

# SpaceTEC<sup>®</sup>

National Aerospace  
Technical Education Center

# Talk

SPRING/SUMMER 2008

## SpaceTEC<sup>®</sup> Member Institutions

Allan Hancock College  
(California)

Antelope Valley College  
(California)

Brevard  
Community College  
(Florida)

Calhoun  
Community College  
(Alabama)

Community College  
of the Air Force  
(Alabama)

Cuyahoga  
Community College  
(Ohio)

Doña Ana  
Community College  
(New Mexico)

Edmonds Community College  
(Washington)

Embry Riddle  
Aeronautical University  
(Florida)

Tarrant County College  
District  
(Texas)

Thomas Nelson  
Community College  
(Virginia)

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website at:  
<http://www.spacetec.org/>

## SpaceTEC Awarded Contract to Develop Workforce Microgravity Training Program

As the Space Shuttle nears retirement, the state of Florida is taking steps to support the workforce transition training needs for NASA's Constellation program and diversify its space industry to include a greater presence of aerospace research, manufacturing, and commercial spaceflight operations.

The Florida Aerospace Microgravity Training program is part of the state's commitment to sustaining the aerospace industry by providing specialized and "first of its kind" workforce training programs to support the next generation of civil and commercial spaceflight programs.

Through funding from Workforce Florida, Inc. and the Brevard Workforce

Development Board, 75 Florida-based aerospace technicians, engineers and scientists will gain first-hand knowledge of spaceflight working conditions under a new microgravity training program.

SpaceTEC and Brevard Community College will lead this initiative to include a combination of classroom, web-based, and in-flight training activities to introduce participants to the physiological effects and the engineering and technical challenges of designing, fabricating, testing, operating, and maintaining systems in the microgravity environment of space.

For more information, visit SpaceTEC's website at [www.spacetec.org](http://www.spacetec.org).



## A Message from the PI...



### Space Revolution

Rocket trucks? Space elevators? Teletransportation? Imagine something you think is impossible. In 1900, an individual gazing at the night sky may have thought it impossible to land a man on the Moon and safely return him to Earth. Certainly not within 70 years; after all, the Wright brothers were still three years away from the first successful airplane flight.

Brace yourselves; we are headed toward a space revolution. NASA is retiring the Space Shuttle and work has already begun on the Constellation program to take man back to the Moon and on to Mars and beyond. The military is working on who knows what, but you can bet stealth and predatory satellites are part of the plan. What will a stealth satellite look like? What was your reaction when you first saw a B2 stealth bomber? Commercially, numerous companies are vying to build safe, reliable, and less expensive space transportation systems for cargo and humans. Robert Bigelow has launched inflatable modules and is seeking companies to safely transport and return visitors to his outpost. This sounds a lot like Henry Flagler, who in the late 1800's built railroads to his hotels in inhospitable south Florida. As they say...the rest is history.

I'm told the average age of the engineers who helped put a man on the Moon in 1969 was 26 years old. It is this same age group that led us through the

latest revolution, the Internet revolution. Something must have inspired them when others said it could not be done.

I fondly remember watching the grainy images of the Apollo missions on television and later the smell of fresh cut grass as I lay in the front lawn looking at the Moon and wondering about that incredible journey. It was an inspiration to me, and I hope a new generation of youth will be inspired and excited about Space as we once again continue to push the frontier. We need it if we are going to realize the impossible.

This Nation has a challenge to maintain and in many cases regain its competitive advantage in science, math, engineering and technology, an advantage that has allowed us to enjoy the highest standard of living. I think a new Space revolution is just what we need.

*Frank Margiotta  
SpaceTEC Principal Investigator*



### SpaceTEC Awarded Contract to Develop Workforce Microgravity Training Program, cont from page 1



**SpaceTEC PI and BCC aerospace instructors experience microgravity.**



*SpaceTEC® Talk* is published by the Office of Public Relations of Calhoun Community College to support *SpaceTEC®*.

