

SCHOOL OF GRADUATE STUDIES **NEWSLETTER**

EMBRY-RIDDLE AERONAUTICAL UNIVERSITY | COLLEGE OF AVIATION



*Pictured: Dr. Jonathan Velázquez.
Story on page 7.*

MAY 2018

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NOTES FROM THE ASSOCIATE DEAN

I WAS WORKING IN THE LAB, LATE ONE NIGHT.

That's the first line in the funny and catchy *Monster Mash* song, written by Bobby "Boris" Pickett and Leonard Capizzi, which reached the number one place on the Billboard Hot 100 chart just before Halloween in 1962.

Here at the School of Graduate Studies, we are fortunate to have access to 30 laboratories in the Daytona Beach College of Aviation and the Worldwide College of Aeronautics. Most of the labs are brick-and-mortar facilities, although a few are virtual and remotely accessible by everyone. Although the *Monster Mash* song fosters the image of mad scientists in labs next to bubbling test tubes, the reality is actually quite different for 21st Century aviation researchers. Today's graduate students often perform work without the use of labs or simulators. Some prefer using existing datasets and others create data from survey instruments, thus forgoing labs altogether. However, other students prefer the intellectual rush that comes from using human test subjects in labs or simulators.

The truth is that the large number of labs and simulators available to SGS students and faculty have historically been used mostly for teaching and, thus, are underused as research resources. I would urge every SGS student and faculty member to review the College of Aviation Lab Guide and contemplate how your research could make use of our wonderful facilities.

The prospect of using a lab to gather data for a thesis or dissertation is a real possibility. Doing so could help you simultaneously learn technology and expose you to using human test subjects in simulated environments, which could enhance your competitiveness for jobs in the research sector. We also have access to equipment that could be used in labs, such as biometric harnesses, that can open additional data streams for analysis.



Dr. Antonio I. Cortés
Associate Dean

For those of you who do not live near Daytona Beach, perhaps you might consider spending a week on campus using a lab to gather data for subsequent analysis back home. Some of our facilities are right around the corner from the SGS Suite, such as the Suborbital Space Flight Simulator and Mission Control Center, the High Altitude Lab, the GAT-II Spatial Disorientation Flight Training Device, the Virtual Reality Lab complete with four different simulations, and the Cognitive Engineering Research in Transportation Systems (CERTS) Lab. The Worldwide Campus has a Virtual Crash Lab and a Virtual Aerial Robotics Lab that can be accessed remotely, and which could, potentially, be used for research.

If you are curious about "working in the lab, late one night," or even during the day, please reach out to a lab or simulator manager and schedule a tour. You can find the manager names in the College of Aviation Lab Guide or read about the labs here: daytonabeach.erau.edu/college-aviation/labs-facilities/index.html.

Stay on target!

RECENT EVENTS

The Sunshine Education and Research Centers' Research Poster Symposium and Interdisciplinary Research Training – 2018 in Collaboration with USF Health Research Day, was held from February 22-24, 2018.

Students not only from Embry-Riddle Aeronautical University, but also from seven other universities in Florida and Puerto Rico attended this training.

Some of our residential Ph.D. students and Dr. Mark Friend attended the poster session on February 23, 2018, at the USF Marshall Center on the Tampa Campus. Brad Baugh created a poster on runway incursions, Woojin Choi covered airport noise management on his poster, and Marisa Aguiar discussed risks and limitations of integration of commercial small unmanned aerial systems into inner cities.

This annual event focuses on the high-impact scholarly work of students and other academics. Our students were able to demonstrate the value and impact of their own research.



BROWN BAGS

Andrey Babin

MSA student Andrey Babin presented on February 20, 2018, about his personal experience at Piedmont Airlines during his summer internship in 2017. Nine students attended the Brown Bag session. After his brief presentation about his position, his responsibilities, and the safety department structure at Piedmont Airlines, attendees were given an opportunity to ask questions. Andrey provided some tips on how to get an internship, how to give a good impression during the interview, and what kind of skills students might need to develop to get a job. It was a helpful session for those looking for employment or an internship. Thank you, Andrey!



