



STEM Leadership Conference

October 5, 2007

*Roots, Reach and Resilience:
The STEM Program
at
Kapi`olani Community College*

Dr. Leon Richards, Chancellor
Dr. John Rand, STEM Program Director



Kapi`olani Community College (KCC)

“Kulia i ka nuu” To Reach for the Highest

- **Founded:** 1964
- **Affiliation:** State (2nd largest college in Hawaii)
- **Accreditation:** Western Assoc of Schools & Colleges
- **Calendar:** Semester
- **Faculty:** 350
- **Location:** O`ahu (East Honolulu)





Kapi`olani Community College Offers:



- Student-Faculty Ratio: **21:1**
- Programs Offered
 - Total: **40**
 - Associate Degree: **19**
 - Certificate of Achievement: **10**
 - Certificate of Completion: **11**



- *Who are our students?*

- Enrollment is approximately **7,955 students** including students from 35 countries.
- **37%** of our students attend full-time.
- **58%** of KCC's students are **women**;
- Mean student age is @ **25 yrs**;
- **51%** of students report Asian ethnicity,
14% Hawaiian/Pacific Islander,
13% Caucasian,
17% mixed, and
3% other.





KCC STEM Mission

1. To provide KCC Students with workforce skills and transfer opportunities in Science, Technology, Engineering & Mathematics (STEM)



2. To provide STEM students with:

- a sense of place on campus;
- a clear academic or workforce goal
- funding opportunities

Student Transfer Goals

- >150 KCC Students transfer to UHM or UHH in STEM majors each year
- >30 Hawaiian Students transfer to UHM in STEM majors each year
- STEM transfer students have GPAs at or above those of UHM



STEM Program Accomplishments

- A new and modern **STEM Center**
- A new Associate of Science degrees in Natural Science (**ASNS**)
- **STEM Program**
 1. Pre-college
 2. Summer Bridge
 3. Retention



STEM Program Accomplishments (cont.)

➤ Funding Opportunities for Students

- Peer Mentors
- Research Interns
- Student Help

➤ Faculty Development

➤ Cultural Enrichment

➤ STEM Outreach Coordinator



STEM Program Accomplishments (cont.)

The New
STEM
Center





A.S. Degree-with a concentration in Life Science or in Physical Science (Total credits: 60 credits)

Have you heard about the new
STEM degree at Kapiʻolani CC?

ASNS

Associate of Science
Degree in
Natural Science

with concentration
in either
Life Science or
Physical Science

SIGN UP TODAY!



See the STEM Center
Monitor for these forms



Pre-College Program

➤ **Computer Building Project (STEP-UP)**



Summer Bridge Program

Junior Bridge

(3 weeks)

- Water Quality Testing

20 students,
90% Hawaiian

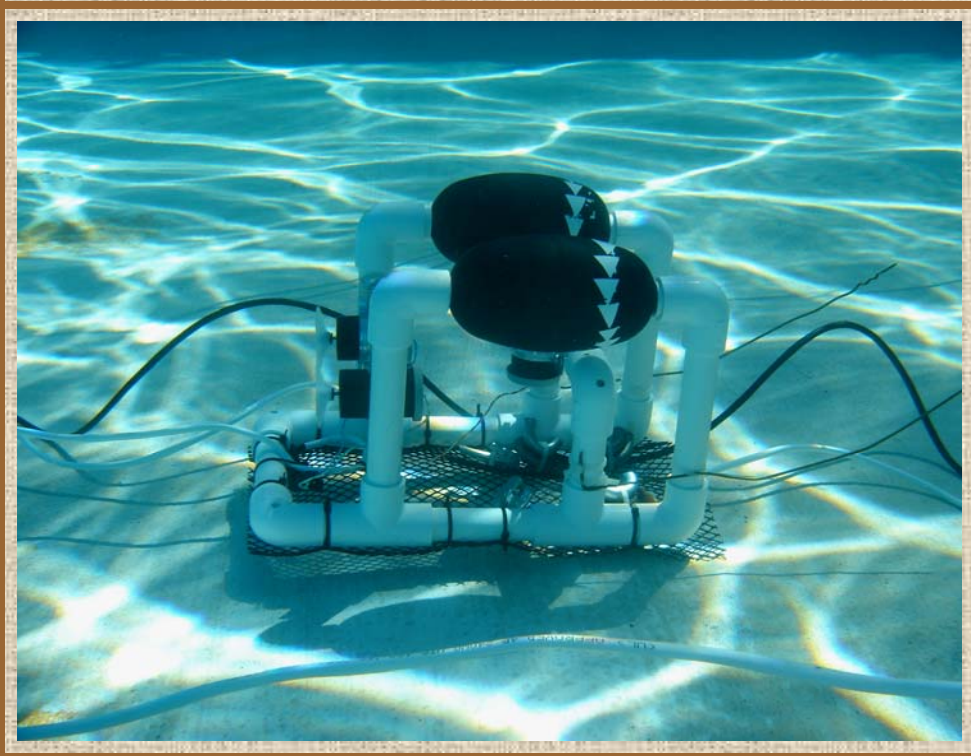


Summer Bridge Program

Junior Bridge (3 weeks)

