

Scholars Academy: A Model for Supporting Student Success across STEM through High Impact Experiences and Mentored Research Sciences

HETS Second Best Practices Showcase
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Overview

- Introduction of UHD and Scholars Academy
- Recruitment & Funding
- Five-Point Model
 - Scholarship Support
 - Freshman Program
 - Mentoring and Tutoring
 - Service Learning
 - Other Activities
- Conclusions
 - Recognitions
 - Results: Student Successes



University of Houston-Downtown

- Urban Commuter School since 1974
- Open Enrollment
- Hispanic Serving Institution
- Minority Serving Institution
- Tuition is 2nd cheapest in Texas
- Over 40 bachelors and master degrees
- 12,900 Students
- Over 800 STEM Majors within the College of Sciences and Technology

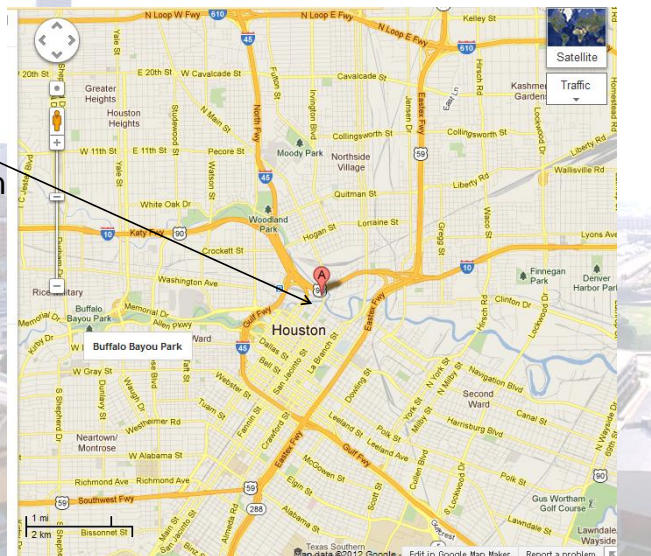


(Data as of Fall 2010)

University of Houston-Downtown



- Located in the heart of downtown Houston
- Three major interstate highways encircle the urban University of Houston-Downtown



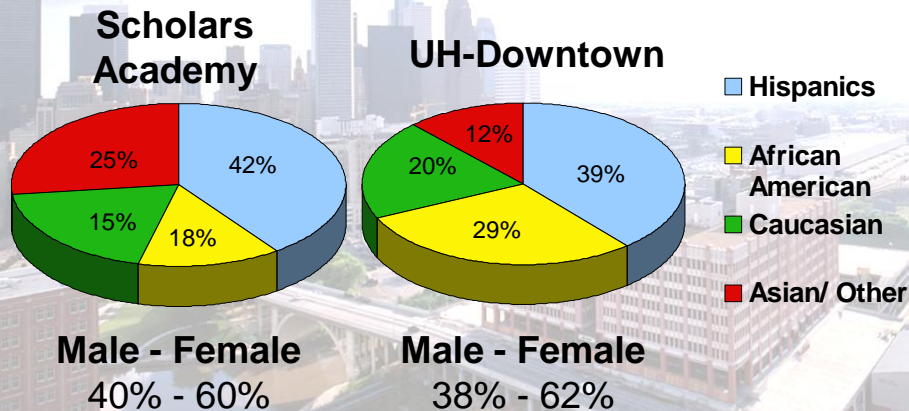


Scholars Academy

- **Academic Competitive Scholarship and Mentoring Program** within the College of Sciences and Technology
- Mission is to increase the number of students graduating with degrees in STEM
- Established in Fall 1999
- Currently 160 students
 - 67% Natural Sciences
 - 27% Computer and Mathematical Sciences
 - 6% Engineering Technology
- Each with a peer and PhD faculty mentor



Demographics



UHD has the most diverse student population of any liberal arts university in the Western U.S., according to *U. S. News & World Report*.

