

4-2015

## April 2015 School of Graduate Studies Newsletter

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### Scholarly Commons Citation

School of Graduate Studies. (2015, April). Embry-Riddle Aeronautical University, College of Aviation, School of Graduate Studies Newsletter. <https://commons.erau.edu/db-sgs-newsletter/5/>

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**EMBRY-RIDDLE AERONAUTICAL UNIVERSITY**

# **Ph.D. IN AVIATION** **[update]**

**EMBRY-RIDDLE**  
Aeronautical University™  
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# The Role of PhD Programs in University Research

## Michael Hickey, Ph.D.

When our president, Dr. John P. Johnson, came to Embry-Riddle in the spring of 2004, he noticed many great attributes, including our students and our faculty. He also noticed that there were small pockets of research occurring across the Daytona Beach campus. What he didn't see were PhD programs. Accordingly, right from the start he set a goal to create PhD programs and help Embry-Riddle become a research university. It took a lot of effort from a diverse group of people, including faculty, staff, administrators and the Board of Trustees to develop and implement his vision. Today, we have PhD programs in Aviation, Engineering Physics, Aeronautical Engineering, Mechanical Engineering and Human Factors and more are in development. Our research is growing and our future looks very bright. But why did it seem so essential to have PhD programs? What makes PhD programs so special? This short article attempts to address these questions, and to provide a plausible rationale for having PhD programs at universities.

Universities have long been recognized as the institutions of higher education, but it is equally important to recognize that they are also one of the primary institutions leading research and discovery. In addition to imparting knowledge to students, the



Dr. Michael Hickey  
Dean of Research and  
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creation of new knowledge is a hallmark of a great university. While teaching may serve the needs of a few thousand students, research can serve many more people. Some discoveries resulting from university research have been of a tremendous benefit to society, and in some cases hundreds of thousands and even millions of people have been positively impacted by research, particularly in the field of engineering and medicine.

The heart of university research lies in its professors. Although some faculty having MS degrees do research, the vast majority of university research is performed by professors having PhD degrees. Some of the research performed at universities occurs within research centers staffed with "soft money" researchers who most often have PhD degrees. Some of them perform research in collaboration with professors. The key point here is that whether they are faculty (professors) or staff (research scientists or engineers), a key requirement for successful research is the experience gained in obtaining a PhD degree. While most MS degrees require the completion of some research, the vast majority of time to degree completion is spent completing coursework. A PhD degree requires that the student complete a certain amount of coursework, but the majority of time to degree completion is spent performing research.

# The Role Continued

Why do universities have PhD degree programs? Obviously PhD programs feed the talent pool for university professors, and so such programs are vital to the sustenance of universities. But another reason is to support research. Although many professors are actively engaged in some form of research, they also have other obligations including teaching. In contrast to this, once PhD students have completed their coursework and passed their qualifier exams, they can perform uninterrupted research for many hours every day. Because of this, PhD students can tackle fairly large, in-depth problems that faculty may not have the time to tackle themselves. For the faculty member serving as the research advisor, the occasional meeting with his or her student is not too time consuming and can be highly enlightening and productive.

The student research culminates in a dissertation that summarizes intense research performed over a period of up to several years. Often, the research will also lead to publications in journals, and it is customary to include the professor as a co-author in such publications. The professor, who is usually well published, understands very well the process required for paper publishing, and so can be of considerable help to the student. For example, the professor can help address reviewer questions and can help with the communications with the journal editors. And of course, the professor has played a key role in the research by advising the student along the way. Hence, in the final analysis, PhD students help increase faculty research and associated publications.

When faculty increase their publications (and conference presentations), their research reputation is enhanced (nationally and internationally). Just as a rising tide lifts everything, the university reputation is also enhanced. In spite of the fact that this increase in national recognition of the university is due to research, it can have a positive impact on many university programs and goals. Many undergraduate students are excited to come to a university where they can be involved in research, so as universities grow their research it is likely that undergraduate student enrollments will increase. Furthermore, many prospective faculty hires want to engage in research, and so the existence of PhD programs will often make a university a far more attractive place of employment for them. In this way, through their direct positive impact on research, PhD programs can positively impact student and faculty recruitment, and in the process grow departments, colleges and universities.

