Bridging the Gap with AIMS² – Enhancing Student Success with a Multi-Institutional Collaborative Program

S. K. Ramesh, Ph.D.
Project Director and Lead PI of the HSI-STEM Grant
AGENDA

• Introduction – Stacey Slijepcevic
• Overview of the AIMS² grant program – Ramesh
• Perspectives from Glendale CC – Scott Rubke
• Partnership with College of the Canyons– Amy Foote
• Student Outcomes and closing comments – Ramesh
• Q & A and discussion with Panelists
AGENDA

- Panelists
  Ramesh
  Amy
  Scott

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Disclaimer

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• However, the contents of this presentation do not necessarily represent the policy of the US Department of Education, and you should not assume endorsement by the Federal Government.
Student Success is our #1 Priority

CSUN’s undergraduate engineering programs were recognized for being the fastest growing in the nation in the 3 years from ‘05-’08 (96% growth) - ASEE March 2010

Headcount Enrollments - 2006-2016
AIMS$^2$
Attract, Inspire, Mentor and Support Students
www.ecs.csun.edu/aims2
The AIMS² Project - $5.5 Million Grant from USDE (2011-16)
Attract, Inspire, Mentor, and Support Students

Faculty and Staff from CSUN and partner Colleges
Goals and Objectives – 2011 Grant

- To increase the number of Hispanic and low-income students who successfully transfer from Glendale Community College (GCC), and College of the Canyons (COC) to California State University, Northridge, to pursue majors in Engineering and/or Computer Science.
- To increase the number of Hispanic and low-income students who join CSUN as upper division transfer students and graduate with degrees from one of the undergraduate programs in the College of Engineering and Computer Science.
- To develop a model, seamless and sustainable transfer program to assist Hispanic and low-income students to successfully transfer from GCC and COC to California State University, Northridge where they will complete their studies in Engineering and/or Computer Science.
Project Activities

- Tutoring to improve student performance in preparatory Math and Science courses.
- Advising and tracking of students in cohort
- Work closely with faculty and staff in feeder community colleges to develop seamless articulation agreements, especially for students transferring from 2 year colleges to CSUN.
- Create a mobile digital environment with Tablet PCs, iPad’s, and appropriate software, so that the project team can work with the cohorts to enhance communication, engagement, collaboration and creativity, and instant learning assessment.
- Expand Facilitated Academic Workshops (FAW) in required introductory courses and key upper division courses offered by the college’s programs
- Faculty/Peer mentoring and career advising of students in the cohort
- College wide events focused on careers and jobs such as the biannual Tech Fest events held in February and September.
- Provide students with opportunities to work on hands-on projects and research activities that encourage them to stay connected with their majors
Support Model

• **Collaboration CSUN and CC faculty:**
  – Facilitating a channel for face to face discussion on curriculum issues among CSUN and CC faculty teaching transferable courses.
  • Promote discussion on learning outcomes, resources, and best practices
  • Build trust to create further collaboration
  • Challenges to overcome
• Collaboration with CC faculty:
  – Facilitate a channel for face to face discussion on curriculum issues among CSUN and CC faculty teaching transferable courses.
  – Success on articulation
    • Avoids waste of resources
    • Avoids confusion
    • Facilitates advising
    • Faster track to graduate
Sequel to AIMS²

“Bridging the Gap: Enhancing the AIMS² Program for Student Success” - (2016-2021)

• Selected to receive funding under the HISPANIC-SERVING INSTITUTIONS PROGRAM (STEM) (84.031C). This grant was in the amount of $1.2 Million/year. It is anticipated that the grant will be for a total of 5 year(s).
Organization – Bridging the Gap: Enhancing AIMS² for Student Success
To be eligible, STEM majors must be an individual who has faced or faces social, cultural educational or economic barriers to careers in STEM and be a US Citizen or Permanent Resident.