Stephanie Fussell

On March 20th Stephanie Fussell, a Ph.D. residential student, presented a draft version of an NTAS presentation about the development of an augmented reality (AR) and virtual reality (VR) laboratory in the College of Aviation. Twelve students attended Stephanie's brown bag session titled "Implementing Immersive Virtual Reality in a Teaching and Learning Program," and there was Q&A time after her presentation. The AR/VR team has been working to integrate interactive simulation into a virtual program for ERAU flight students, mimicking real world complexities to elicit necessary cognitive and psychomotor behaviors. The draft was presented and feedback received will be used to refine the presentation in time for NTAS, which will be held in August on our Daytona Beach Campus.



THESIS DEFENSES

This spring semester, MSA students Andrey Babin and Ziyi Dong, presented their thesis defenses. Their committees had a rigorous discussion after their defenses and brought us the good news that both students passed! SGS is very proud of your achievements, and we congratulate you on your success.

Andrey Babin

On March 30th, Andrey Babin presented his thesis defense. Andrey discussed issues with wrong identification of a failed engine in twin-engine propeller aircraft, such as when pilots shut down a working engine instead of a failed engine. Andrey proposed an alternative method of identifying the failed engine and performed a study to test this method. He found out that the alternative identification method was more efficient and less confusing to pilots who participated. The possibility of implementing this method in pilot training was discussed.

Ziyi Dong

On April 6th, Ziyi Dong defended her thesis on the relationship between gender and types of navigation instructions in driving. This defense gave insights of gender differences in wayfinding. Because of the trend where women are becoming more involved in aviation, differences between gender in wayfinding instructions may carryover to navigating in aviation. Specifically, Ziyi's study asked if, based on the type of directions given, men are better at navigating than women, and if gender has an effect on situation awareness when driving instructions are provided. Ziyi presented several differences between males and females in relation to navigation and situation awareness that she discovered through completing the study.

DISSERTATION DEFENSE

Dr. Robert (Bob) L. Thomas presented his dissertation, "Effect of Active Learning on Instrument Pilots' Knowledge and Self-efficacy" on Friday, February 9, 2018, on the Daytona Beach campus. The committee was chaired by Dr. Steven Hampton, Professor for the School of Graduate Studies.

Congratulations to Dr. Robert (Bob) Thomas for successfully defending his dissertation! Bob will be walking in May at the Daytona Beach Campus Commencement Ceremony at the Ocean Center.



MSA ANNOUNCEMENTS

OUR STUDENTS, STAFF, FACULTY, AND ALUMNI



Dr. Cortés and Eddie in Brazil!

Dr. Cortés met up with LCDR Edilson “Eddie” DaSilva at a safety conference in Brazil in April. Eddie is a recent MSA graduate and a helicopter pilot and safety officer with the

Brazilian Navy. The picture shows both gentlemen proudly displaying a recently published article based on Eddie’s Graduate Capstone Project, which explored pilot workload and stress during overwater missions in single-engine versus multi-engine helicopters. Eddie also presented Dr. Cortés with a very cool Brazilian Navy cap, as pictured.



Marisa Aguiar

The School of Graduate Studies is very happy to share Marisa’s first teaching experience. Marisa Aguiar is one of our residential Ph.D. students.

Over the spring semester, she participated in a Teaching Practicum developed by SGS that allows Ph.D. students

the opportunity to observe a class, teach occasionally, participate in CTLE, and be mentored by a host faculty member. The course she has been observing all semester is SF 210: Introduction to Aerospace Safety.

According to Marisa, her favorite part about this opportunity was learning how to teach. This went beyond the scope of just engaging students, but rather, she was exposed to the science behind learning and optimizing the classroom environment so that students would not only learn the material but also would be able to apply the material and think critically, therefore fostering student’s growth into scholars at both professional and cognitive levels.



Matthew Grunenwald

One of our Ph.D. students, Matthew Grunenwald, received an award for the Tenth National Aviation System Planning Symposium Graduate Student Participation Grants. Matthew had submitted a 1-2 page paper outlining his doctoral coursework and research, and how it applies to aviation system planning. His research is in utilization of Monte Carlo simulations to determine value of corporate air shuttles for high volume business travel demands.

The grant will provide financial assistance to help him attend the symposium and cover the cost of Symposium registration and up to five nights’ accommodation at the Lakefront Anchorage Hotel. The Symposium is being held from May 20-23, 2018. As a grant recipient, he will attend one or both of the TRB (Transportation Research Board) committee meetings being held in conjunction with the symposium in order to gain an appreciation of

TRB committee activities. He will take notes for two sessions and assist in preparing a summary of the sessions for the Symposium proceedings.