- Water Quality Testing
- Underwater ROV

20 students, 90% Hawaiian



Summer Bridge Program

Junior Bridge (3 weeks)

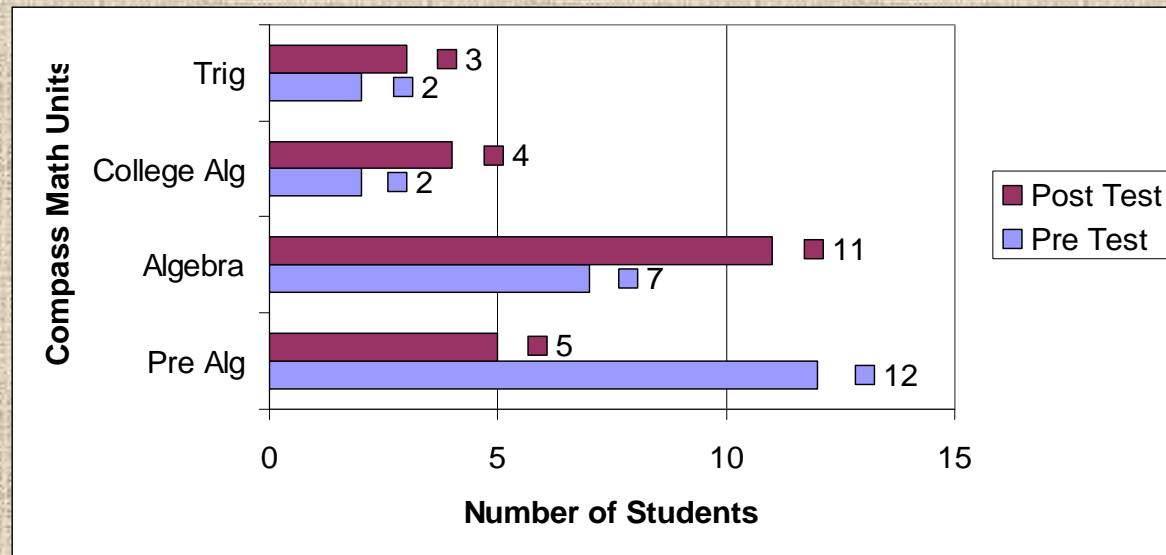
- Water Quality Testing
- Underwater ROV
- **ALEKS Math**
- Oahu Field Trips

20 students, 90% Hawaiian



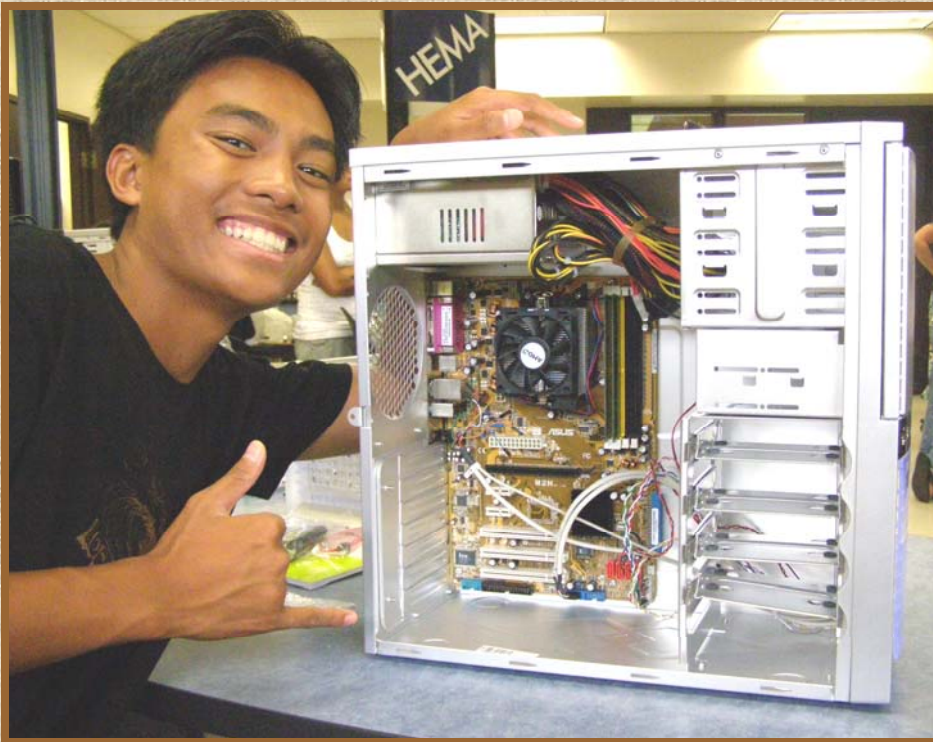
ALEKS Pre-Post Evaluation on Compass Placement Test

- 65.2% of the students scored significantly higher on the UH CPT raw score after working with the ALEKS program.



