



# **YEAR 2 SECOND QUARTERLY REPORT**

**February 1 – April 30, 2005**

**CURRICULUM IMPROVEMENT  
PARTNERSHIP AWARD PROGRAM**

**Allan Hancock Joint Community College District**

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Name of Institution

**Robert Alldredge, PI & Ardis Neilsen, Co-PI**

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Principal Investigator

**Year 2**  
**2nd Quarterly Report – February 1 through April 30, 2005**

- 1.0 Name of Institution** Allan Hancock College
- 2.0 Name of Principal Investigator(s)** Robert W. Alldredge, PI  
 Ardis L. Neilsen, Co-PI
- 3.0 Name of CIPA Project** Mechatronics Curriculum Expansion Project
- 4.0 Project Activities**

A description of Year Two, second quarter activities is provided below.

<b>Objective 1: To provide a summer youth Mechatronics Institute and Space Endeavour Camps featuring NASA curriculum in mechanical engineering, mechatronics, GPS, satellite tracking, and robots. Thirty minority students will attend. At least 50% will demonstrate a significant increase in knowledge.</b>	
Status:	Planning for the summer 2005 Mechatronics Institute and Space Camps is ongoing.
Year Two, 2nd Quarter Progress	In coordination with Allan Hancock College’s MESA interim director, Julie Niles, and in partnership with the founder and president of the Endeavour Center (a NASA Teacher Resource Center), strategic planning is ongoing for a high school Mechatronics Institute during July 18-21, 2005. The Institute will feature Dr. Ed Avila, director of the Endeavour Institute, returning as the instructor of record. Ms. Niles was successful in obtaining National Science Foundation “ <b>B A STAR</b> ” funding, whereby selected statewide community college MESA students will serve as instructional aides for Mechatronics Institute 2005 as part of their four-week internship. Mechatronics curriculum developed for the institute held in summer 2004 will again be used in 2005 and shared with MESA summer interns. The Endeavour Center has announced three sessions of summer space camps for junior high school students: July 4 – 8; July 18 – 22; and August 1 – 5. Recruitment for 15 eligible NASA CIPA-sponsored campers will begin in late May 2005.

<b>Objective 2: To increase the ability of the electronics faculty to quickly assess students’ electronics skill levels and knowledge to facilitate student academic success. Purchase four NIDA workstations. Train 30 students per semester. Develop an open access electronics lab. Increase Hispanic student success rates by 5% per semester from fall 2004 to fall 2006.</b>	
Status:	Achievement and ongoing progress noted.

<p>Year Two, 2nd Quarter Progress</p>	<p><b><u>NIDA Electronic Consoles/Workstations</u></b></p> <p>Two more NIDA consoles along with various electronics lab/ experiment cards and additional site licenses for software were requisitioned in April 2005 with the support of leveraged funding sources. Upon delivery, the electronics lab will feature a total of eight NIDA electronics consoles and one NIDA programmable logic controller console.</p> <p><b><u>Fall 2004 Retention and Success Rates</u></b></p> <p>Overall student retention and success rate data for fall 2004 computer science, electronics, and engineering courses have been previously reported. Similar data for educationally disadvantaged and underrepresented student populations remain unavailable at this time.</p> <p><b><u>Spring 2005 Enrollment Data</u></b></p> <p>Initial spring 2005 enrollment data were reported previously.</p>
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<p><b>Objective 3: To partner with the Endeavour Center, a NASA Teacher Resource Education Center, to infuse NASA curriculum into the college's electronics program and to provide professional experience opportunities for students.</b></p>	
<p>Status:</p>	<p>Achievement and ongoing progress noted.</p>
<p>Year Two, 2nd Quarter Progress</p>	<p><b><u>CURRICULUM DEVELOPMENT/EXPANSION</u></b></p> <p>NASA-developed curriculum are integral components of Space 179: NOAA-N Satellite Educators' Launch Workshop, approved by AHC's Academic Policy &amp; Planning (AP&amp;P) committee. Ticket number 6675 has been assigned to the half-unit course offered May 10 – 11, 2005.</p> <p>Principal Investigator Bob Alldredge continues work on developing an A.S. degree and certificate option in Mechatronics. The degree and certificate proposal will be submitted in spring 2006 for institutional review and approval by AP&amp;P, in advance of targeted fall 2006 implementation. John Reese continues to develop a lab manual to support the introduction of mechatronics into beginning electronics courses.</p> <p>Development of a NASA website informing viewers of the AHC Mechatronics Expansion Project is nearing completion. Mr. Alldredge targets September 2005 as the date for uploading to the internet.</p> <p>A new noncredit class in Vocational English as a Second Language (VESL) Introduction to Electronics course has been approved and is currently advertised in the summer 2005 <u>SPECTRUM</u>. This course will introduce a pathway for underrepresented students, ages 18 and over, to eventually transition to credit electronics and mechatronics curriculum. CalWORKs funds were leveraged to support new curriculum development.</p> <p><b><u>EDUCATIONAL OUTREACH &amp; PROFESSIONAL EXPERIENCE /DEVELOPMENT OPPORTUNITIES</u></b></p>

Twenty-one (21) MESA students traveled to NASA JPL and Disney Imagineering on March 17 – 18, accompanied by MESA interim director, Julie Niles, and advisory board members Bob Alldredge (electronics), Dom Dal Bello (engineering), Linda Metaxas (physics), and Margaret Lau (economic development). NASA CIPA funding partially defrayed transportation expenses for this field trip, and the National Science Foundation (NSF) SpaceTEC grant helped fund the polo shirts worn by field trip participants.



