Increasing Underrepresentation in STEM: The Scholars Academy A Model for Student Success

Presenters:
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The Scholars Academy is funded by the National Science Foundation (0728408, 0909948, 0934913), U.S. Nuclear Regulatory Commission (NRC-27-10-1121), Joint Admission Medical Program (K-2-01024), Texas Workforce Commission, Brown Foundation, Hamill Foundation, Welch Foundation (BJ-0027), Shell Oil Company Foundation, and UHD Donors.
Background Information

Urban 4-Year University since 1974
Hispanic Serving Institution
Minority Serving Institution
Tuition is 3rd most affordable in Texas
Over 40 bachelors and master degrees
Almost 14,000 Students
Over 3,000 new students each year
Over 2,000 graduates each year
940 majors in STEM

(Data as of Fall 2012)
Mission: To increase by 100% the number of students graduating with degrees in STEM.

Vision: To support 100% matriculation into graduate programs, professional programs, and STEM industry careers.
Academically Competitive

• Minimum 3.0 GPA
• Minimum 1,000 SAT (500 math/500 verbal)
• Prefer completion of Pre-Calculus
• Two Letters of Recommendation
• Essay describing academic goals
• Resume or Curriculum Vita
• Limited Funding for Non-Residents
• Applications online: www.uhd.edu/scholars
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 S13; UHD data F12)
SA STEM Demographics

Tuition Scholarship Support

<table>
<thead>
<tr>
<th>Level of Support</th>
<th>Percentage Receiving Scholarship Funding</th>
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<tbody>
<tr>
<td>61%</td>
<td>20</td>
</tr>
<tr>
<td>70%</td>
<td>66</td>
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<tr>
<td>90%</td>
<td>77</td>
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<td>100%</td>
<td>100</td>
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SA FTIC Graduation Rate 47.34%
SA FTIC 6-Year Graduation Rate 42.51%
SA FTIC 1-Year Retention Rate 64.08%
SA FTIC Entering Grad/Professional School 44.9%
SA Total Entering Grad/Professional School 40.6%
Value Added to UHD FTIC 6-year Graduation Rate 1.73% (over 1999-2006)
Graduation Demographics

SA Prior and Current Members (1070)
AI – 0.6%; A/O – 24.8%; Black – 16.4%; Hispanic – 37.9%; W – 20.4%

SA STEM Graduation Rate (522 or 48.8%)
AI – 0.4%; A/O – 31.6%; Black – 13.8%; Hispanic – 33.3%; W – 20.9%

SA Entering Grad/Professional School (212 or 40.6%)
AI – 0.9%; A/O – 31.1%; Black – 20.8%; Hispanic – 27.8%; W – 24.1%
Acceptance into Post-Baccalaureate Programs

Three year review of increases in acceptance rates into graduate and professional schools by UHD SA STEM undergraduates.
Continuance in STEM Beyond Undergraduate Years

Three year review of increases in continuity into graduate and professional schools by UHD SA STEM undergraduates following graduation.
SA Five Point Model

• **Point 1: Scholarship Support**
  - Barriers to underrepresented project participants are eliminated through academic scholarships. Academic scholarship support ranges from $3200 to $8000 per year with stipulations and academic requirements.

• **Point 2: Mentoring**
  - Assignment of SA students to faculty mentor and peer mentor groups. The mentoring activities last the entire 2-4 years in SA; Pre-Start week-long orientation session for entering SA students and parents (early August), a core College Success Program (CSP) course for freshmen and transfer students.

• **Point 3: Broadening Experiences**
  - STEM seminars/field trips by faculty mentors or guest faculty (provided as a mechanism to further broaden and/or provide detailed understanding of STEM career/research possibilities; service learning activities; intervention series per semester presented by faculty mentors.

• **Point 4: Graduate School Preparation**
  - Exposure and preparation for graduate school through development of CV and Personal Statements; a Graduate School and Internship Fair, and GRE Prep workshops (on average students increase their combined Verbal and Quantitative GRE scores by 200 points).

