HACU Annual Conference
Sunday, October 11, 2015
Room - Splash 11
10:30 a.m. – 11:45 a.m.

Hartnell College STEM Internship Program:
Engaging Future Scientists through Authentic Research
Presenters

Shannon Bliss – Dean, Academic Affairs (Hartnell)
Moises Almendariz – Director, HSI Initiatives (Hartnell)
Yuliana Ortega – STEM Diversity Programs Director (UC-Santa Cruz)
Jade Loftus – Science & Math Transfer Coordinator (UC-Santa Cruz)
Dr. Willard Lewallen – Superintendent/President (Hartnell)
Participant Interaction

Who is our audience today?

- Community Colleges?
- Universities?
- Currently have an internship program?
- Considering an internship program?
Hartnell College Mission Statement

Focusing on the needs of the Salinas Valley, Hartnell College provides educational opportunities for students to reach academic goals in an environment committed to student learning, achievement, and success.

Hartnell College Vision Statement

Hartnell College will be nationally recognized for the success of our students by developing leaders who will contribute to the social, cultural, and economic vitality of our region and the global community.
Strategic Plan / Six Priorities

1. Student Access
2. Student Success
3. Employee Diversity and Development
4. Effective Utilization of Resources
5. Innovation and Relevance for Programs and Resources
6. Partnerships with industry, business, agencies, and education
STEM Internship Program

Hartnell Community College District
Trustee Areas
Adopted November 1, 2011

Map Layers
City Limit (white line)
County
Water
Highway

Trustee Areas
Trustee Area 1
Trustee Area 2
Trustee Area 3
Trustee Area 4
Trustee Area 5
Trustee Area 6
Trustee Area 7

Miles
0 5 10 15

411 Central Avenue Salinas, CA. 93901
www.hartnell.edu
(831) 755-6700
STEM Internship Program

• Over 13,000 total students annually
• 85% receive financial aid
• 73% of students are Latino/Hispanic
• 90% unprepared for college level math
• 85% unprepared for college level English
• Less than 10% of adults in District have a bachelor’s degree or higher
• 39% of adults over 25 years old do not have a high school diploma
• Annual family income in East Salinas - $11,000
Against this backdrop of enormous socio-economic challenge and education disadvantage…World class STEM programs and world class students

• NASA-MAA program
  – to provide space-related STEM experiences to increase the participation and retention of historically underserved and underrepresented youth.

• CS-in-3 Program
  – Only one of its kind in the U.S.
  – 3-year bachelor’s degree in computer science
Program History

• Was initiated in 2007 with support from a CCRAA (College Cost Reduction and Access Act) grant.
• Has been supported with various grants, endowment, and general funds since inception.
• Has endured multiple leadership changes.
Number of Participants in the Hartnell STEM Internship Program

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Interns</th>
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<tbody>
<tr>
<td>2007</td>
<td>10</td>
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<td>2013</td>
<td>50</td>
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<tr>
<td>2014</td>
<td>120</td>
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<tr>
<td>2015</td>
<td>120</td>
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Scale of our program:

2015

• STEM Graduates: 151
• Internship Participants: 125
Who are our interns?
STEM Internship Program

Percent Female Interns

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<tr>
<th>Year</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
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<tbody>
<tr>
<td>Value</td>
<td>16</td>
<td>31</td>
<td>44</td>
<td>50</td>
<td>29</td>
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</table>
To meet the needs of our demographic, we provide a wrap-around program designed to prepare and support our students in their research experience.

- Mentor building
- STEM Internship Preparation Class - Science 124
- Intern matching
- Mid-Summer retreat
- Symposium
STEM Internship Program

Student Outcomes

• Access to MENTORS
• Comparable experience to university students
• Transfer connections (CSUMB/UCSC/UCB)
• Research opportunities, career-related experience
• Practical knowledge and soft skills
• Increased self confidence
• Exposure to determine interest
• Professional and industry networking opportunities
• Prepare for application to grad school
STEM Internship Program

Criteria

• Declare a STEM major
• Prepare an education plan with counselor
• Attend informational workshop.
• Complete internship interest form on Internship Program website
• Upload current resume on Internship Program Website
• Enroll in Science 124 “STEM Internship Preparation Course” for Spring Semester
• Get a letter of recommendation from a faculty member
STEM Internship Program

Science 124

• Team taught by 4-6 faculty members and Math, Science and Engineering Dean

• Example Topics:
  • Resume Preparation
  • Abstract Writing
  • Data Analysis,
  • Research Presentation,
  • Lab Skills/Programming,
  • Responsible Research

• Write Project Plan to be reviewed and approved by mentor
Intern Matching

- Internship Placements
  - Internship coordinator interviews every student for interests and goals
  - Goals and interests and well as skill level is accounted for in placement
- Students encouraged to find own internships
- Internship Mentor Orientation and Handbook
Participant Interaction
Mentor Building
– Is this a focus at your institution?
– What are you doing?
Summer Internship Program
Internship Structure

• Mid-June Internships begins

• 8-10 weeks, Monday – Friday, full-time

• Site visits and lab tours by program activity directors throughout summer
Types of Internships

- Traditional Business/Industry
- Research Scholar Institute
- Government Agency (USDA & NPS)
- University partner
Research Scholars Institute (RSI)

- College faculty lead intern in research at Hartnell
- Published papers and mentor building.
  - Algal genome
  - Cosmic ray detection
  - Math Applications
  - App development for pathogen detection on crop species
Naval Postgraduate School (NPS)-Community College Catalyst Program

