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GeoTech Center
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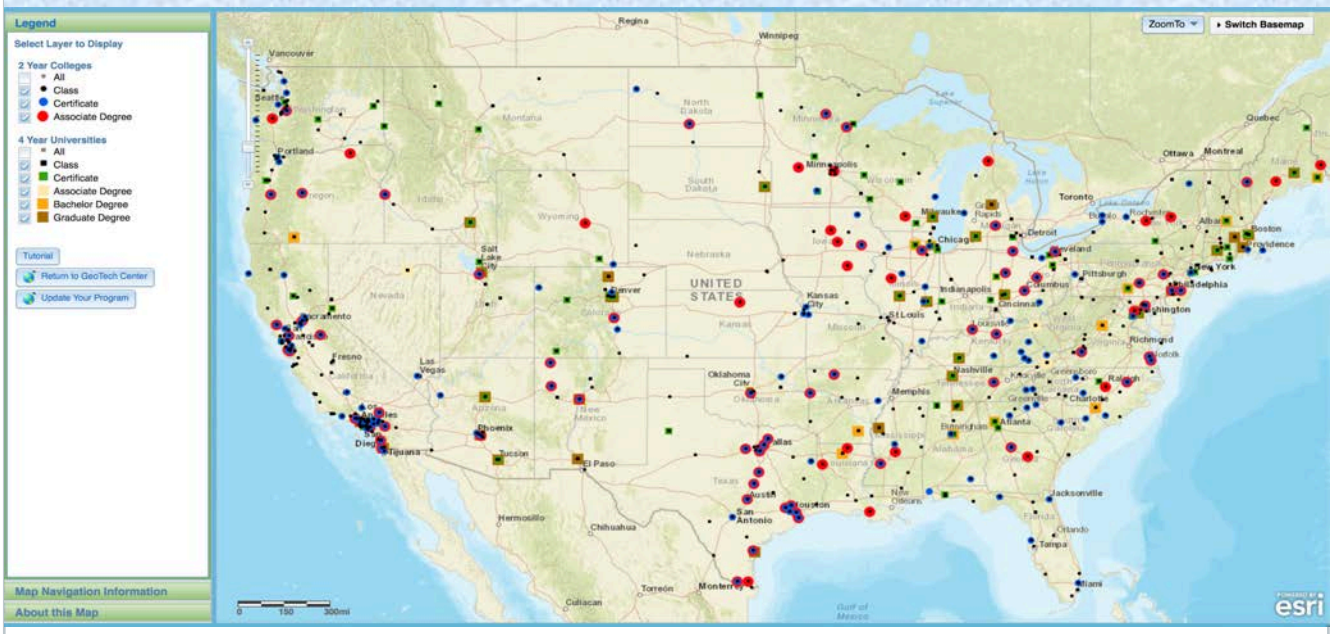
Empowering Colleges: Expanding the Geospatial Workforce



GeoTech Center Receives New Funding from the National Science Foundation (NSF)

The NSF recently awarded the GeoTech Center a 5-year, $4 million Advanced Technological Education (ATE) award to continue its efforts to assist in the expansion of a well-qualified geospatial technology (GST) workforce. Center partners work together to provide professional development opportunities, curriculum resources, document career pathways, and research core competencies for the new and incumbent GST workforce. The Center has served as the *national* unifying voice and support system for 2-year colleges, and is recognized by the U.S. Department of Labor as a leader in supporting GST education.

Continued on 4

GeoTech Center Information

This material is based on work supported by the National Science Foundation (DUE #1700496). Any opinions, findings, and conclusions expressed in this material are those of the authors(s) and not necessarily those of the National Science Foundation.

The GeoTech Center is virtual, comprised of a Director, four Associate Directors, and eight Assistant Directors from institutions across the nation. The central office is located at Jefferson Community and Technical College (JCTC) in Louisville, KY.

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GeoTech Center 2017 Annual Award Winners…

The GeoTech Center is honored to recognize educators and organizations that have made significant contributions in support of community college geospatial education. The 2017 Distinguished Geospatial Educator is Jonathon Little, from Monroe Community College in Rochester NY. Jonathon is being recognized for his exemplary teaching abilities, curriculum and program development, and strong student mentoring and leadership activities related to his National Science Foundation funded geospatial grant.

The 2017 Lifetime Achievement Awardee is Michael Krimmer. Mike is recognized for long-standing work to promote and expand geospatial education as Program Director at Northern Virginia Community College. Mike is involved in several NSF and Department of Labor grants, including work on the NSF ATE Integrated Geospatial Education and Technology Training Project (iGETT), and as a Senior Research for the GeoTech Center and the DOL Geospatial Careers Pipeline initiative. His work includes the support and expansion of geospatial education culminating in an AAS and Career Certificate to prepare students for the geospatial workplace.