(SA data S11; UHD data F10)

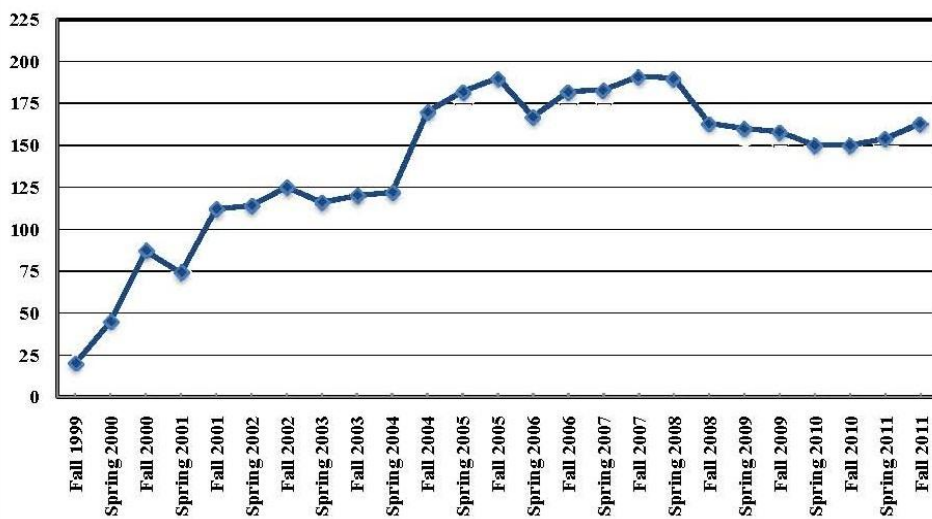


Alumni and Current Demographics

- | | |
|-------------------------------|---|
| ■ 451 <u>Alumni</u> members | ■ 160 <u>Current</u> members |
| ■ 49% Minority | ■ 60% Minority |
| ■ 35% Hispanic | ■ 42% Hispanic |
| ■ 49.9% Female | ■ 60% Female |
| ■ 50.1% Male | ■ 40% Male |
| ■ 55% First Generation | ■ 58% First Generation |
| ■ 30% SES status of <\$20,000 | ■ 65% SES status of <\$20,000 to \$40,000 |



Academy Membership Growth





Recruitment

■ Entrance Requirements

- Majoring in Natural Sciences (including pre-health), Engineering, Computer Science, and Mathematics
- HS GPA or College GPA of 3.0 cumulative
- SAT Scores (HS): 450 Verbal and 450 Math
- U.S. citizens/residents; however, others may still apply
- Pre-Calculus preferred
- Priority to students with less than 75 college hours

■ Application

- 2-page application, transcripts, a personal statement, and two recommendations forms/letters
- Available at www.uhd.edu/scholars

■ Renewable

- Required GPA; Active Participant in SA activities



Recruitment

■ Maintaining Eligibility Through Semester monitoring

- Grades
- Broadening activity requirements, e.g., scholarly seminars, field trips
- Peer mentor group networking meetings
- Development/Revision of curriculum vitae (CV) & personal statement (PS)
- Faculty Mentor CV/PS review & feedback meeting

■ Probation

- Academic progress
- Broadening requirements not met
- Scholarship impact





Funding



- **\$4,000 average scholarship per year**
 - Brown Foundation, Inc.
 - National Institutes of Health
 - National Science Foundation
 - U.S. Dept. of Education
 - U.S. Nuclear Regulatory Commission
- **Amount of tuition/fees for 12 hours covered by SA**
 - 20% receive SA scholarships providing over 100%
 - 60% receive SA scholarships providing 86% or more
 - 77% receive SA scholarships providing 70% or more
 - 100% receive SA scholarships providing 61% or more

(Data as of Spring 2011)



Funding

Scholars Academy Opportunities	Amounts
Incoming Freshmen – 2 Week Workshop in August	\$500
Scholars Academy scholarship – each semester	\$2000 average
Program Assistants – summer workshops	\$500 - \$1200
Tutors and Course Assistants – each semester	\$600 - \$1200
Peer Mentors – each semester	\$500
Research Internships – each summer session	\$1000 - \$3000
Leadership & Presentation Awards – yearly	\$200 - \$600
Student Recruiter & Assistants – each semester	\$800 - \$1400
Student Conference Travel – nationwide; yearly	70-120 students



