Grand Challenges Scholars Program

Grand Challenges Scholars Program Workshop – Hong Kong

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The GCSP Motivation:

Impact

Students want to change the world
Vision

The Texas A&M GCSP is designed to attract, retain and graduate future engineering world leaders in academe, government and industry.

“Today, unlike the first time I was asked what I wanted to be, I know without a shadow of a doubt that I want to contribute to the life saving efforts of the world through engineering. Agnes Aina, Chemical Eng, Class of 2019
How did we develop?

**AggiE Global Challenge (started Fall 2012):**
- Broad exposure and engagement
- 1-2 semester program with 500+/year
- Faculty led multidisciplinary teams of 4-6 ugrads & grads

**Grand Challenges Scholars Program (started Fall 2016):**
- Deep learning in targeted areas
- 3 year program with ~20 students in each cohort
- Individualized, student-directed program with faculty mentor
Texas A&M GCSP Program

- Selective, three-year program that students begin in 2nd year
- Cornerstone is a thesis related to one of the Grand Challenges
- Individualized, self-directed program with each student integrating their research with the other GCSP components
- Community created through monthly meetings and annual symposium

Competencies and Engagement levels

- Deep ~3 courses or equiv.
- Research
- Interdisciplinarity
- Entrepreneurship, Multicultural, Social Consciousness
- Medium ~2 courses or equiv
- Exposure ~1 course or equiv (at least one medium)
Research

• The Thesis
  - 2-4 semester research project
  - GC faculty mentor
  - Texas A&M undergraduate research scholars program

"I have co-authored in a paper about Welding of 3D Printed Parts, published in Science Advances. I have a second co-authorship on a paper which has been submitted and under review”
- Victoria Hicks, Chemical Eng, Class of 2019
Multidisciplinary Engagement
- medium

Examples
- GCSP thesis research
- AggiE Challenge
- Stakeholder involvement

"I led a 6 person (from different engineering majors) team in VEX U robotics competition, [...] creating EasyC code for autonomous parts." - Ricci Seguban, Chemical Eng, Class of 2019
Entrepreneurship

- **Engagement**
  - at least exposure

- **Examples:**
  - Aggies Invent
  - Startup Aggieland
  - TAMUHack
  - Entrepreneurship courses, certificates or minors

"I was a Stanford University Innovation Fellow and an organizer for TAMUHack“ - Jusung Lee, Computer Science, Class of 2019
Multicultural

• Engagement
  - at least exposure

• Examples
  - Global internships
  - Study Abroad
  - TAMU Qatar
  - Engineering intern. certificate
  - Engineers without Borders

“My travels to a small rural village in Nicaragua (part of Engineers without Borders program) was a very eye-opening experience to see the lack of resources in some parts of the world.” - Brian Welsh, Civil Eng, Class of 2018
Social Consciousness

- **Engagement**
  - At least exposure

- **Examples**
  - EPICS (Eng. Projects in Community Service)
  - Big Event - largest, one-day, student-run service project in US
  - Tutoring/peer teaching

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“As a SWE officer, I was involved with the community outreach committee in SWElites. I helped in planning of Bel Inizio: Race for a Better Life. and STEMfest, an event to inspire girls to enter STEM fields”.

-Millie Kriel, Electrical Eng, Class of 2019
Texas A&M GCSP Cohorts

- **Fall 2016 (our first):**
  - 23 2^{nd} & 3^{rd} year students from 9 majors

- **Fall 2017:**
  - 17 2^{nd} year students from 10 majors

![Texas A&M GCSP 2016 Cohort](image)

**Gender distribution:**
- Male: 34.8%
- Female: 65.2%

**2016 major distribution:**
- Aerospace: 13.0%
- Biological & Agricultural: 13.0%
- Biomedical: 8.7%
- Chemical: 17.4%
- Civil: 8.7%
- Computer Science & Engineering: 17.4%
- Electrical & Computer: 13.0%
- Industrial & Systems: 13.0%
- Mechanical: 13.0%
Challenges

- Administration commitment
- Faculty buy-in and time
- Resources for travel
- Communication between disciplines – students are often more willing than faculty…