- Application including Essay and Interview
- Enroll and complete a minimum of 24 units/year and passing all courses with grades of C or better
- All students eligible to receive $ 500 towards textbook awards bi-annually upon meeting requirements
- Selected students eligible to participate in paid UG research activities working up to 10 hours/week during the semester and 20 hours/week in the summer. Paid at the rate of $ 15/hour
- Tutors and Peer Mentors. Paid at the rate of $ 15/hour
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Glendale Community College
AIMS²
GCC Program Profile

• A total of 51 low-income (98% BOG eligible) GCC STEM students participated in the AIMS² program (2012-present)
• Cohort 1 ($n=13$), Cohort 2 ($n=13$), Cohort 3 ($n=11$), Cohort 4 ($n=14$)
• Female ($n=20$), Male ($n=31$)
• Average GPA amongst all 4 cohorts is 3.11 vs. 2.6 (comparison group)
• Majors included: Computer Science, Physics, Aerospace, Civil, Computer, Electrical, Manufacturing, Mechanical, and Structural Engineering.
• Thus far, 28 students have transferred to: CSUN ($n=17$), Cal Poly Pomona ($n=5$), UC Berkeley ($n=3$), CSULA ($n=1$), UC Irvine ($n=1$) & UC Santa Barbara ($n=1$)
## Performance by Cohort

<table>
<thead>
<tr>
<th>Cohort</th>
<th>Spr 12</th>
<th>Fall 12</th>
<th>Spr 13</th>
<th>Fall 13</th>
<th>Spr 14</th>
<th>Fall 14</th>
<th>Spr 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.91 (n=13)</td>
<td>3.05 (n=12)</td>
<td>2.95 (n=10)</td>
<td>2.11 (n=7)</td>
<td>M=11.71 units carried</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>3.09 (n=13)</td>
<td>3.00 (n=13)</td>
<td>3.09 (n=11)</td>
<td>3.36 (n=10)</td>
<td>M=12.84 units carried</td>
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<td></td>
</tr>
<tr>
<td>3</td>
<td>3.38 (n=8)</td>
<td>3.43 (n=11)</td>
<td>3.14 (n=10)</td>
<td>2.74 (n=10)</td>
<td>M=12.83 units</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>M=11.22 units carried</td>
<td>2.83 (n=14)</td>
<td>2.67 (n=14)</td>
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</tbody>
</table>

### Comparison groups

<table>
<thead>
<tr>
<th></th>
<th>Spr 12</th>
<th>Fall 12</th>
<th>Spr 13</th>
<th>Fall 13</th>
<th>Spr 14</th>
<th>Fall 14</th>
<th>Spr 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.58 (n=14,828)</td>
<td>2.57 (n=14,962)</td>
<td>2.59 (n=15,085)</td>
<td>2.59 (n=14,549)</td>
<td>M= 7.86 units carried</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2.57 (n=14,962)</td>
<td>2.59 (n=15,085)</td>
<td>2.59 (n=14,543)</td>
<td>2.63 (n=14,115)</td>
<td>M= 7.83 units carried</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>2.59 (n=15,036)</td>
<td>2.59 (n=14,549)</td>
<td>2.63 (n=14,115)</td>
<td>2.59 (n=15,036)</td>
<td>M= 7.88 units</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>M= 7.91 units carried</td>
<td>2.59 (n=15,036)</td>
<td>2.63 (n=14,054)</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
# Closing the GAP: GCC/CSUN Articulation Agreements Enhanced

<table>
<thead>
<tr>
<th>CSUN Course Name/#</th>
<th>Course Title</th>
<th>GCC Course Name/#</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIT 101/L</td>
<td>CIT Fundamentals w/lab</td>
<td>CS/IS 101</td>
<td>Intro to Computer Info Systems</td>
</tr>
<tr>
<td>CIT 160/L</td>
<td>Internet Technologies w/lab</td>
<td>CS/IS 260</td>
<td>Intro to Website Development</td>
</tr>
<tr>
<td>COMP 108</td>
<td>Orientation to Computer Science</td>
<td>CS/IS 112</td>
<td>Intro to Programming using JAVA</td>
</tr>
<tr>
<td>COMP 122/L</td>
<td>Computer Architecture &amp; Assembly Language</td>
<td>CS/IS 165</td>
<td>Computer Architecture &amp; Assembly Language</td>
</tr>
<tr>
<td>ME 186/L</td>
<td>Computer-Aided Design w/lab</td>
<td>ENGR 111</td>
<td>Solid Works Applications</td>
</tr>
<tr>
<td>CE 240/L</td>
<td>Engineering Statics</td>
<td>ENGR 152</td>
<td>Engineering Mechanics-Statics</td>
</tr>
<tr>
<td>ECE 240/L</td>
<td>Electrical Engineering Fundamentals</td>
<td>ENGR 140</td>
<td>Electrical Engineering Fundamentals (pending)</td>
</tr>
<tr>
<td>MSE 227/L</td>
<td>Engineering Materials w/lab</td>
<td>ENGR 146</td>
<td>Engineering Materials (pending)</td>
</tr>
<tr>
<td>ME 209</td>
<td>Programming for Mechanical Engineers</td>
<td>Engr 156</td>
<td>Programming &amp; Problem Solving in MATLAB</td>
</tr>
</tbody>
</table>
Project Activities