Freshman Programs

- Specialized Orientation for Academy Freshmen
 - Testing, Advising, Register for classes, Campus Tour
- Parent / Student Colloquium Dinner
 - Providing a better understanding of college expectations & the caring community in which they are joining at UHD
- Pre-College Workshop
 - Exposure to **research** and **college life** in a two-week intensive workshop; Common Book Project
 - Freshman each paid \$500
- College Success Program Course
 - Continue acclimation to college life
 - FTIC, Transfers



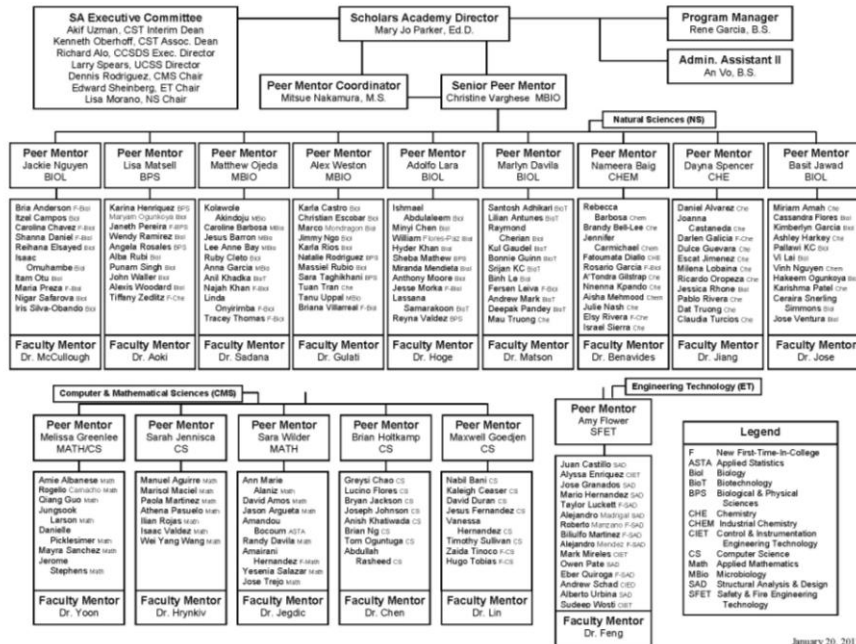
Mentoring

- Every member of the Academy is assigned
 - Peer Mentor
 - Faculty Mentor (Ph.D.)



- Semester Meetings
 - Orientation mtg
 - A networking mtg
 - A service learning activity
 - Review of CV and Personal Statement

Spring 2012 UHD Scholars Academy Roster



SA SUCCESS DATA

- Beginning 13th year of... Educating Students & Graduating Leaders
- \$13 Million in Grants Awarded to SA
- 980 Scholars
- 3,400 scholarships awarded (> \$6M)
- 750 community service hours yearly
- 100 research presentations yearly
- 461 Alumni
- 39% in Graduate/Professional Schools

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Tutoring

- Free Tutoring for most STEM courses
 - Includes lower and upper level courses
- Peer-Led Team Learning (www.pltl.org)



Service Learning

- Peer Mentors organize group volunteer activities
- Reflections in surveys and presentations
- Over 400 volunteer hours per semester





Broadening Experiences: Field Trips and Seminars

- Houston Crime Lab
- Texas A&M College of Veterinary Medicine
- NASA Johnson Space Center
- Texas Brazos Bend State Park
- Texas A&M Nuclear Science Center
- Memorial Hermann Hospital
- Huntsville State Park Blue Lagoon Quarry
- HAAC Fermentation/Winery
- Schlumberger, ExxonMobil, Sharkbyte Studios
- Houston area construction sites
- UH Visual Computing Lab
- UH Pharmacy School
- M.D. Anderson Cancer Center
- Austin area Geology Field Trips
- Museum of Health and Medical Science
- Green's Bayou Wetland Mitigation Bank
- Houston Museum of Natural Sciences
- Downtown Houston Historic District
- Science & Engineering Fair of Houston
- Bayer Plant in Baytown
- Plus numerous off-campus conferences



Undergraduate Research



• Year-round Undergraduate Research Program

Paid research program where Academy students work with PhD faculty in STEM fields at UHD.