• **Point 5: Scholarly Research/Internships**
  - Opportunities by PhD faculty-mentored research occurs on-site and off-site in competitive research programs nationally; support for conference dissemination of research findings; and possibly co-authorships of published research. SA members are required to submit to 2 research/internship opportunities per semester. These may be internally or externally sponsored.
Support Programs

• Freshman Programs
• Mentors & Tutors
• Seminars & Fieldtrips
• Service Learning
• Undergraduate Research
• Conferences and Travel
• Social Activities
• GRE Workshops
• Graduate School & Internship Fair
Freshman Programs

• Summer Prep for Freshmen
  – Testing, STEM Advising, Registering, Research Days
• 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 one-week intensive workshop; Common Book Project
  – Freshman each paid $220
• College Success Program (CSP)
  – Continue acclimation to college life
Innovative Freshman and Transfer Seminar (CSP)

The What

1) Building a cohort community of learners, thereby increasing retention.

2) Providing first generation STEM students foundational reading, writing, presentation skills, and knowledge/skill of applied research, thereby enabling a visioning process of advanced graduate work for minority students.

3) Building leadership skill sets through teamwork and service learning, thus building self-sufficiency, confidence, capacity for the rigors of university academics and STEM careers.

College Life – Scavenger Hunt
Time and Stress Management
Notetaking
Plagiarism
Curriculum Vitae & Personal Statement Development
Service Learning
Technology in Mathematics
Field Trip
Research Through Movie Project
Peer Mentor
Dayna Spencer
CHE

Miriam Amah Che
Darlen Galicia Che
Escat Jimenez Che
Vi Lai Che
Milena Lobaina Che
Vinh Nguyen Chem
Vincent Pham Che
Jessica Rhone Biol
Pablo Rivera Che
Dat Truong Che

Faculty Mentor
Dr. Jiang
Tutoring Services

- 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
- About 400 volunteer hours per semester
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
• **Year-round Undergraduate Research Program**
Paid research program where Academy students work with PhD faculty in STEM fields at UHD (about 50 students).

• **Promotion of Off-Campus Research**
Students participate in collaborative off-campus research programs (about 20 placements each summer).

• **Conference Travel Support**
Paid Travel for students presenting research at peer-reviewed scientific conferences nationwide (70-80 yearly).

• **Student Research Conference**
Campus-wide student research conference held each spring at UHD (about 100 posters yearly).
• Texas Branch of the American Society for Microbiology (ASM)
• 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
• South Texas Chapter of the Heath Physics Society
Social Activities

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

- In our 14th year of...
  - Educating Students and Graduating Leaders
- Over 1,000 Scholars
- Over 3,600 scholarships awarded (> $6M)
- Over 750 community service hours yearly
- Over 100 research presentations yearly
- Over 600 Alumni
- 39% in Graduate/Professional Schools
Recent Recognitions

• 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
Student Success Results

39% Attend Graduate/Professional School

- Arizona State University
- Baylor College of Medicine
- Columbia University
- Harvard University
- Johns Hopkins University
- Penn State University
- Prairie View A&M University
- Rice University
- Texas A&M University
- Texas Tech University
- University of Houston-Central
- University of Maryland
- University of Notre Dame
- University of Southern California
- University of Texas El Paso
- UT Medical Branch-Galveston
- UT Health Science Centers – Dallas/Houston/San Antonio
- York University (Europe)
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- Scholarship and Stipend Support
- Establishing a Bridge
- Use of STEM Seminars and Fieldtrips
- Tutors and Peer Mentors
- National Recognition
- Community Building
- Expanding the STEM Pipeline
- Undergraduate Faculty Mentors
- Training in STEM Research
- Diversity
- Service and Outreach
- Successful Entrance into Graduate and Professional Schools
- Culture of Academia
- STEM Graduate School Prep
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163 STEM undergraduate Academy members

UHD Scholars Academy – Spring 2012
Founders and Initial Grant Writers
- Larry Spears, Professor in Chemistry, UHD
- Richard Alo, Professor in Computer Science, UHD

Current and prior SA Directors and the SA Program Manager are recognized and acknowledged as innovators and leaders in developing the SA to its current level of success.

Current and prior Funding Agencies
- National Institutes of Health
- National Science Foundation
- Texas State Legislature
- Texas Workforce Commission
- Brown Foundation, Hamill Foundation, Welch Foundation
- Shell Oil Company Foundation
- U.S. Army Research Office
- U.S. Department of Education
- U.S. Nuclear Regulatory Commission
- U.S. Office of Naval Research
- University of Houston-Downtown
Thank You for Your Attention.

Questions?

www.uhd.edu/scholars