- 9 students (39%) placed in at least one math course higher on the post test.
- In one case, a student moved from College Algebra (MATH 103) to Calculus (MATH 205).
- This improvement saves the student 3 semesters of mathematics at KapCC.

Summer Bridge Program



Senior Bridge (3 weeks)

- Computer Building
- 21 students,
86% Hawaiian



Summer Bridge Program



Senior Bridge

(3 weeks)

- Computer Building
- H₂ Fuel Car
- 21 students,
86% Hawaiian



Summer Bridge Program



Senior Bridge

(3 weeks)

- Computer Building
- H2 Fuel Car
- PLATO Math
- Meet the Faculty

- 21 students,
86% Hawaiian

Retention Program

➤ Funding Opportunities for Students

- Peer Mentors (\$3000/sem)
- Research Interns (\$1200/sem)
- Student Help

➤ High Context Learning

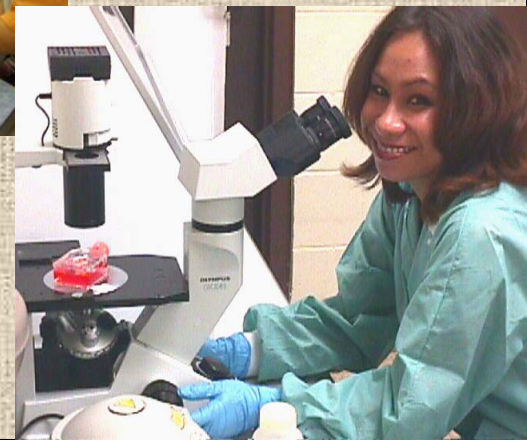
- Learning Communities
- Service Learning

➤ Cultural Enrichment Projects

- Kahoolawe
- Mauna Kea
- STEM Paina

➤ Student Progress Monitoring System

➤ Research Laboratory Experiences

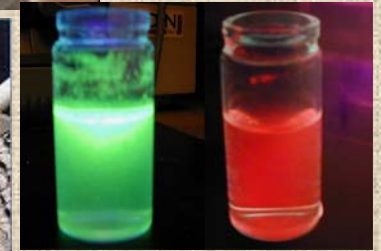
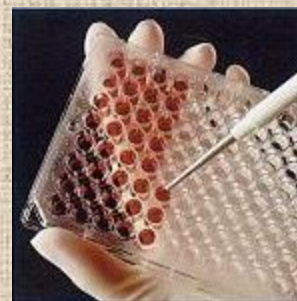


Curriculum Pathways

➤ **Waikiki Watershed Ecology**



➤ **Biotechnology and Molecular Science**



➤ **Space Science and Engineering**

➤ **Physiology and Human Behavior**

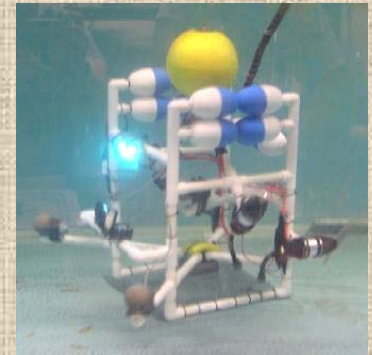




Student Research in Waikiki Watershed Ecology Pathway

- **GIS**

- Mapping the Waikiki Watershed
- Mapping Pig Trails
- Coastal Clean-up

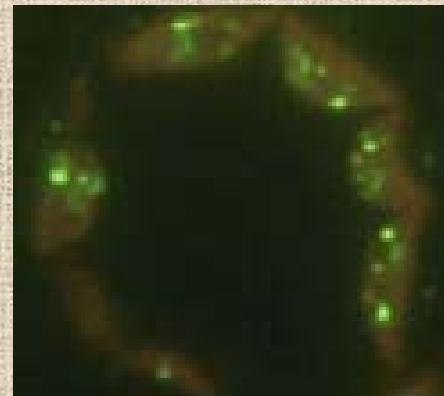
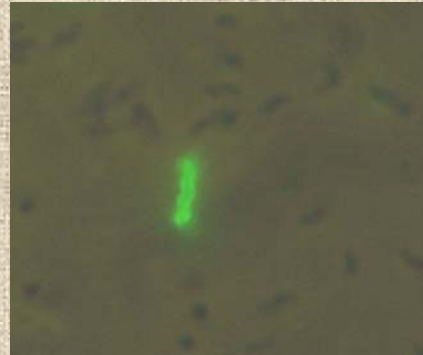