The 2017 Distinguished Geospatial Education Partner Awardee is GISetc, owned by two outstanding geospatial educators, Roger and Anita Palmer. GISetc provides cutting-edge GIS Professional Development, curriculum and support to K-12 and post-secondary schools, educators and students. Their goal is to advance education, improve quality of curricula, provide authentic research and learning projects, and provide training and skill development in an atmosphere of discovery. The Palmers have written textbooks, workbooks and exercises for use in teaching geospatial technology at all levels of education including work to support geospatial education internationally.

The GeoTech Center looks forward to honoring more geospatial educators in 2018 and requests that you think about nominating individuals or partner organizations for these awards starting next January.

UAS at Palomar College and Southwestern College

Palomar College, in partnership with Southwestern College (both in San Diego County, CA), was recently awarded a 3-year NSF ATE award to prepare students to succeed as employees or entrepreneurs in the high growth unmanned aircraft systems (UAS) industry. Industry estimates the UAS industry will generate more than 100,000 jobs and generate economic impacts upward of $82 billion by 2025. California, and specifically San Diego, is home to the world's two leading UAS manufacturers and the demand is increasing for a workforce that specializes in the production of drone sensors, drone data analytics, and the development of UAS navigation technology for mapping and inspection applications. Local colleges and universities have been urged to focus on UAS technology to preserve San Diego's leadership in the industry.

This project brings together community leaders in collaboration with partners from high school districts, universities, and various industry representatives to develop industry-specific UAS coursework. Students will be prepared with not only UAS knowledge and skills, but also business and workplace acumen. Summer academies as well as student competitions will be hosted to excite underrepresented high school and college students about UAS educational career pathways. A Massive Open Online Course (MOOC) will also be developed and will enable broad dissemination about the safe and novel applications of UAS to both the public and technical professionals.

For more information about the project, contact Dr. Wing Cheung, PI, Palomar College. wcheung@palomar.edu.

Continued from Page 1…."GeoTech Center Receives New Funding from the NSF"

Project Abstract:

The National Geospatial Technology Center of Excellence (GeoTech Center) is a collaborative effort of two-year colleges, universities, and industry to accomplish the vision of increasing the number and diversity of learners and workers who possess industry-defined geospatial technology (GST) skills and competencies. The need for a GST workforce that possesses current industry-defined skills and competencies is expanding at a rapid rate. Today, GST is becoming an essential tool in fields including (but not limited to) emergency response, sustainability, agro-science, energy, and a variety of STEM disciplines. These occupations require a skillset in the analysis of spatial data and geo-visualization. One impact of this project will be the national expansion and diversification of a GST workforce that possesses relevant and current industry-defined GST skills and competencies. GeoTech Center research has identified a lack of educational materials to meet the needs of the broad geospatial community of users. Curricula that are standardized and contextual, and that can be used in traditional college learning environments, as well as by individuals for self-improvement, is desperately needed. The GeoTech Center will design and develop industry-aligned educational materials that can be used in a modularized format and portable to different learning environments.

The GeoTech Center has four integrated Goals: 1) Research emerging trends and uses of GST; 2) Develop industry-aligned curriculum for new and incumbent users of GST; 3) Investigate best practices to increase (and retain) the number of underserved and underrepresented populations (including veterans, women, minority groups, and persons with disabilities) into GST and STEM fields; and 4) Develop and implement professional development opportunities and resources for secondary and post-secondary faculty. In order to successfully accomplish its Goals, the Center will build on strong, documented relationships with professional GST organizations and provide new and current workers access to educational resources to assist them in filling any gaps in their GST skillset (and for them to receive recognition of those skills through micro-credentials and professional certifications). The Center will expand its Community of Practice and address specific educational needs of targeted audiences, including underserved and underrepresented students, veterans, and faculty in STEM disciplines. The efforts of the Center to accomplish its Goals will provide the optimum framework and resources to increase the number and diversity of learners and workers who possess industry-defined GST skills and competencies.

For information regarding the Center please visit www.geotechcenter.org, or contact the Center Director:

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Unmanned Aerial Systems (UAS) The Future is Now!

By Ann Johnson

In an article by Jeff Salmon, in xyHT Magazine, he outlines how UAS use went from "FUD" (Fear, Uncertainty and Doubt) six years ago to "FOMO" (Fear of Missing Out). It is hard to imagine how quickly the technology and its use has become accepted and common place. Not long ago, vehicles were too costly, difficult to operate, and data collection and visualization too complex to make UAS use worthwhile except for extremely well-funded applications. Today there are so many options as to vehicle type, size, cost, operating systems and software able to collect, integrate and visualize data that deciding on which UAS to employ may be the most overwhelming decision. Capabilities and Return On Investment has made use of small UAS (sUAS) within the budget of even small enterprises. Applications exist for use in natural disasters, land use planning, search and rescue, powerline inspections, road inspections, cinematography and even real estate sales of single family homes. While laws governing UAS use are still being defined and UAS applications and aircraft/camera hardware are advancing rapidly, the education community, including the GeoTech Center, are working to identify what skills and competencies need to be covered in courses to prepare a well-qualified UAS workforce. During the GeoEd17 pre-conference Exploratorium this June in Louisville, KY, a six-hour session was held for attendees addressing UAS use including the current laws governing UAS and actual flight time within a covered (batting) cage.