**Figure 1 - AHC MESA director, students, and faculty pose together with Richard Alvidrez of NASA JPL's Education Office; March 17, 2005.**

On April 7, 81 students from five area high schools participated in AHC's Rocket Lunch & Launch, an educational outreach activity co-sponsored by the Endeavour Center, a NASA Teacher Resource Center. Nine MESA student volunteers helped monitor rocket building and launching activities with assistance by NSF SpaceTEC-funded AHC staff members Fred Patrick, Joyce Krantz, Yesenia Alcantar, and Margaret Lau. Coinciding with the college's second annual Ag & Industrial Tech Job Expo & Fair which attracted over 1,000 high school and college students and members of the public, the launchings of student-build GNOME rockets on the campus soccer fields capped the day's activities in the minutes prior to their departure back to their respective high schools.

In addition to the Rocket Lunch & Launch, the Ag/IT Job Expo offered visitors numerous tours of the electronics and engineering labs, led by Mathematical Sciences faculty members Bob Alldredge and Dom Dal Bello, respectively,.

Attachment 1 is the ad promoting the Job Expo & Fair that appeared in the

March 24 edition of the Santa Maria Times.



**Figures 2 and 3 - Pioneer Valley High School MESA advisor Patricia Peinado attaches fins to her rocket. GNOME rockets were remotely launched by electrical charge from a specially constructed platform; April 2005.**

MESA students have been invited to participate in the NOAA-N Satellite Educators' Launch Conference, an educational outreach event scheduled for May 10 - 11, 2005. The conference is funded in part by the NSF SpaceTEC grant and features renowned research scientists and professional space-science presenters from varied NASA Education Centers. Attachment 2 is the conference program in portable document file format.

Principal Investigator Bob Alldredge and Co-principal Investigator Ardis Neilsen have participated in numerous meetings involving educational, commercial, military, and government entities, to impart awareness of the industry-driven curriculum advances that have recently been implemented and continue to be developed in the electronics program, thanks to generous leveraged funding through NASA CIPA and other sources. The strategies developed to increase enrollment, retention, and success rates of underrepresented, educationally disadvantaged student populations continue to be implemented and promoted throughout the community. The following represent opportunities capitalized upon for partnership growth and enhancement opportunities:

- Feb. 4: Meeting with eight representatives from El Camino Community College, AHC, and the California Space Authority to discuss the feasibility of forming a statewide consortium of aerospace educators.
- March 9: Meeting with 11 advisory board members convened at Vandenberg AFB by Andrea Seastrand, executive director for California Space Authority, at which NASA CIPA and NSF SpaceTEC grants were presented and discussed.
- March 31: Educational needs assessment and tour of the 381<sup>st</sup> Training

	<p>Group at Vandenberg AFB, facilitated by Col. Mike Morgan. Goals of the NASA CIPA “Electronics to Mechatronics Expansion” project were discussed. Approximately 20 education professionals and military officers attended and provided curriculum input.</p> <p>April 22: Electronics career and program awareness presentation at a Counselors’ Workshop at AHC, attended by 60 local high school counselors.</p> <p>April 23: Electronics career and program awareness presentation to one hundred (100) local high school students participating in “AHC Connect,” an orientation program for new college students.</p>
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<b>Objective 4: To expand the partnership with the NSF SpaceTEC Consortium to share curriculum, employment research information, and national cost effective strategies to provide training to new technicians.</b>	
Status:	Achievement and ongoing progress noted.
Year Two, 2nd Quarter Progress	<p>As stated previously in this report, many of the NASA CIPA grant deliverables – the MESA field trip to NASA JPL and Disney Imagineering and curriculum development for Space 179 NOAA-N Educators’ Launch Conference, to name two – have been supported by leveraging NSF SpaceTEC funds. In addition, a new, four-color brochure which promotes the A.S. degree and certificate program in Electronics Technology – Space Operations is being developed with NSF funds.</p> <p>As of April 2005, AHC administered 21 written and 19 oral and practical components in validating the NSF SpaceTEC national core certification exams. Participants, five of whom were successful in attaining core certification, represented a diverse population and range of experience, including Air Force enlisted personnel and employees of Boeing and Lockheed Martin. A core aerospace preparation course is being developed as a shared resource among SpaceTEC consortium partners.</p>

**5.0 Personnel Changes**

There are no changes in key personnel to report during this period.

**6.0 Expenditures**

Year 2 expenditures to date total approximately \$41,700, with an additional \$32,560 committed to outstanding encumbrances. Expenses have largely been accrued in salaries and benefits, equipment, supplies, and travel.

**7.0 Additional Remarks**

None.