

AVAILABLE WORK FORCE

Embry-Riddle Aeronautical University, Daytona Beach, Florida offers some of the brightest and skilled minds for the Space Industry.

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School officials announced the first-of-its kind program for a Commercial Space Operations bachelor degree Wednesday morning in Washington, D.C., at the Federal Aviation Administration's 16th annual Commercial Space Transportation Conference.

While companies like SpaceX, Virgin Galactic and Boeing Co. scramble to supplement NASA's role in space, they will need professionals educated in regulations and certifications required from the FAA and NASA before they're approved, to paraphrase "Star Trek," to explore strange new worlds and seek out new life and civilizations.

Embry-Riddle is stepping up to fill that need with the new undergraduate degree, the first in the world, university officials said. The program would start in the fall pending approval by the university's board in March.

"(The companies) are going to be hungry," said Richard Heist, chancellor for the Embry-Riddle Daytona Beach campus. "They are going to want to hire young, innovative, free-thinking people that graduate from programs such as this who are not afraid to ask the 'why not' question and do what they need to do to take people into space and sub-orbital travel."

While a couple of other schools have master's degrees pertaining to space studies, Embry-Riddle leaders say the degrees don't cater to the emerging commercial space industry.

The new Commercial Space Operations degree will help fill management jobs needed in training personnel and participants who want to fly; flight planning; space policy and laws; and overall operations and safety, including contingency planning if something goes wrong.

Heist said the university was the first with a doctorate in aviation so, "It's not at all surprising we will be the first offering this kind of program."

Embry-Riddle is already more than an aviation school, he noted, with its work in engineering, business and human factors, which studies everything from psychology to the effects being in space has on the

body. Research is already being conducted pertaining to space and satellite designs and propulsion systems, Heist said.

The new commercial space degree is expected to have 15 students the first year, according to Lance Erickson, the Embry-Riddle professor of applied aviation sciences who created the degree with two students after receiving a grant from NASA.

When the students graduate, many of the companies building space vehicles will be looking to hire the graduates to start their programs and train passengers who plan to go into space.

Virgin Galactic, for example, is already booking tickets for space travel starting at \$200,000. Television star Ashton Kutcher was the company's 500th "future astronaut customer," according to the company's website. While details on when flights might occur are more sketchy, the company has said it hopes to carry tourists next year after a test flight later this year.

Embry-Riddle expects to be ready to do its part.

"It's going to start slow," Erickson, who will be the first professor to teach the program, said of the private space venture. "It's not going to be like commercial airliners today where you have hundreds of thousands of passengers flying every day. It's starting slowly around different space launch areas. It takes a while to progress and develop because space flight is hazardous and it's expensive."

One of the students who worked on developing the degree, Rebecca Zgorski, 22, a senior from Baltimore, said the companies were cooperative in providing feedback on the development of the program because they knew it would benefit them in the future.

"The unique thing is the commercial space industry is still in its infancy," said Zgorski, who plans to work in the commercial space industry and hopes one day to go on a flight to space. "A lot of companies are hiring engineers to develop the systems, but they will need help in the operations once the rocket is built."

The school's research showed more than 300 commercial space companies are starting up nationally, Zgorski said. Some are already building space vehicles, have contracted with NASA and sent cargo up to the International Space Station.

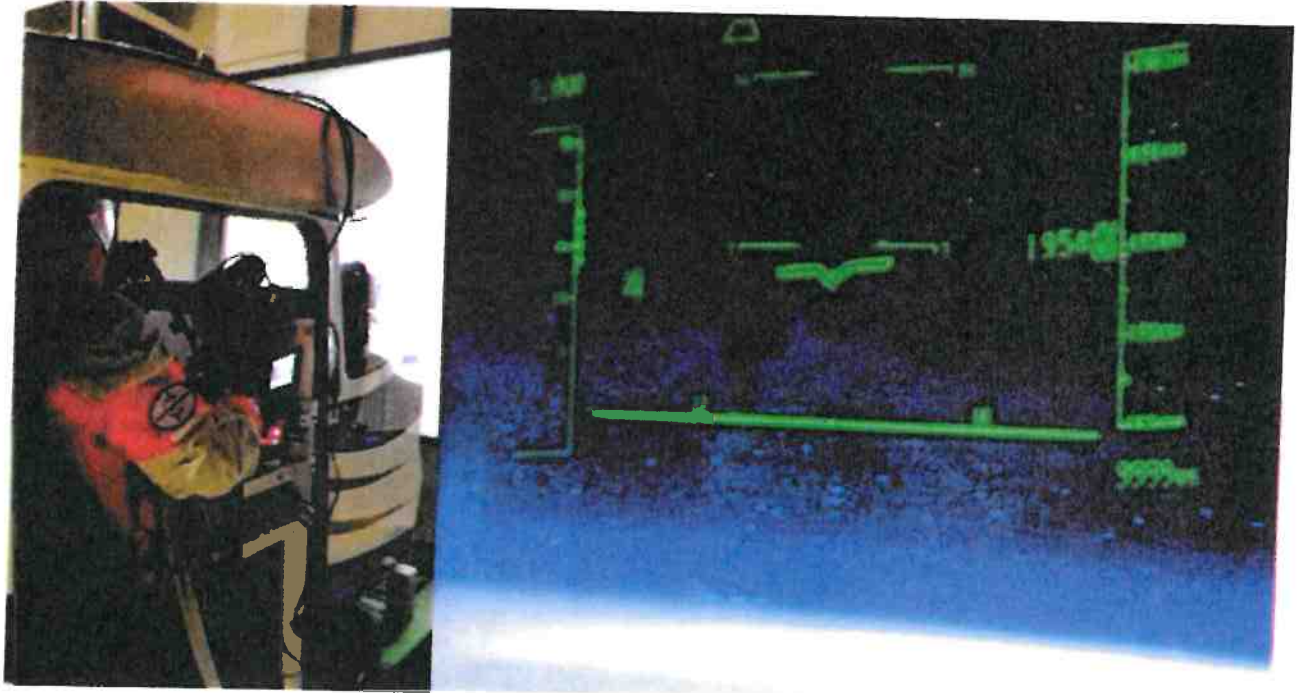
"There are companies planning to be here in Florida and there are companies already ready to get their preparations done for their first flight," Erickson said.

