the competency

#1
**in the U.S. for
innovation**



ASU ahead of Stanford and MIT

**- U.S. News & World Report
2016, 2017, 2018 and 2019**

ASU Charter

ASU is a comprehensive public research university, measured not by whom it excludes, but by **whom it includes** and how they succeed; advancing **research and discovery of public value**; and assuming fundamental **responsibility for** the economic, social, cultural and overall health of **the communities it serves**.

ASU GCSP

Launched in 2009

Focused on building a community of scholars

400 Students

56 graduates (as of Spring 2019)

gcsp.engineering.asu.edu



ASU GCSP

Building A Community of Scholars

- Students invited to apply as incoming freshmen (upon acceptance into ASU Engineering)
- 40-50 freshmen begin building GCSP community at GCSP Summer Institute *before* starting classes
- Students begin GCSP (Multidisciplinary) in first year course: Perspectives on Grand Challenges for Engineering

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GCSP Summer Institute

- 5 day residential program
- Explore ASU & GCSP through lab tours, activities
- Build GCSP community before starting classes



GCSP Grand Challenges course

(part of GCSP Multidisciplinary competency)

- Explore Grand Challenge theme areas
- Find Your Passion (Reflection)
- Plan the Future (Future Solutions Team Project)
- Explore Societal Dimensions to develop an Interdisciplinary perspective

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Expectations for Students

- **Enroll in FSE150 course in first year**
- **Develop a GCSP Plan in your first year (in FSE150)**
- **Submit GCSP Competency forms to help us to monitor your progress**
- **Update Digital portfolio annually (at minimum)**

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Expectations for Faculty Advisors

- **Attend Bi-annual Steering Committee meetings**
- **Review experiences submitted for Approval**
- **Meet with students as needed to support their progress**
- **Connect with students at GCSP events**

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Supporting Student Success

- **GCSP Competency Approvals & Tracking**
 - Approval form (for students seeking approval for experiences)
 - Completion form (for students with completed experiences)
- **List of Pre-approved courses & experiences in GCSP Program Manual**
- **Meetings with Faculty director and/or faculty advisors**
- **Funding opportunities**

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GCSP Challenges

- Tracking student progress
- Maintaining engagement with all students

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Developing Resources for GCSP Community

- **Grand Challenge Lecture Series**
- **Co-teaching Introductory course at University of New South Wales, Sydney, Australia**
- **Summer workshops on Entrepreneurship**

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