• Research Begins Freshman Year

Grant-funded labs at UHD & other Houston area labs

• Promotion of Off-Campus Research

Students participate in collaborative off-campus research programs.

• Conference Travel Support

Paid Travel for students presenting research at peer-reviewed scientific conferences nationwide (50-80 yearly).

• Student Research Conference

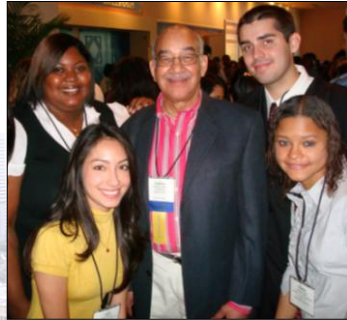
Campus-wide student research conference held each spring at UHD (approx. 100 posters yearly).





Student Travel

- Texas Branch of the American Society for Microbiology
- Georgia Institute of Technology FOCUS Scholars Program
- Mathematical Association of America (MAA) Joint Mathematics Meetings
- National Sigma Xi Student Research Conference
- Annual Biomedical Research Conference for Minority Students (ABRCMS)
- National Society for the Advancement of Chicanos and Native Americans in Science (SACNAS) Conference
- Hispanic Engineer National Achievement Awards Conference
- Annual Texas Undergraduate Mathematics Conference
- National Institute of Standards and Technology (NIST) Annual Conference
- National Conference on Undergraduate Research (NCUR)
- American Chemical Society National Meeting



Community Building Activities

- Student Clubs in STEM
 - Community Service
 - Pizza/Puzzle Party
 - Programming Contests
 - Science Jeopardy
 - Tutoring/Reviews
 - Mission Trips
 - Socials / Parties
 - Throw Pie at Teacher
 - Dunk a Professor
 - Conferences





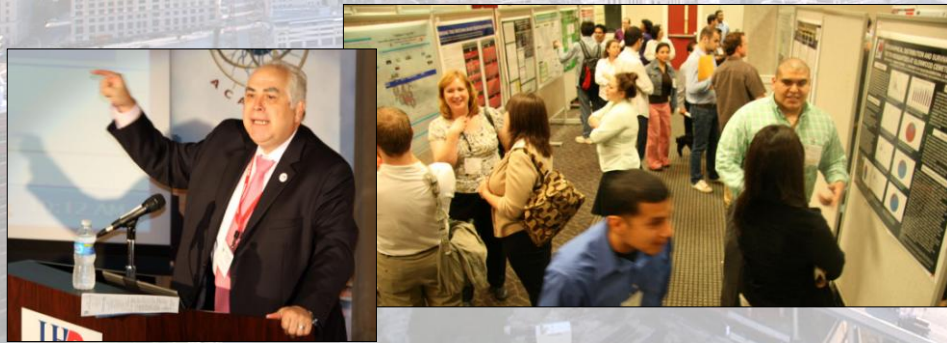
Annual Graduate School Fair

- Promote Academy members to prospective graduate schools & companies
- Showcase 15-20 graduating Academy research projects
- 50-60 STEM graduate and internship programs attend



Annual Student Research Conference

- Promote Academy members and UHD undergraduates research to the larger university community
- Showcase 100 mentored undergraduate research projects
- University-wide attendance





Online GRE Preparation

- Preparing Academy members for GRE
 - Fall & Spring Semesters
 - Offered as a for-credit course
 - Mock Exams conducted by Kaplan



Major Recognition

- In December 2004, the UHD Scholars Academy was awarded the **Texas Higher Education Star Award**, established by the Texas Higher Education Coordinating Board to recognize exemplary contributions toward closing the educational gaps that challenge the state. The Academy has received acknowledgement on national and international levels as an exemplar for fostering academic success within an urban university environment.