- Naval Air Base (San Diego)
- Burbank Water & Power
- JBL/Harman field trip
- Great Minds in STEM Conf
- CSUN Speed Mentoring
- SHPE National Conference
- Calif. Science Museum
- Golden Road Brewery
- CSUN Research Program
- Jet Manufacturing Firm
- Jet Propulsion Lab (JPL)
- Latinas in STEM conf
- Society of Women Engineers Conference
- CSUN Tech Fest
- IPAD trainings
- Boeing field trip
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College of the Canyons Partnership with CSUN

March 21, 2018
Amy Foote
MESA Program Director
College of the Canyons
COC and CSUN Partnership

• AIMS² Students

• Services for Students

• Student Opportunities
AIMS² Students

- Students – 1st generation college students, financially disadvantaged, underrepresented and STEM

- 7 years - partnered with CSUN’s AIMS² Program

- 50 - COC Students participated in 6 cohorts

- 20 - Students transferred to CSUN from those cohorts

- AIMS²/COC students had a 3.35 average GPA

- Currently have 15 students involved in the AIMS² Program at COC this year
Services for Students

1. Tutorial support from both faculty and peer tutors ~96hrs/week
2. Peer Mentor Program – 1st yr. paired with 2nd yr.
3. Academic excellence workshops in which MESA facilitators, in consultation with faculty, lead weekly skill-building workshops in math, physics, engineering, computer science and chemistry.
4. Professional development workshops, guest speakers and other activities such as financial aid workshops, UC application workshops, resume workshops, Industry presentations, etc.
Student Opportunities

• Conferences
  - Great Minds in STEM – HENAAC
  - SHPE – Society of Hispanic Professional Engineers
  - Women in Engineering

• Symposiums and EXPOs
  - CSUN Research Symposium
  - Aerospace Engineering Symposium and Expo
Student Opportunities

• Research
  - CSUN Summer Research (10 students last summer from COC)
    Present their work at Symposium
  - JPL/NASA (~10 students per year)

• Facility Tours
  - NASA Armstrong in Antelope Valley
  - NASA/JPL
  - CSUN Engineering and Computer Science Department
Research and Internships

**Spring 2017**
8 students received notification of acceptance to JPL/NASA’s JPLUS and NCAS programs

**Fall 2017**
6 students were accepted to JPL/NASA’s NCAS program and 3 students were nominated to the SIRI program.

**Summer 2017**
10 students were accepted to AIMS² Summer Research Program
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Student Outcomes

- Multidisciplinary undergraduate research
2nd Annual Research Symposium
Sep 15, 2016
AIMS²- Attract, Inspire, Mentor and Support Students
CSU Northridge, Glendale CC, College of the Canyons,
LA Pierce College, Moorpark College
Student-Faculty Interaction

- Resume Workshops
- Tech Fest preparation
- Research Presentations
- Attending conferences
- Annual AIMS² Research Symposium

- Student mentors
- Student tutors
- Weekly/biweekly meetings
- Meetings via appointments
- Advising
- Maintain minimum requirements for scholarship
External Advisory Committee

• Ms. Rupa Dachere, Codechix
• Ms. Roslyn Soto, JPL
• Dr. Vaughn Cable, JPL
• Mr. Luis Carbajo, IEEE LA Council Vice Chair
• Ms. Linda Friedman, Northrop Grumman, Woodland Hills
• Mr. Neal Gaborno, Raytheon
• Mr. Bill James, Avery James Inc.,
• Prof. Miguel Macias, Emeritus faculty CSUN
• Mr. Tony Magee, PWR
• Mr. Michael Medina, Hill International, San Diego
Sixth Annual AIMS² (HSI-STEM Grant) Advisory Committee Meeting Meeting # 54

CSUN
June 15, 2017
• Cohort based model
• Collaboration between CSUN and CCC’s
• High Transfer Achievement
• GPA, Persistence, and Graduation
• Served over 250 transfer students (approximately 67% Latino/a) with 2011 grant
• Presently serving over 300 freshmen and transfer students with 2016 grant

For more information
Visit www.ecs.csun.edu/aims2
Questions and Discussion