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[www.spacetek.org](http://www.spacetek.org)

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## Calhoun SpaceTEC Core Certification Blitz

Calhoun Community College (CCC) has gone on an outreach blitz to promote the Core Certified SpaceTEC exam program. The number of core certified technicians has grown from the original four candidates that sat for beta testing in 2005, to an additional 29 incumbents. Industry represented include Teledyne Brown, the Boeing Company, United Launch Alliance, Digital Fusion, and several CCC faculty and adjunct instructors.

The Boeing Company has used the exam platform to recognize their professional technicians and for those certified to act as mentors to technicians aspiring to sit for the exam. Their management team consisting of Gina DeSimone, VP of Missile Defense Systems Huntsville; Nancy Stovall, Huntsville site director of Operations & Product Support for MDS and a member of the National Advisory Committee; and Floyd Cook, Manufacturing Operations manager, have established a Wall of Fame that identifies the certified technicians. SpaceTEC Certification is a great opportunity, according to Floyd Cook. "I would like to envision Boeing and the Huntsville Chamber of Commerce utilizing this credential to market our workforce to interested industries and government agencies. The Huntsville area now has a professional technician workforce of 33 certified SpaceTEC technicians."



**Pictured in the Boeing group are, bottom row left to right: Clifford Wagner, Todd Wall, Ben Kendrick, John Tolleson, and James Martin; top row left to right, Dana Cousins, Jerry Dunn, Jim Jester, Johnny McCutcheon, Martin Kuca, and Johnny Sharp. Missing are Ricky Hollis and Travis Scott. Since the presentation celebration, several additional incumbents have become certified. They are Hubert Pickle, Ron Fulmer, Scott Morgan, Harry Chandler, Jeremy Bulman, Doug Swafford, and Dorothy Henry.**

Recognizing strategies to increase local interest in the certification, Calhoun decided to offer a second instructor-led readiness course. The course was held on Wednesdays and Fridays, April 2 – April 23 from 5:00 to 7:30PM, with the exam following on Saturday, April 26.

Digital Fusion recognized Jeff Turk, the 25th technician certified in the Huntsville area, on February 22. Frank Libutti, CEO; Mike Wickes, VP; and Scott Flemming, Jeff's supervisor, all congratulated him on achieving Core certification and his upcoming graduation from Calhoun in May with a double AAS degree in Aerospace Technology, endorsements in Structures & Assembly and in Machining & Fabrication.



**Pictured are Jeanette Buchheit, SpaceTEC Support; Jeff Turk; Jim Swindell, assistant dean for Technology Education at Calhoun; and Mike Wickes, VP of Digital Fusion.**

The opportunity to sit for the Core Certified SpaceTEC Technician exam was also presented to United Launch Alliance (ULA) in Trinity AL, at a lunch and learn session. From that session, 42 incumbents indicated interest in registering for the exam. At that session the first ULA certified technician, David Couch, was recognized while being awarded his certificate by his supervisor, Doug Kent.



**David Couch and Doug Kent**

**Bill Tepper (right), Calhoun instructor, recently certified and trained as an STE, receives his certificate from Jim Swindell, assistant dean for Technology Education.**



## SpaceTEC Virtual Readiness Course

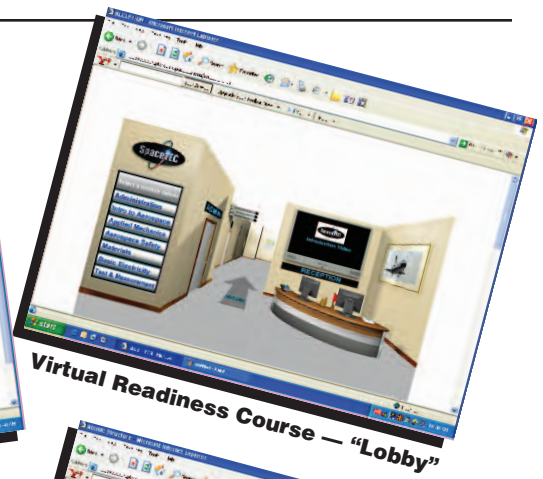
SpaceTEC has announced the completion of the Core Certification Virtual Readiness Course. The course will be used by technicians who are preparing to sit for the SpaceTEC certification exam. Previously, the only option available for partner colleges was to host a 16 hour "classroom setting" Readiness Course. Not every location had the subject knowledge experts to teach each module.