Major Recognition

- The Scholars Academy was featured within the National Science Foundation's Budget Request to the White House for Fiscal Year 2008, (made public on February 5, 2007).
- The NSF request includes funds for NSF projects including the NSF STEP award that supports the Scholars Academy and many of the SA member scholarships.
- The article cited was used in justifying NSF's \$6.43 billion budget is located on page 10 of the document at www.nsf.gov/about/budget/fy2008/pdf/29_fy2008.pdf. More about the NSF request to the U.S. Congress is accessible online at www.nsf.gov/about/budget/fy2008.



Major Recognition

■ Excelencia in Education 2011 Competition

- The Scholars Academy nominated and notified as one of 15 Finalists
- Featured in Examples of Excelencia! – <http://edexcelencia.org>



■ 2011 President's Higher Education Community Service Honor Roll

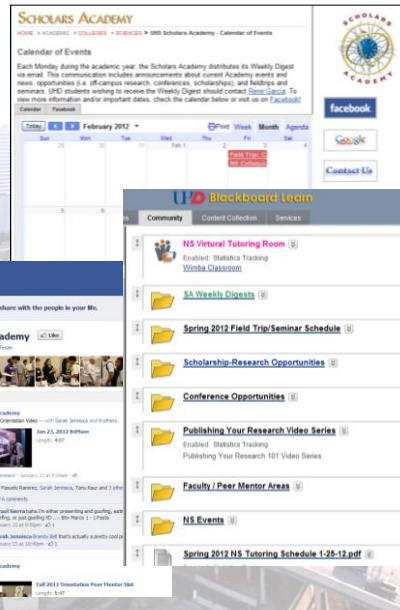
- Scholars Academy is one of three UHD programs recognized as contributors towards the award
- Awarded by the Corporation for National and Community Service





Technologies Used to Build Community

- SA Weekly Digest – emailed to all SA members
- SA Website Google Calendar
- SA FaceBook.com
- SA BlackBoard Learn
- SA Database (13 years)
- SA link from UHD web



Results: Student Successes

- Over 13 years of **“Educating Students & Graduating Leaders”**
- 980 Academy Members to-date
 - 55% - 1st Generation College Students
 - 33% - First Time In College (FTIC)
- Over 3,500 scholarships awarded (~\$6 Million)





Successes

■ 451 Alumni to-date

- 44% - FTIC graduation rate **
- 49% - Overall FTIC graduation rate **
- 69% - Overall retention rate **
- 39% in graduate/professional programs
- In 2009/2010, SA members presented
 - 165 research posters on-campus/off-campus
- 51% acceptance rate to medical schools
- 91% remain in STEM workforce or graduate programs

** 1999-2006 cohorts



Student Successes

Graduate/Professional Schools Attended

- Arizona State University
- Baylor College of Medicine
- Columbia University
- John Hopkins University
- Penn State University
- Prairie View A&M University
- Rice University
- Texas Tech University
- University of Houston-Central
- University of Maryland
- University of Texas El Paso
- UT Medical Branch-Galveston
- UT Health Science Centers – Dallas/Houston/San Antonio
- York University (Europe)





Conclusions

- Students have an on-campus family-like connection
- Students spend more time on campus
- Students have an active and reliable support system in their peers, mentors and faculty/staff
- Students have a better understanding on how they will apply classroom concepts to real world problems
- Students can relate concepts across multidisciplinary subjects
- Students are better prepared and more confident upon graduation to continue on to graduate schools