The day following GeoEd17 a one-day meeting was held to present details about programs from several community colleges that are currently teaching UAS. Jonathan Beck from Northland C&T Aerospace and Agriculture Community and Technical College in Minnesota, Jenni Frigen and Mandy Briggs from Parkland Community College in Champaign, Illinois, Chris Cruz from West Valley College in Saratoga, California and Wing Cheung from Palomar Community College and Ken Yanow from Southwestern College in San Diego County, California presented their current and future plans for their UAS programs. The meeting also included a brain-storming session on possible competencies that should be included in a program and how many courses would need to be offered to cover those topics. The results of this session will be used, along with DACUM outcomes from several other colleges, to compile a Meta-DACUM list of competencies that can be reviewed by educators and the workforce. Additional UAS training and discussions will be part of a one day UAS workshop on July 7 at Palomar College that Wing Cheung is hosting called "Drone Con'17". Details of the outcome from this event and others will be included in future Newsletters and on the GeoTech Center website.

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For remote sensing resources, please see: igettremotesensing.org

10 Tips for Passing the FAA's Part 107 Knowledge Exam

By Wing Cheung and Sean Figg

Whether you are an instructor or a consultant, drones or small unmanned aircraft systems (sUAS) have something to offer everyone. But before you use your sUAS for any commercial or business purposes, you must first register your aircraft, which must be less than 55 pounds, and pass the Federal Aviation Administration's (FAA) Part 107 Knowledge Exam.

What is Part 107?

Part 107, also known as the Small Unmanned Aircraft Rule, came into effect August 29, 2016, and governs the operation of small unmanned aircraft used for commercial purposes. The Knowledge Exam consists of roughly 60 multiple choice questions. Although the test preparation materials and our test registration clerk informed us that there would be 60 questions, we had about 65 questions on our exams. Each question has three answer choices and one correct answer. According to the FAA, 15-25 percent of the questions cover regulations, 15-25 percent cover airspace and requirements, 11-16 percent cover weather, 7-11 percent cover loading and performance, and 35-45 percent cover operations.

10 Tips for Passing the Knowledge Test:

1. Note that not all tests are the same. A colleague and I took our Knowledge Exam at the same time, at the same location, sitting next to each other. When we compared notes after the exam, it was apparent that we had very different questions, so study the sample questions online, but do not use them as an absolute.
2. Make use of the free resources and practices tests online. These tests definitely helped build our confidence and gave us a sense of what to expect. However, as we have already mentioned, do not think of the sample questions as an absolute. In our opinion, the actual test questions were more difficult, as they tend to have trickier answer choices than the online sample questions.
3. Know your symbols and figures. Several questions on the exam will refer to symbols and figures in the Airman Knowledge Testing Supplement Book. You will be tested on the symbols for different types of airports, airspace classes, the ceilings and floors of different airspace classes and more.
4. Know what materials will be provided to you during the test (e.g., the Airman Knowledge Testing Supplement Book) to help reduce the amount of materials you need to memorize. The supplement book not only contains the figures that you will need to answer some of the test questions, but also includes the legend to help you in answering questions about sectional aeronautical charts and airport communication protocol.
5. Do not overthink the easier questions. We made some simple mistakes on our exams that we truly kicked ourselves about later. We were so entangled and absorbed by a few of the trickier questions that it caused us to overthink some of the subsequent simpler questions. Do not overthink the easy ones. Instead, it will be wise to skip over some of the harder or trickier questions and revisit them later. We also highly recommend reviewing your test and answer choices after you are done with the exam.
6. Do not freak out over unexpected questions. Each of us completed at least 300 sample exam questions online before taking the exam, looked over the FAA study guide, and completed an online prep course, but we were still surprised by a good 10-15 percent of the questions that were on the exam. Keep in mind that you need only 70 percent in order to pass the exam. Also remember that a lot of the training materials online were created before the FAA even implemented the exam in August, so there are bound to be surprises.
7. Worry about the weather. According to the FAA's Remote Pilot-Small Unmanned Aircraft Systems Airman Certification Standards, 11-16 percent of the test is on weather. A good number of the questions on our tests had to do with sUAS operations in different weather conditions. If the answers to the weather-related sample questions online are not clear, be sure to read up on their justifications and understand the reasoning in the FAA study guide or other online resources.
8. Study early, understand the materials, and do not simply plan on memorizing the correct answers for the sample questions online. Even if you get the identical questions on exam day, you will get very different answer choices that will require you to apply your knowledge to pick the right answer!
9. Be sure that your name is exactly as it appears on your driver's license when you sign up for the exam. This includes your middle name. If the names do not match when entered into the Integrated Airman Certification and Rating Application (IACRA) system, it may cause long delays in the issuance of your remote pilot certificate.
10. After receiving a passing exam score, you must register as a remote pilot using the IACRA website. You may begin your application at any time, but it will take 48 to 72 hours, excluding weekends, before your exam number can be found and associated with your account.

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