SpaceTEC partnered with RCP TV Productions in Fort Lauderdale, Florida, to produce the course. The course is available "on-line" as well as on DVD. The flexibility of the virtual course allows SpaceTEC to offer the course at any time and any place. It allows the student to prepare for the exam at his/her own pace.

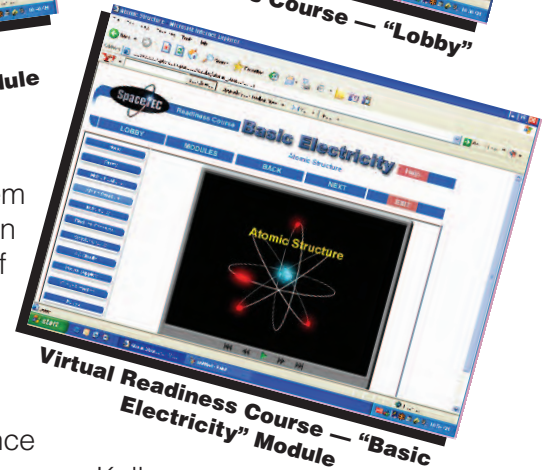
SpaceTEC recently made the course available to eight Army soldiers who are stationed in Iraq.



Virtual Readiness Course — "Introduction to Aerospace" Module



Virtual Readiness Course — "Lobby"



Virtual Readiness Course — "Basic Electricity" Module

The DVD option allows them to prepare for the civilian certification during their off hours. The written exam will be administered at their local testing center, and those who are successful will continue on to the oral and practical once they return to the States. SpaceTEC thanks the following individuals for their assistance in completing this project: Richard Peritz (RCP Production), Dr. Al

Koller,  
William Fletcher,  
Jerome Folmar, Ron  
Lucas, Tom LaForge, Katie Knettel,  
Dave Friction, and Frank Margiotta.

## News from Cuyahoga Community College

Over 150 students had interest in the fall 2007 and spring 2008 SpaceTEC outreach program. However, due to faculty time as well as facility space, Cuyahoga Community College and college staff were only able to accept the top 104 students.

Each student registered in a three credit hour course in the Manufacturing and Applied Science degree program. The students were quickly put to task learning the 3-D C.A.M. software skills, and manufacturing concepts that are required to successfully design and build a winged airfoil for their SpaceShip-One models on the Stereolithography - Rapid Prototype. These models were tested successfully at the national

headquarters of the American Society of Metals, as each rocket was launched over 700 feet into the air.

The students, under the guidance of instructors Gary Pretzlav, Carrie Marsico, Dave Bredenbeck, Norm Johnson, and Ken McCreight, quickly learned the design and manufacturing processes through a combination of traditional learning methods, as well as through the learning concept of a Differentiated Classroom using an Avatar. The program is adjusted to fit the learning needs of the students regardless of their abilities or disabilities.

This outreach program uses the creativeness that is required in



engineering airfoil design, and material science. The students share in their learning experience as a team with each other and with their instructor. The teachers and students form an alliance that actively engages in manufacturing, material science, and project design concepts found to be relevant to real Aerospace and Material Science careers.



## New Associate Degrees in Mechatronics Offered at Allan Hancock College

Two new degrees at Allan Hancock College, among the first of their kind in California, couple knowledge of the aerospace and manufacturing industries with the fundamentals of robotics into career opportunities in the field of “mechatronics.” Introduced in fall 2007, the college offers A.S. degrees in engineering technology and electronics technology, both with an emphasis in mechatronics.