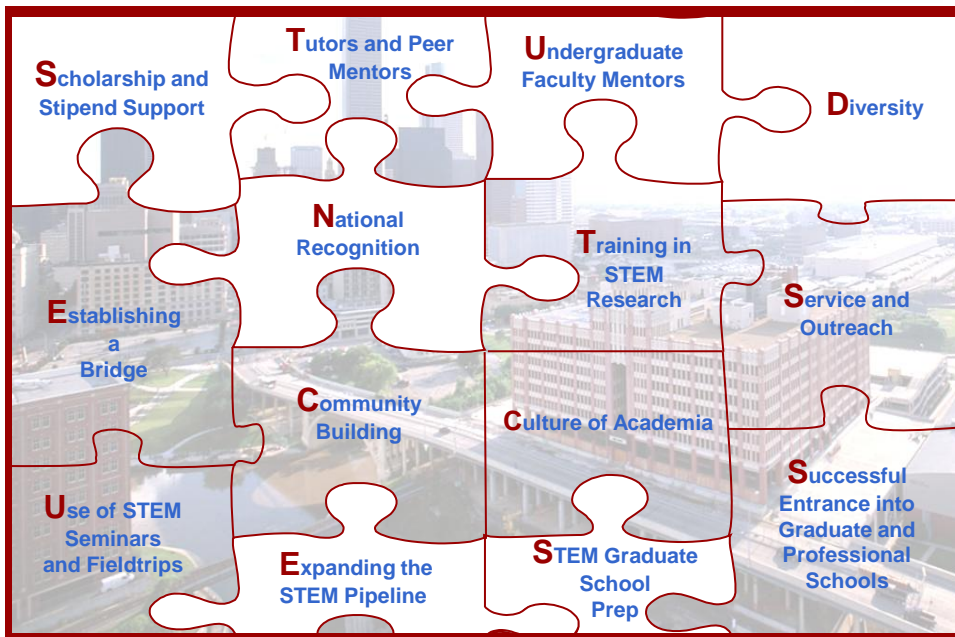
Conclusions

Future Assessments to Study

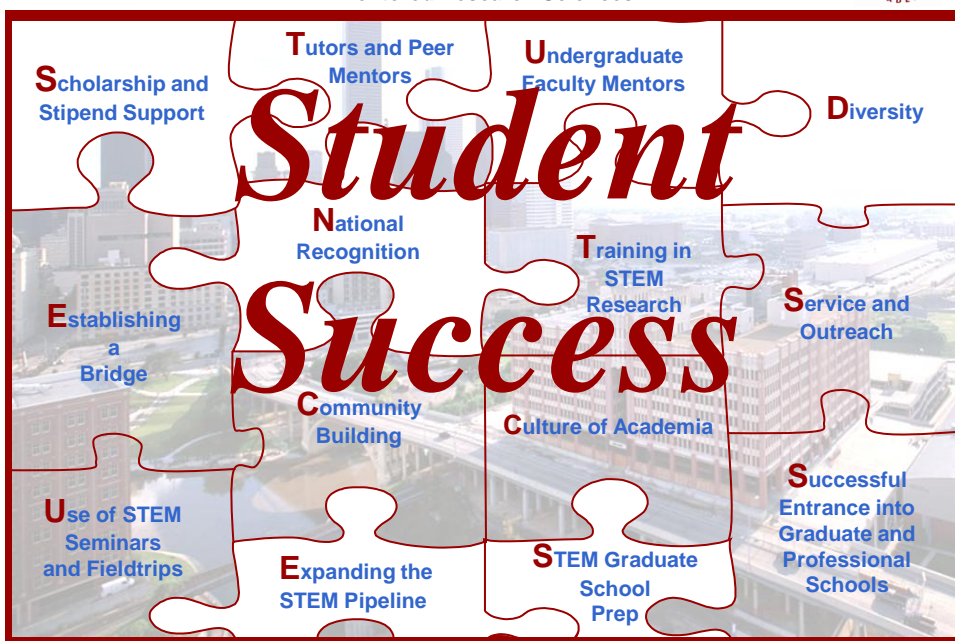
- Reflections
 - Students provide open-ended reflections on these programs within surveys each semester
- Retention and Graduation Rates
 - Continue studying FTIC, Transfer cohort retention and graduation rates
- Longitudinal Post-Baccalaureate Graduation Rates
 - Graduate programs, professional schools
- Longitudinal STEM Workforce Employment



Scholars Academy: A Model for Supporting Student Success across STEM through High Impact Activities and Mentored Research Sciences



Innovative Scholars Academy: A Model for Supporting Student Success across STEM through High Impact Activities and Mentored Research Sciences





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