Matthew has decided to submit a poster on his doctoral research during the symposium. He is one of four grant recipients for this award, the others were from Harvard University and the University of South Florida. *SGS is truly happy for your achievement and we congratulate you!*

MSA ANNOUNCEMENTS *CONTINUED*

OUR STUDENTS, STAFF, FACULTY, AND ALUMNI

Dr. Dahai Liu's Research Team

A research team lead by Dr. Dahai Liu is investigating the efficiency of pedestrian evacuation processes, in response to disasters like hurricanes, earthquakes, massive shootings, terrorist attacks, aircraft emergency landings, and many more.

This research project is funded by the U.S. Department of Transportation's University Transportation Center Program. The Center for Advanced Transportation Mobility (CATM) was established as part of the program and the Daytona Beach Campus of Embry-Riddle Aeronautical University is one of the institutions of the CATM. The lead institution for the consortium is North Carolina A&T State University, with Virginia Tech, Embry-Riddle, and the University of the District of Columbia. ERAU's research team includes Dr. Dahai Liu; Dr. Sirish Namilae, Assistant Professor of Aerospace Engineering; and Dr. Jennifer Thropp, Assistant Professor of SGS. Students include Pierrot Derjany (doctoral student in AE), Yixuan Cheng (MSA) and Jie Chen (MSA). The research team is working collaboratively with colleagues from NCAT to understand how to improve efficiency and save lives in evacuations.

The purpose of this project is to eventually quantify human behavior change under the influences of different psychological and environmental factors. The findings could provide insights to policies and decision-making and training for emergency responses.

The team is primarily using modeling and simulation approaches to investigate the problems due to the complex nature of panic situations in an emergency. They are using mathematical models such as the stochastic process, queuing theory, the social force model, as well as the discrete event simulation model, in conjunction with an understanding of human psychological behavioral analysis. For the first year, the team has tested the influences of several factors on evacuation efficiency using simulation models, including the number of exit doors, the number of passengers, strategies, and guidance during evacuation, gender, and age. Two more factors, disability and group effect, are currently being tested. Meanwhile, the team has reviewed and developed a comprehensive list of human factors and environmental factors that are present during evacuations.

Part of the research has been accepted by the 9th Applied Human Factors and Ergonomics International Conference 2018 and the IISE Annual Conference & Expo 2018 as conference proceedings. Daytona Beach International Airport was used as the initial testbed; later, the study could be further expanded to a larger and busier airport. In the future, modified models can be applied to highway and other transportation evacuations. The next stage of this project will be further expanded on developing smart airport evacuation systems, for instance, creating a mobile application to guide evacuees to leave the building more efficiently and effectively.

SGS ANNOUNCEMENTS

PUBLICATIONS

Article

One of our Ph.D. alumni, Dr. Jonathan Velázquez, published an article in a Magna Report, “Best of Magna Teaching with Technology (MTWT) 2017,” about his session titled “Flipping the classroom successfully with Technology.” It was one of the top-rated presentations in the MTWT conference held in Baltimore, MD., and he was invited to publish his article with MTWT.

You can read his article on the following website: info.magnapubs.com/2017-best-of-teaching-with-technology. You will need to fill out the first page in order to download your free report.

This free report is a compilation of articles written by the top-rated presenters at the 2017 MTWT Conference.

NEW SGS EMBLEM

We are proud to introduce the new emblem for our School of Graduate Studies. Inspired by the beautiful “Pathways to the Sky” sculpture by artist Peter Forster, which is in the College of Aviation complex and visible from our school, the SGS faculty and staff worked for months to create an emblem that captures the spirit of intellectual exploration and progress in aviation and aerospace. With the help of our university’s Creative Services, we produced the emblem during the Spring 2018 Semester and you can expect to see it appear as a symbol of our unity and spirit. The emblem serves as a representation of our forward thinking school spirit, portrayed as soaring above the earth with a starry background. We hope that the emblem inspires us to expand the boundaries of knowledge as we build the future of our industry and of our scholarly discipline together. Upwards! Always together and always upwards! The emblem is approved for internal use in the school. Any questions about proper use of the emblem should be directed to Dr. Cortés.



