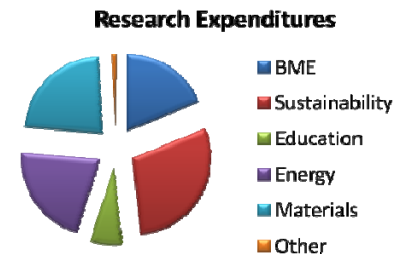


University of Houston Cullen College of Engineering  
Cluster Project Overview  
**Educational Outreach**

Several initiatives have been launched over the last seven years to effectively recruit and retain more students in Science, Technology, Engineering and Mathematics (STEM) fields. Though engineering outreach research expenditures only account for 8% of the college's FY10 research expenditures, more than \$8 million has been awarded to the college in pursuit of outreach initiatives such as:



**GK-12**

Fritz Claydon and Stuart Long (ECE), Kathy Zerda, Hanadi Rifai (CEE), Pradeep Sharma (ME)  
Funded by the National Science Foundation

The GK-12 program is focused on teaching school children complex scientific topics through examples in popular culture. Graduate fellows at UH work with area school teachers to teach children electromagnetism (cloaking) and quantum mechanics (teleportation) through the adventures of Harry Potter. Such activities foster modernization and development of science using the Knowledge, Applications, Research and Technology (KART) approach.

**STEP-AHEAD**

Stuart Long and Fritz Claydon (ECE), Hanadi Rifai (CEE), Kathy Zerda  
Funded by the National Science Foundation

STEP-AHEAD is a program designed to bridge the educational tract for Houston Community College students looking to transfer into UH engineering programs. Study skills and time management activities enhance the pre-engineering curriculum at HCC by helping students prepare for the rigorous academic curriculum at UH.

**S-STEM**

Stuart Long and Fritz Claydon (ECE), Kathy Zerda  
Funded by the National Science Foundation

Another community college transfer program, S-STEM provides scholarships to transfer students as a means of improving retention rates.

**RET**

Fritz Claydon and Stuart Long (ECE)  
Funded by the National Science Foundation

Research Experiences for Teachers is a national program launched by NSF to help local science high school teachers and community college faculty introduce innovative research topics to their students. Teachers spend their summer break working with college faculty to research topics related to their specialty and develop classroom activities to translate their research experience.

**REU**

Fritz Claydon and Stuart Long (ECE), Gila Stein (ChBE)

Funded by the National Science Foundation

Research Experiences for Undergraduates is perhaps one of the most well-developed programs nationally that fosters advanced research for undergraduate students. The program is designed to pair undergraduate students with faculty researchers, allowing the student to participate in ongoing research funded by NSF. Many students involved in REU programs consider continuing their education through graduate programs.