• 126 Interns since 2007
  – 3 former interns now Scholarship for Service Scholars, earning MS
  – 1 former intern earned MS from NPS
  – 1 former intern earned BS from NPS

• Co-authors on groundbreaking research
  – Large Data
  – Material Science
  – Anthrax Modeling
STEM Internship Program

USDA

• Year-round model
• Trained with key skills in our program
• On-going Research throughout the year
• Science to Ag crossover opportunity
  – Pest and pathogen control
  – Trout water quality
STEM Internship Program

• Mid Summer Retreat
  – Modeling poster session- students from CSUMB and UCSC
  – Symposium preparation- abstracts and poster preparation
STEM Internship Program

Research Symposium
Research presentations at our symposium are a vital component of our program; where our students:

- communicate their research to mentors, local scientists and professionals.
- network with potential transfer universities and future job opportunities in the Salinas Valley.
- receive feedback and guidance at every level of research experience and presentation skill.
STEM Internship Program

Symposium Participants
Parent and Family Engagement
Mentors and Partners
Funders
Faculty
President and Board
Partner Award
Community Leaders
Participant Interaction

• Effective Family Engagement
  – Our challenges
  – What are you doing?
Internships motivate our students
Intern survey responses (2015)

Learned / used skills not available in course setting

Feel ready for more demanding / applied work
STEM Internship Program

Spring to Spring College Persistence for 2014 Intern Cohort vs. College-Ready Population

- Interns: 96%
- College Ready: 78%
University Internship Collaborations
CSin3 Internships

- 3-year Computer Science Degree
- 1.5 years at Hartnell, 1.5 years at CSUMB
- Year-round, cohorted program
- Second summer internship- mandatory
  - Joe Welsh- principle founder of both programs
  - CS students not marketable without experience
  - First cohort placed for internships this summer
CSin3 Interns
• 27 students
• % Female: 37%
• % Hispanic: 85%

Key Placements
• Apple
• Uber
• Cisco
• NASA
• UC Berkeley
• Salesforce
• Allstate
• VMWare
• Driscoll Farms
Hartnell and University of California Santa Cruz Partnership
Hartnell Living Learning Community (HLLC)

- Research Internships
- HLLC Lending Library
- Conference and Symposia
- Tutoring and Study Groups
- HLLC Coffee Transfer Hour

- Professional Development
- Mentoring
- Hartnell Mid-Summer Retreat
- Annual Summer Symposium
Hartnell and University of California Santa Cruz Partnership
HLLC Data

2015 Transfer Student Population

- UCSC Transfer/Re-entry student: 29% (3,329)
- PBSci/SOE Transfers: 17% (572)
- Hartnell Student Population: 3% (15)

2013-15 Hartnell Student Participation in Research

- Active: 49%
- Not Active: 51%
Hartnell and University of California Santa Cruz Partnership
HLLC Data

Hartnell Student Status 2013-15
(N=41)

- Junior:
  - 71% (n=29)
- Senior:
  - 55% (n=16)
- No Degree*:
  - 10% (n=4)
- Degree Completed:
  - 19% (n=8)
- Degree in Progress:
  - 45% (n=13)

Legend:
- No Degree*
- Degree Completed
- Degree in Progress
Hartnell and University of California Santa Cruz Partnership
Positive Outcomes

• **Outreach** (Transfer Day, Summer Symposia)

• **Transfer Pipeline** (Campus contacts, STEM Diversity Programs, NSF-LSAMP CAMP Transfer)

• **Conference Student Awards & Recognition** (CAMP, iGEM, SACNAS)

• **Student Success** (Graduate School, Industry Jobs, etc.)
STEM Internship Program

Resources Necessary to Develop the Internship Program
STEM Internship Program

• Resources
  – Endowment
  – Partners- corporate and university
  – Specifically-focused grants
  – Institution
  – Foundation and community support
STEM Internship Program

Support at the highest level of the institution – CEO and Board

Excellent staff with passion and dedication toward students

Staff with the ability to build robust partnerships with multiple stakeholders and institutions

Braided funding = public and private funding

Ability to maintain and steward relationships with partners
STEM Internship Program

Developing Partnerships with Agencies, Organizations, and Educational Institutions
STEM Internship Program
STEM Internship Program

Cultivate and maintain relationships with partner institutions

Develop partnership agreements

Recognize partners for their contribution

Keep in touch regarding student’s success and needs

Look for co-funding opportunities to support both institutions

Report student success back to mentors
Internships lead to strong transfer and degree completion outcomes.
Intern survey responses (2015)

Made/reinforced decision to pursue advanced STEM-related education

Percent of Students

- Strongly agree: 60%
- Agree: 20%
- Neutral: 10%
- Disagree: 10%
- Strongly disagree: 0%
Educational Attainment for Hartnell STEM Internship Participants
(first 5 cohorts, n = 69)

- Bachelors: 42% (HC Interns), 12% (National)
- Associates: 55% (HC Interns), 14% (National)
STEM Internship Program

Percent of Interns Transferred to 4-Year

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<thead>
<tr>
<th>Year</th>
<th>Percent</th>
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<td>56.3</td>
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STEM Internship Program

Seventh Annual
Summer STEM Internship Symposium
STEM Internship Program

Questions?

https://sites.google.com/a/hartnell.edu/hartnell-college-internship-program/home