The mechatronics degrees are a culmination of innovative and pioneering collaborations between Allan Hancock, the National Science Foundation SpaceTEC consortium, NASA (through the Curriculum Improvement Partnership Award), and the California Space Authority (CSA).

What exactly is mechatronics? According to Bob Alldredge, an electronics instructor at Allan Hancock who helped create the curriculum, the field integrates four main elements: mechanical engineering, electronics, control systems and computer science.

“This curriculum teaches students the fundamentals of complex decision making to the operation of physical systems, such as robotics,” he said. “These physical systems depend on computer software for functionality. Mechatronics emphasizes that link.”

One example for application would be in the aerospace industry, which incorporates mechatronics in the development of production systems and planetary rovers, Alldredge added.

Allan Hancock is a natural choice to offer this type of curriculum due to its proximity to Vandenberg Air Force Base, according to Paul Murphy, dean of academic affairs.

“What’s important is accessibility—this program is open to all first-time college students and reentry students interested in electronics and engineering,” he said. “It teaches advanced problem-solving skills and provides ‘hands-on’ training with career and academic opportunities. Very little



**In this photo, courtesy of NASA/JPL, a technician inspects the robotic arm of NASA's Phoenix Mars Lander during the assembly phase of the mission.**

advanced mathematics is required.”

A strong local job market exists for employees with this type of training. According to a recent aerospace technician demand assessment study, more than 1,000 aerospace technicians are located within the Vandenberg area, many of them approaching retirement age.

“It is difficult to recruit qualified technicians to the area, due to the cost of living and the low rate of local turnover,” said Murphy. “The next five years could see a high local demand for qualified technicians.”

Students have the option of finding employment after obtaining an associate degree or continuing their education further. Much of the curriculum in Allan Hancock’s program is transferable to California state universities or other four-year institutions, including CSU Chico, Cal Poly Pomona and Embry-Riddle



**The Allan Hancock College Robotics and Mechatronics Educational Outreach trailer attracted over 200 visitors, including the college’s mascot, at its public debut in fall 2007 at the college’s Career Exploration Day. The trailer, a classroom-on-wheels, was acquired through generous NSF SpaceTEC funding.**

continued

Aeronautical University. In addition, the college's Priority Admission Transfer program ensures priority admission consideration of eligible students to such institutions as Cal Poly San Luis Obispo, and UC Santa Barbara.

In addition to local employment, significant statewide career opportunities exist for aerospace technicians, due to the fact that California supports one-quarter of the global space industry. Other industry sectors that employ technicians with mechatronics training include agriculture, automotive technology, entertainment, manufacturing, medical technology, and security services. With median annual earnings as high as \$45,000 and up, jobs in this career field are consistently ranked among the highest-paying for those with an associate degree.

Ongoing enhancement of the Allan Hancock mechatronics curriculum and outreach is supported in part from the National Science Foundation SpaceTEC consortium and CSA's California Innovation Corridor project for WIRED (Workforce Innovation in Regional Economic Development). Allan Hancock is one of 42 partners participating with the CSA in a \$15 million, three-year grant from the U.S. Department of Labor, with a focus on entrepreneurship development, global competitiveness in manufacturing and the supply chain, and creation of the next generation of innovators and technicians.

For more information about the new degree programs, as well as the SpaceTEC-core degree program in electronics technology with emphasis in space operations, call (805) 922-6966 ext. 3201 or email [ball@hancockcollege.edu](mailto:ball@hancockcollege.edu).

## **Allan Hancock Adds New STE to SpaceTEC Team**

Allan Hancock College congratulates Martin (Marty) Montez upon his recent attainment of national certification as a SpaceTEC technical examiner (STE). Having already been nationally certified through SpaceTEC as a core aerospace technician, Montez completed and passed all requirements for STE certification, which was administered by SpaceTEC program manager, Mr. Robert S. Ward, in early January 2008.

