



*Face the Challenge!*

**Duke**  
PRATT SCHOOL OF  
Engineering

# Recruiting Students and Faculty Mentors

## Duke's NAE Grand Challenge Scholars Program in the Pratt School of Engineering

**Martha Absher, Associate Dean, Education and Outreach**



**The first class of NAE Grand Challenge Scholars- Class of 2010**



# The NAE Grand Challenge Scholars Approach at Duke Engineering

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**Awareness and Involvement begins  
at Freshman Orientation**

**Students build portfolios from freshman  
year onward**

**Junior year is Gateway to formal acceptance  
into GCSP via application**

**Leveraging of Existing Program Tracks**

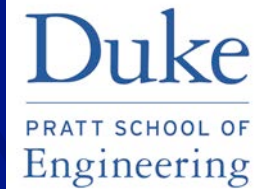
**Each Track provides plan  
to meet requirements**



**Eric Thorne in Uganda**



# Building a GCS Portfolio at Duke Engineering



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## Complete Portfolio requires:

The Two Required In-Depth Components:

Research/Practicum component

Interdisciplinary component

One Medium-Depth Component:

Either Global, Service, or Entrepreneurship

Equivalent to semester- or summer-long experience, or more

Two Minimum-Depth Components

Either Global, Service, or Entrepreneurship

Equivalent to semester or less extracurricular experience



**Research in Osteoarthritis:**  
*Chondrogenesis from induced pluripotent stem cells and characterization of regenerative capabilities*



**Entrepreneurial: Student-created venture capitalist club**



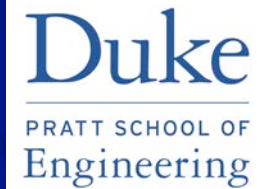
**Global:**  
*Water pump project in Uganda*

**Service:**  
*Bridge design & construction in Bolivia*





# Involving students in the NAE Grand Challenge Scholars at Duke Engineering



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## Pre-Matriculation through Sophomore Year

### Pre-Matriculation (**getting on the radar**)

Interviews

Recruitment material

Tours & Invited campus visits

### Freshman Orientation (**raising awareness**)

Introduction to the GCS Program

Activities fair booth and sign-up

### Freshman and Sophomore Years (**portfolio building**)

GCS Seminars

GCS presence in classes (Intro Engineering 10; major courses, new curriculum)

Meetings with Dean Absher

Clubs and Activities tracks (EWB, EWH, CERC)

Special Programs (Pratt Fellows, Smart Home Fellows, IHP)



**Tricia Lowe: DukeEngage in Bolivia**



# Involving students in the NAE Grand Challenge Scholars at Duke Engineering

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## Junior Year: The Gateway Year

Information Sessions

Recruitment Seminars

In-Class Presentations

Faculty recruitment

Application for formal admittance

Present portfolios of the  
5 components

Propose plans

Link with GCS Advisor

Develop budget (up to \$5000)

Selection Committee Decisions

New GC Scholars inducted 2<sup>nd</sup> semester junior year

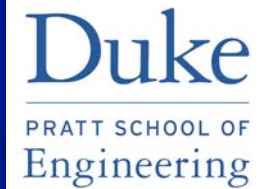
Intense research and practicum work begin



**Tricia Lowe in the lab**



# Involving students in the NAE Grand Challenge Scholars at Duke Engineering



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## Senior Year: The Completion

**Summer crucial**

**Senior year focus  
on research & completion**

**Presentations of Portfolios  
Donor Involvement**

**Formal Thesis completion &  
Thesis approval**

**NAE Grand Challenge Scholars  
Program designation on Transcript**





## Developing Faculty Buy-in

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**Dean Tom Katosuleas one of 3 Founding Deans**

**Top-Down support and involvement**

**All Departmental Chairs committed to Program**

**Faculty involvement in program creation—  
Founding Committee for Duke GSCP had faculty  
members from:**

**All Departments (DUS)**

**Each Program Track**

**Clubs and Organizations**

**Special Duke Resources**



**Tom Katsosuleas (Duke), Richard Miller (Olin),  
Yannis Yortson (USC)**

**Tom, Tom, Tom!**



## Obstacles, Strategies, and Best Practices

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**Biggest Obstacle: Faculty TIME and Resources Limited**

**Fear Factor #1 TIME: Faculty nervous breakdowns! Rebellion!**

**Fear Factor #2 Resources: Labs crowded, drained. Grumpy faculty at DUKE!**

**Strategy: Minimize the bad and maximize the good**

**Fear Factor Solution #1: Leverage proven techniques in successful program!**

**Point out 100% survival rate. They like it! They Love It!**

**Fear Factor Solution #2: Point out advantages to faculty: great student research & resources, leverage for grants and funding**

**Best Practices: Created environment supportive of undergraduate research involvement**

**Pratt Fellows Program– 12 years, Fellows 12 to 110+ per year**

**Outreach Programs: 20+ years, over 90% underrepresented**

**Best Practices: Support grant efforts via educational and outreach program development and assistance**

**Best Practices: Total administrative support lets faculty focus on research/projects**

**Best Practices: Utilize POPS (Professors of the Practice) AND Tenure Track Faculty**



## Continuing to Support Faculty Mentors

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**Dean's office support**

**Financial support for Scholars' efforts via generous donors:**

**J. Stephen and Susan G. Simon  
Stavros Niarchos Foundation**



**Strong administrative support from Duke GCSP Program Structure**

**Goal to minimize faculty frustration and red tape and maximize the fun parts**



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# Summary

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**The NAE GCSP at Duke has graduated 21 GC Scholars**

**GC Scholars have included a Rhodes Scholar,  
a Fulbright Scholar, NSF Graduate Research  
Fellows, and many doctoral scholarships**

**Duke Engineering now has its THIRD class of Grand  
Challenge Scholars actively completing the Program**

**Duke GCSP Class of 2012 Program has 13 GC Scholars**

**Duke's GCSP combines new creative efforts with  
leveraging ongoing programs that enable students**

**Funding provided by generous donations from:  
J. Stephen and Susan G. Simon  
Stavros Niarchos Foundation**



**Anna Brown,  
2011 GC  
Scholar,  
BME Major  
Plans: Oncology  
research at  
Cambridge, then  
medical school**