## Have questions or content?

Contact Kadie Mullins at [haywardk@erau.edu](mailto:haywardk@erau.edu). We look forward to sharing your stories as well as providing you with important information to ensure your success in the program!



# chair's corner

## Message from our Chair

by: Alan Stolzer, P.h.D.

Dr. Brady and I had the privilege of attending a conference in Orlando earlier this week – the conference was titled the International Conference on Doctoral Education, and was hosted by the University of Central Florida. Our own Kadie Mullins is nearing completion of UCF's Ed.D. program (we'll soon have to begin calling her Dr. Mullins!) that served as host for the conference, and she presented a poster on doctoral advising issues.

Dean Brady and I presented a paper we co-authored titled, "Toward Developing an Academic Discipline." We discussed some of the issues related to developing our Ph.D. in Aviation program - the university's first Ph.D. program, the discipline's first Ph.D., and obtaining approval of the accreditor, the Southern Association of Colleges and Schools Commission on Colleges. It's not very often that creating a doctoral program also signifies creating a discipline, so it was enjoyable to talk to the audience about that



Dr. Alan Stolzer

experience.

While I was at the conference, I took some time between sessions to read a few things about a topic on which I often reflect; that is, scholarship. One article that caught my attention was authored by Dr. Andreas Tolk with Old Dominion University, who wrote, "What are the Characteristics of a Scholar?" (published in The Society for Modeling and Simulation International Magazine - the link to the article is provided at the end of the Chair's Corner). Tolk asked more than 50 of his colleagues from around the world to assess characteristics and qualities of great scholars; he cited specific characteristics

identified in the literature. He asked responders to indicate whether each characteristic was Essential, Optional, Not Needed, or Undecided. The results follow in Table 1.

Does the ranking of his list surprise you? How about the fact that Ethics holds the top spot? His article includes definitions for each of these characteristics; I'll list just a few of them.

Ethics – "a scholar follows strong professional ethics rooted in honesty about the [sic] own work, accepting constructive criticism, treating others with respect, and not gaining personal advantage out of serving positions."

Immersion – "a scholar is intimately familiar with and knowledgeable about both the classical and most recent literatures in the area of inquiry."

Disposition – "a scholar is marked by what could be called academic poise; a skepticism about knowledge claims, self-criticism and doubt."

## Chair's Corner Continued

Definition – "a scholar has a sharp focus that delimits the area of inquiry in which he (or she) works ... this development of a long-term research identity is crucially dependent on sharp definition.

Tolk also gave his colleagues the opportunity to write-in characteristics of a scholar. While some appear to be duplicates, mentorship, contribution, integrity, tenacity, service to mankind, open-mindedness, and others were included.

I found his article interesting, and I believe it would be worth your time to take a moment and read it. Our program mission is to produce scholars, and I hope that we are all constantly trying to develop the characteristics that define a scholar. Enjoy the journey!

Download the full article here:

<http://tinyurl.com/TolkArticle>



Table 1

	Essential	Optional	Not Needed	Undecided
Ethics	94%	6%	0%	0%
Immersion	92%	6%	0%	2%
Disposition	86%	11%	2%	0%
Authority	86%	11%	2%	0%
Persistence	83%	11%	6%	0%
Passion	80%	17%	3%	0%
Productivity	57%	34%	9%	0%
Definition	50%	41%	3%	6%
Recognition	37%	51%	9%	3%
Loyalty	37%	49%	14%	0%
Connection	34%	63%	3%	0%
Competitiveness	15%	67%	18%	0%

Source: Tolk, A. (2012)

## Program Updates

- ^ **DAV714 Students:** The book used for DAV 714 *The Legal Environment of Aviation - Aviation and the Law* (5th ed.)- is no longer available for individual purchase from the publisher, which is apparently going out of business. Therefore, the department is purchasing several copies of this book, and we will sell them to students at our cost plus shipping (\$110), upon request. If you are planning to take DAV 714 in May and need the book please advise Susie ASAP to ensure that we can get it in your hands prior to the 7th.
- ^ **Funding Available:** Did you know you can request funding for travel, software,

conference fees, or other expenses related to your research? Simply e-mail Dr. Stolzer at stolzera@erau.edu with your request!