The addition of Montez to the Allan Hancock SpaceTEC team, currently consisting of STE MSgt. Scott Munden (USAF) and Co-Principal Investigator Margaret Lau, enhances the convenience and ready access for qualifying Central Coast candidates to complete written, oral, and practical components of the

national core aerospace technician certification exam. More information about the SpaceTEC program at Allan Hancock is available at [www.hancockcollege.edu/spacetec](http://www.hancockcollege.edu/spacetec).



**Pictured left to right are MSgt Scott Munden (USAF), Robert Ward, and Marty Montez.**

## **Embry-Riddle Event Promotes Aerospace Among Middle-School Girls**

Embry-Riddle Aeronautical University promoted aerospace careers to over 400 female middle-school students on April 15 at its main campus in Florida. The annual Women in Aviation Day program included exhibits, simulators, interactions with university faculty and students, a luncheon, and special guest speaker.

The guest speaker was Judith Rice, president and CEO of Careers in Aviation, an aviation scholarship endowment that inspires American youth to achieve their dreams in the aviation/aerospace industry. Rice is also the director of the National Conference on Aviation & Space Education and the Leadership Conference on Aviation & Space

Education. The day ended with the announcement of the results of the Women in Aviation/Aerospace Essay Competition, which attracted nearly 75 entrants.

The participating girls were selected because of their outstanding grade point averages and accomplishments in math and science. Many of the students had already shown an interest in entering the aviation/aerospace industry. The university highlighted the variety of employment paths available within the industry, ranging from technician-level careers, to jobs as engineers, pilots, astronauts, business executives, instructors, air traffic controllers, weather forecasters, and scientists.



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## Doña Ana Community College Pleased with Progress in SpaceTEC Programs



**Newly certified  
STE James Webb**

Doña Ana Community College (DACC) is pleased with the progress it has made in developing SpaceTEC program. Currently, there are 40 students enrolled in the high school/college dual credit program in manufacturing that has a pathway to Aerospace Technology at DACC. The college is hopeful that a number of students will continue

in the Aerospace degree path toward an associate's degree and a SpaceTec certification.

During the summer, DACC will put on a week-long rocket workshop for middle school students, giving them a real taste of college. They will even be staying in the dorms. The class will be taught by the Nina Hammond, the high school teacher whose students won the rocket competition and were awarded a trip to SpaceTec and Cape Canaveral last summer.

DACC has been involved in an outreach program that is twofold.

1. The college is working with more area high schools to build our electronics and manufacturing which is all related to our aerospace program. DACC anticipates an enrollment of about 75 this coming fall. In this effort, the college has met with counselors, teachers, and students. This made it possible for college faculty and staff to speak with upwards of 500 students.
2. Included in the outreach is our effort to promote the SpaceTEC Certification exam as both a certification and an assessment for our NASA and White Sands Missile Range employers.

James Webb, who will be teaching the Introductory Aerospace Technology classes, has just been approved after passing all of his exams as a STE.

## SpaceTEC Certifies Sailor on Board the USS Nimitz

SpaceTEC announces the certification of sailor AM1 Alexander Jakhel. This certification was special as it was conducted on-board the USS Nimitz, which at the time was docked at her homeport in San Diego, California. The Core Certification examination was conducted by trained SpaceTEC Examiner AFCM Brian Limer. Also observing the examination was SpaceTEC Program Manager Robert Ward.

AM1 Jakhel was one of the first sailors to take advantage of the civilian certification offered through Navy COOL (Credentialing Opportunities On-Line). Stationed at nearby NAS Lemoore, Alex was delighted at the opportunity to test on-board the USS Nimitz. He also participated in additional training to become a SpaceTEC Examiner himself.

The USS Nimitz has since left port with Master Chief Limer on-board. Master Chief Limer will continue with his duties as a SpaceTEC examiner during his "off hours". The transportability of the exam has allowed additional sailors to pursue the SpaceTEC certification. Currently there are additional sailors on board the USS Nimitz who are preparing to take their certification exam by studying the SpaceTEC provided Readiness Course material.



USS **Nimitz** (CVN-68) passes by Naval Base Point Loma as she pulls into San Diego Bay.



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Funded in part by a grant from the National Science Foundation