- **Maunalua Bay Clean Up**
 - Underwater ROV Video & Sensors



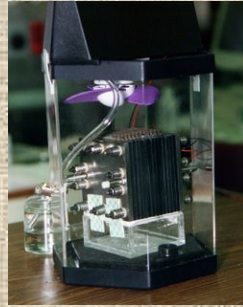
Student Research in Biotechnology Pathway

- **Biotechnology**
- **Protein Chemistry**
- **Molecular Science**
- **Campylobacter**



Student Research in Space Science & Engineering Pathway

- Fuel Cells



- CANSAT



- BalloonSAT



- Underwater ROV's



- "New" Alternative Energy Golf Cart



Student Research in Physiology & Human Behavior Pathway

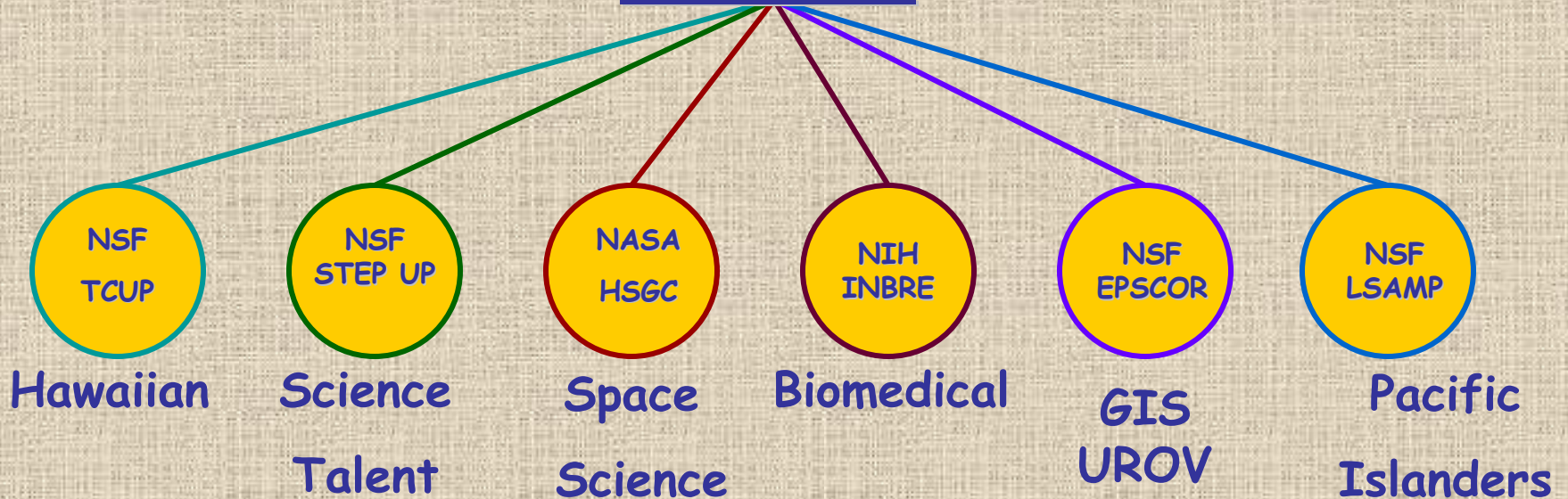
- Heart Rate Variability
- Sleep Stage Analysis
- Video Pupilometry
- Neurocognitive Functioning & Exercise
- Actigraphy





KCC STEM Student Funding 2007

KCC STEM





Challenges, Opportunities & Vision

- Associate in Science with concentrations in Natural Sciences (ASNS)



- *Life Sciences*
- *Physical Sciences*
- *Food Science/Culinology*
- *Ecology/ Environmental Science*
- *STEM Teacher Training*
- *etc.*



Challenges, Opportunities & Vision

- Associate in Arts (AA) with concentrations in → New Media Arts (Digital Media Arts)

- *Animation*
- *Interface Design*
- *New Media Arts Teacher Training*
- *etc.*



- The Future - Creativity served by Technology
- Develop KCC Alliance of Educational Academies through *partnerships, e.g.,*
 - KCC and State Government, DOE, Private Industry (Social Entrepreneurs)
 - KCC NMA and Film Studio,
 - Fort Ruger and STEM,
 - C&C BWS and STEM,
 - Leahi Hospital and STEM/Health Ed





Challenges, Opportunities & Vision

- **ASNS/AA**

STEM

&

Digital Media



- *Game Design & Development*
- *Science Through Animation*
- *Creative Writing with Publishing*
- *etc.*



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