- ^ **SPSS and SEM/Data Mining Residency Sessions:** Optional review sessions for SPSS and Structural Equation Modeling and Data Mining will be offered during the residency on Friday, August 14. SPSS will be open to all 702/703 students; SEM/ Data mining will be open to 702/703 students who have completed DAV 724. These sessions will only be offered if there is sufficient interest so please contact Kadie at haywardk@erau.edu as soon as possible to signify your interest in participating.

- ^ **Alumni Engagement Program:** A group of graduates from the Ph.D. in Aviation program (who now number nine!) has begun the work to establish an alumni organization specific to our program. Some of the highlights from the group's recent discussions have included programs to encourage scholarly collaboration between current students and graduates, industry education efforts, and alumni participation in dissertation committees and advisement. If you have an interest in shaping an alumni engagement program, please let Kadie know.

## Mond Buaphiban to Defend Dissertation

Mond Buaphiban will defend his dissertation "DETERMINATION OF FACTORS THAT INFLUENCE PASSENGERS' AIRLINE SELECTION: A STUDY OF LOW COST CARRIERS IN THAILAND," on Thursday, April 30 at 11:00 AM EST in COB 114. The event will also be broadcast live via EagleVision. The link will follow via e-mail. Students are strongly encouraged to attend. His committee is chaired by Dothang Truong, Ph.D.

### ABSTRACT

This research examined the factors that influenced the airline selection of Low Cost Carriers (LCCs) in Thailand. The research was justified based on the rapid growth of LCC travel in Thailand, particularly in domestic and regional travel. There is a relative lack of successful explanation of the choice of LCCs in Thailand, with only a few studies addressing topics like passenger satisfaction and perceptions of service quality. Following an extensive literature review, the author used a theoretical framework based on the Theory of Planned Behavior (TPB) (Ajzen, 1991) in order to explain passenger behavioral intentions. This framework was supplemented by airline operational and marketing factors identified from the literature, including Price, Service Quality, Airline Reputation, Airline Safety, Route Availability and Convenience, and Frequent Flier Programs. A large scaled survey was sent to Thai LCC passengers at major airports in Thailand. The final sample (n = 781) was predominantly working-age, female, highly educated, and with average incomes. In general, they flew frequently (two to three times a year or more). In order to test the relationship among the external factors, TPB factors, behavioral intentions, and actual behavior, Structural Equation Modeling (SEM) was conducted. Results showed that Subjective Norms, Perceived Behavioral Control, Airline Reputation, Price, and Service Quality had a positive impact on Behavioral Intentions, while Behavioral Intentions positively influenced Buying Behavior. This research has important implications both in academia and industry. It indicates that LCC passengers are not merely driven by price as concluded by economic studies in LCC selection. Instead, factors like service quality, airline reputation, and social acceptability implied by subjective norms play a significant role in the choice of LCCs over Full Service Carriers (FSCs). Additionally, the results of this research provide LCCs with useful guidance to form appropriate strategies to attract more passengers: protecting price leadership, improving service quality, enhancing public image, and maintaining route diversity.



## WRITR Call For Papers

The World Review of Intermodal Transportation Research Special Issue "New Generation of Research in Transportation and Logistics: Our Common Future" welcomes papers for consideration. The deadline to submit is June 30, 2015. For the full call for papers, please e-mail Kadie at haywardk@erau.edu.

## NextGen and the Ph.D. Program | Jorge Ferrand

NextGen is a series of FAA sponsored programs focused on evolving the National Airspace System (NAS) to safely increase efficiencies and capacity. These programs represent an evolution from a ground-based system of air traffic control to a satellite-based system of air traffic management.

