Furman University
Greenville, South Carolina – one of the nation’s premier undergraduate liberal arts colleges

Undergraduate Population:
2731
Faculty: 254

Dr. George C. Shields
Vice President for Academic Affairs & Provost
Professor of Chemistry
Starting from Scratch at Armstrong!

- Armstrong (Atlantic) State University, a regional state university, 6000 undergraduates, 2008-2010
- Barriers – *Faculty time*, 4-4 teaching load, summer school
- Barriers - *Money*, low salary, 10 month paycheck
- Barriers – *Student time & money*, hours in summer
- Time, Money, Knowledge key barriers
Early Introduction to Undergraduate Research

• Funded originally by Dreyfus Foundation & NSF-STEP, Hamilton College (1800 Undergrads) : “Using Pre-College Research to Promote Student Success and Increase the Number of Science Majors” Shields, Hewitt, North CUR Quarterly 31 (2010) 43-47; GPA 2.5; Graduation Rate 97% (+10); 75% STEM Majors (59%)

• Armstrong State University CST – “Best Intervention Ever” The average four-year graduation rate is 6.1% for CST and 13.2% overall for Armstrong. Fall 2011 and 2012 cohorts were 43% & 33% “Using Early Introduction to Research to Increase STEM Majors: A Tale of two Colleges, one small highly selective private and one non-selective regional public.” Shields, Gajdosik-Nivens, Ness ACS Books

• Bucknell University (3450 Undergrads, small MS program), in year 3, all Under Represented groups only (female, student of color, low socioeconomic status, first generation college student ) 97% retention so far; 94% retained in STEM so far

• WHY DOES IT WORK! Mentoring, real research, bias removal.
“Engaged Learning” at Furman: Problem solving, project-oriented, research-based philosophy (1995 –David Shi)

~ 200 Furman undergrads/year conduct full-time research
*In past 2 years, 50% of faculty have mentored at least one student

~ 100 Furman undergrads/summer receive institutional support via “Furman Advantage” mechanism (1984) *Since 2010, 20% of this funding to projects in the Humanities

~ 130 undergrads/year receive institutional funding for conference travel
*25% (2015) graduating seniors have presented research off-campus

~ 600 student presentations at Furman Engaged! Spring Celebration *20% direct participation by Furman student body, 2016
Administrative support: Creating and Maintaining Sustainability (1) *The Office of Undergraduate Research & Internships (URI), Tim Fehler*

- Faculty development activities

- Institutional funding for students (*Furman Advantage*)

- Student travel for conference presentations

- *Furman Engaged!* Celebration of Research/Creative Endeavors

- Evaluation/Assessment
  - > 95% students extremely satisfied (80%) or satisfied (15%) with research experience; > 80% faculty extremely satisfied

- 2016 URI Budget: $660,000 (*internal funding*)
Identify, develop (external applications), manage and assess programmatic opportunities across STEM disciplines and in the science education community

Assist target faculty in developing individual competitiveness for grant submission

> $7M in multidisciplinary STEM funding since 2010 Sources: NSF, NIH, HHMI, Merck/AAAS, Beckman, others

Since 2010, ~ 220 undergrads, ~ 70 faculty supported for summer research experiences (stipends/supplies/equipment)

> 50 HS students/teachers provided 6-week summer research experiences, and > 85 at-risk, first generation HS students enrolled in 1-2 science exposure camps