Space Florida, the state-run public economic development corporation, would like 150 acres NASA owns near the Volusia/Brevard county line for a commercial spaceport.

"It's terrific news (about the new degree) because commercial space is Florida's future," said Tina Lange, spokeswoman for Space Florida. "As companies like SpaceX, XCOR and Sierra Nevada grow their operations here, there will be a significant need for skilled workers coming out of our colleges."

The new Commercial Space Operations degree, Embry-Riddle President John Johnson said, "is very appropriate to our location and proximity to NASA. I think we are going to be doing a lot of research that may have applied implications."

The program could draw attention as well to the university's Aerospace Research and Technology Park near the university off Clyde Morris Boulevard, especially if a spaceport comes near Volusia County. Heist said that would draw more companies to do research that want to be near faculty and doctoral students with expertise.

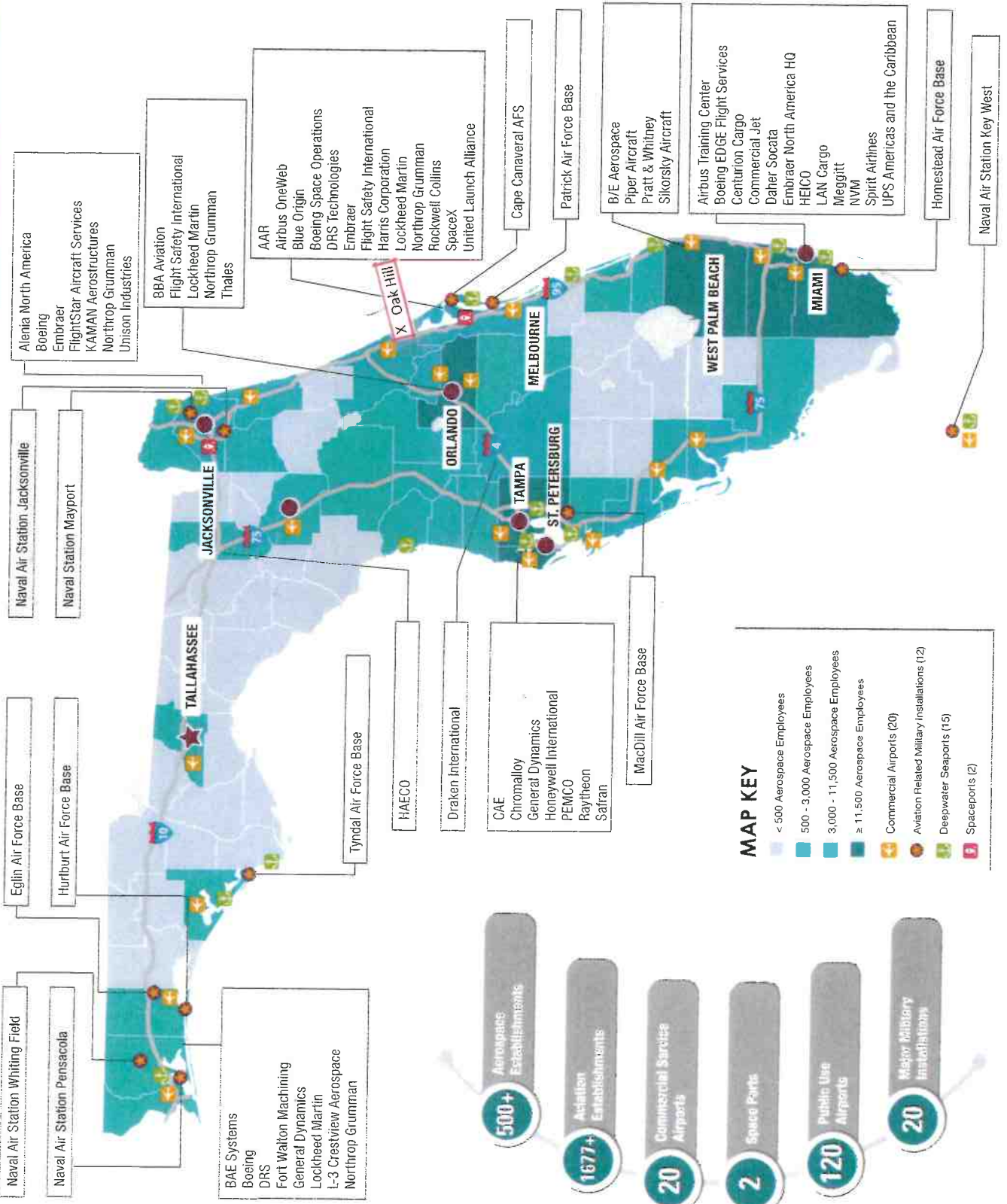


The Applied Aviation Sciences Department operates a Suborbital Space Flight Simulation and Mission Control Center, which together comprise the Suborbital Operations Science Lab, located in Room 355 of Building 6 at the Daytona Beach Campus. The lab simulates a space vehicle and associated control center to simulate takeoffs and landings from conventional runways and flights up to 350,000 feet. The simulator consists of aviation control and display hardware, head's-up-display, modified X-Plane software, and compressed air for pressure suits. The simulator's baseline profile is a rocket-propelled ascent followed by a glide descent to the departure airfield; however, the system can easily be configured to simulate point-to-point flights. The simulator records 56 flight data parameters, such as angle of attack and acceleration forces, that are available for analyses.

Potential research topics include astronaut spatial and temporal perception and attentional allocation, biometric analyses, energy-limited traffic avoidance maneuvers, in-flight emergencies, knowledge sharing, distributed supervisory control, fatigue effects on communication, mission control operations and communications, pressure suit ergonomics, propellant management for contingencies and diversions, safety processes and procedures, and suborbital flight energy management.

FLORIDA'S AVIATION & AEROSPACE CLUSTER

(select companies highlighted)