NextGen means less time sitting on the ground and holding in the air. NextGen enables the sharing of real-time data about weather, the location of aircraft and vehicles and conditions throughout the National Airspace System. We get the right information to the right people at the right time, helping controllers and operators make better decisions and improve on-time performance. NextGen is better for the environment. Flying is becoming quieter, cleaner and more fuel-efficient. Operators are beginning to use alternative fuels new equipment and procedures thereby reducing our adverse impact on the environment. More precise flight paths are also helping limit the numbers of people impacted by aircraft noise.

NextGen is providing tangible financial benefits to aviation

stakeholder communities. In this edition, we highlight several airports realizing benefits from using NextGen procedures.

At Dallas/Fort Worth, American Airlines is saving \$10 million to \$12 million in annual fuel costs using NextGen procedures off the ground. NextGen procedures employed at Dallas/Fort Worth are also yielding a 20% increase in the number of hourly departures and miscommunications between pilot and controller at Dallas/Fort Worth have been reduced by 40%. NextGen limits miscommunications between pilot and controller through the adoption of new technologies.

In Denver, United Airlines alone saved \$21 million in fuel costs in 2013. This newsletter features an interview with Ken Greene, Deputy Manager of Aviation – Denver Airport Operations, who toured the Florida NextGen Program and shared his insights on the benefits Denver is experiencing from the current roll-out of NextGen.

Financial results clearly demonstrate that the current and planned economic benefits of the NextGen program far outweigh the

“expediency derived” from potential, nominal budget gains realized if the proposed cuts are enacted. NextGen will cost the FAA \$38 billion through 2030 while generating \$106 billion in total benefits through 2030 to the traveling public, aircraft operators, and the FAA. While this is not a trivial return on investment (ROI) it does not begin to consider the safety, situational awareness, environment, America’s future competitiveness, and numerous other benefits afforded by NextGen. It becomes apparent that NowGen benefits being realized from NextGen are well underway at airports and across the aviation stakeholder community.

ERAU will be hosting a NextGen 101 class through the Office of Professional Education.



## NextGen Continued

ERAU is a trusted NextGen partner with an 8 year legacy and a contract extension until 2018 to lead the Florida NextGen Test Bed (FTB). The Test bed conducts research, rapid prototyping and demonstrations of emerging technologies for Air Traffic Management.

The FTB is a government funded facility that provides a robust platform where early-stage Next Generation Air Transportation System (NextGen) concepts are prototyped, integrated, demonstrated, and evaluated. The FTB, integrated with the Tech Center and other Government and industry labs, is critical in informing the value-driven roadmap to NextGen. The FTB brings together best-in-class government, industry, and academia, work to advance implementation. The facility offers a unique, one of a kind architecture, a “microcosm” of the National Air Space System,

to demonstrate systems, concepts, and procedures. Embry-Riddle Aeronautical University (ERAU) manages the facility and its activities for the government under the management of the William J. Hughes Technical Center and working with our industry partners, also known as our Strategic Partner Alliance

The mission of the NextGen Florida Test Bed (FTB) is to prototype and demonstrate NextGen capabilities that are aligned with planned functionality as depicted by the NAS Enterprise Architecture and Infrastructure Roadmaps. The FTB is used to evaluate concepts, operational research, capabilities, and technologies prior to these being funded, implemented, or fielded at a NAS facility. The FTB integrates multiple flight domains within its facility in order to provide for end-to-end or multi-domain demonstrations and concept evaluations.

The FTB consists of two primary areas: The Integration Suite and the Demonstration Suite. Additionally, the Data Center houses the network equipment, rack mounted servers, and other equipment required to drive the operational capabilities in the Integration and Demonstration Suites.

The FTB provides an open platform to help evaluate and examine the feasibility of new technologies under a Other Transaction Agreement (OTA) recently renewed to 2018. The OTA at Embry-Riddle brings together the best-in-class of Government, Key Industry and Academic skills, systems and investments as a Consortium. This Consortium is focused on addressing Operational Improvements (OIs) identified in the NextGen Implementation Plan through tasking. We create value for the FAA, through the Consortium, using the Value Creation approach.





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