SGS ANNOUNCEMENTS *CONTINUED*

MSA UPDATE

Changes to M.S. in Aeronautics Degree Program Create One Common Program Between Daytona Beach and Worldwide Campuses

We have amazing news to share! For the first time in the history of our university, we have a single common degree spanning across several campuses. After a year of hard work by the MSA Joint Curriculum Committee, the SGS MSA and the Worldwide Campus MSA are now the same degree, which greatly enhances the options available to our students in terms of available specializations and ways to complete the degree.

The Master of Science in Aeronautics (MSA) degree program is a broad-based, flexible degree program designed to provide both the aviation/aerospace professional and students who are interested in a career in aviation with a rigorous academic approach to an aviation/aerospace oriented multidisciplinary degree. It provides an unequalled opportunity for pilot flight crew members, air traffic control personnel, flight operations specialists, meteorologists, industry technical representatives, unmanned aircraft systems operators, and aviation educators to enhance their knowledge and pursue additional career opportunities.

The MSA degree is designed to provide the student with a broad research background and technical knowledge in the core curriculum and the opportunity to select from eleven different specializations to pursue their chosen career path in the aviation field.

Although both the Daytona Beach Campus and Worldwide Campus have the same degree name, over time they had become very different programs. The Joint Curriculum Committee worked arduously to modify the MSA degree programs to create one common program. Daytona Beach currently had six different specializations and the Worldwide Campus had ten specializations. They have now been combined into 11 common specializations and have the same core requirements. Specializations offered only through the Worldwide Campus will now be available online to Daytona Beach Campus students. This negates the need for determining course equivalency or transfer of credit. What a huge win for our students!

The current Daytona Beach program consists of 33 credits. Students must complete the MSA core requirements, consisting of 12 credits, and then complete the nine credits that make up the selected specialization in one of the following: Air Traffic Management (FAA AT-CTI approved), Aviation/ Aerospace Education Technology, Aviation/ Aerospace Management, Aviation/Aerospace Operations, Aviation/Aerospace Safety Systems, and Unmanned Aerospace Systems. When choosing the Capstone option, the degree plan allows students to complete a dual Specialization without taking any additional courses. When choosing the Thesis option, a dual Specialization can be completed with one additional course.

In addition to the current specializations, the Daytona Beach Campus MSA catalog will now include the following Worldwide Specializations:

- Space Studies (courses offered at both campuses)
- Air Traffic Management (non-CTI ATC students) (Specialization courses offered through the Worldwide Campus only)
- Aeronautics (Specialization courses offered through the Worldwide Campus only)
- Human Factors (Specialization courses offered through the Worldwide Campus only)
- Small Unmanned Aircraft Systems (Specialization courses offered through the Worldwide Campus)

These changes become effective this summer, establishing a common MSA degree program for the Daytona Beach and Worldwide Campuses. This will provide students additional options for completing their degree. Daytona Beach students will benefit from the ability to take courses through the Worldwide Campus in Online and classroom modalities while their Worldwide counterparts may choose to come to the Daytona Beach Campus to take advantage of our laboratories or flight training opportunities. For more information, please contact the SGS MSA Advisor, Ms. BeeBee Leong.



UPCOMING EVENT

SAVE THE DATE! AUGUST 13 - 15, 2018

**Registration is
Now Open**



Register at embryriddle.edu/ntas now through June 13 and save \$100!

The National Training Aircraft Symposium (NTAS) serves as a forum for aviation professionals from academia, government, and industry to exchange ideas and learn about ways to address emerging issues in the aviation industry. With the technological advances in automation and the proliferation of Unmanned Aircraft Systems (UAS), this year's theme is focused on **The Changing Role of the Pilot**. The conference will be held August 13 - 15, 2018, at Embry-Riddle Aeronautical University's Daytona Beach campus.

Featured Keynote Speakers



Earl F. Weener, Ph.D.
NTSB Board Member



Dr. Robert "Buck" Joslin
FAA CSTA Flight Deck
Technology Integration

Become a 2018 NTAS Sponsor! For more information, visit the conference website at embryriddle.edu/ntas

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Aeronautical University
DAYTONA BEACH, FLORIDA

Register at embryriddle.edu/ntas by June 13 to receive \$100 off your registration!

COLLEGE OF AVIATION
SCHOOL OF GRADUATE STUDIES NEWSLETTER

Please feel free to send all updates/announcements to
Katie Esguerra at dunnk2@erau.edu for future newsletters.

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