MAP KEY

- < 500 Aerospace Employees
- 500 - 3,000 Aerospace Employees
- 3,000 - 11,500 Aerospace Employees
- ≥ 11,500 Aerospace Employees
- Commercial Airports (20)
- Aviation Related Military Installations (12)
- Deepwater Seaports (15)
- Spaceports (2)

- 500+** Aerospace Establishments
- 1677+** Aviation Establishments
- 20** Commercial Service Airports
- 2** Space Ports
- 120** Public Use Airports
- 20** Major Military Installations

CONNECT WITH THE BEST



FOR AVIATION AND AEROSPACE COMPANIES IN FLORIDA, BUSINESS ISN'T JUST GOOD.

IT'S SOARING.

That's because companies have the resources they need to succeed here. Virtually every major aviation/aerospace company in the world has significant operations in Florida – generating a robust supply chain that benefits all.

WORKFORCE EXPERTISE

Nothing is more important to a company's success than its workforce. More than 85,000 Floridians work in Florida's aviation and aerospace industries with large numbers of rocket scientists, machinists, pilots, engineers, and other flexible, "badgeable" workers. Florida is also home to 65,000+ active duty personnel, 30,000+ civilian personnel, 9,000+ annual military separatees, and 1.6 million veterans.

Florida's universities are among the nation's top producers of STEM graduates, including many specializing in aviation and aerospace.

So while we're helping you succeed with today's talent, we're also preparing tomorrow's.



¹CompTIA CyberStates

FLORIDA'S ANNUAL OUTPUT OF RELEVANT SKILLED CERTIFICATE AND DEGREE HOLDERS

Title	Non-degree awards/certificates	Associates	Bachelor's	Master's	Doctorate's	Total Awards
Mechanical Engineering	-	-	1,019	321	56	1,396
Electrical and Electronics Engineering	-	55	794	416	110	1,265
Electrical, Electronic and Communications Engineering Technology/Technician	201	391	57	-	-	649
Airframe Mechanics and Aircraft Maintenance Technology/Technician	603	-	-	-	-	603
Aviation/Airway Management and Operations	38	235	87	158	-	518
Aerospace, Aeronautical and Astronautical/Space Engineering	-	-	411	92	13	516
Industrial Engineering	-	-	199	248	35	482
Computer Technology/Computer Systems Technology	413	-	8	-	-	421
Aircraft Powerplant Technology/Technician	237	104	66	-	-	407
Systems Engineering	10	-	120	174	15	319
Total Awards	1,502	785	2,671	1,409	229	6,596

Source: JobsEO; Data as of the 2013-2014 academic year, related occupation data as of 2016 Q1 except wages which are as of 2014.
 Note: Figures may not sum due to rounding.