Coast-2-Coast-2-Coast UAS Program Experiences

Geospatial Technician Education—Unmanned Aircraft Systems (GeoTEd-UAS)

Preparing the Small UAS Operation Technicians of the Future

Chris Carter, Deputy Director
Virginia Space Grant Consortium
Virginia Space Grant Consortium

**NASA Priorities**
- Aerospace
- Aviation
- Earth and Planetary Science
- Technology
- Education

**Space Grant**
- STEM Education
- Workforce Development
- Outreach
- Research
- Economic Growth

**State Needs and Goals**
- STEM Education
- Science and Technology Research
- Workforce Development
- Economic Growth
**Geospatial Technician Education -- Unmanned Aircraft Systems (GeoTEd-UAS)**

- Three-year NSF ATE Project (2016-2019)
- **Mission**: prepare the future small UAS Operations Technician workforce
- NASA and industry partnerships
- Robust external evaluation

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David Webb – Mechanical Engineering Technology, John Tyler Community College

Cherie Aukland – IT and Program Head for GIS, Thomas Nelson Community College

Dr. John McGee – Associate Professor and Virginia Geospatial Extension Specialist, VT

Fred Coeburn – Computer Networking Technology, Mountain Empire Community College
1. Developing a Curriculum (DACUM) Chart for Small UAS Operations Technician
sUAS Operations Technician

- Mission Planning
- Vehicle and Sensor Selection
- Flight Operations
- Data Collection and Management
- Data Post-Processing and Analysis
- Maintenance and Cybersecurity
- Developing and Delivering a Report
New Unmanned Systems Prefix (UMS)

1. UMS 107 - Small Unmanned Aircraft System (sUAS) Remote Pilot Ground School
2. UMS 111 - sUAS I (Introduction)
3. UMS 112 - Program and Flight Data Management
4. UMS 177 - sUAS Components and Maintenance
5. UMS 211 - sUAS II (Advanced)

Thomas Nelson Community College – ‘Stackable’ Career Studies Certificates

Small UAS Flight Technician (9 credit hrs)
Small UAS Operations Technician (21 credit hrs)

Mountain Empire Community College
AAS in sUAS Operations Technical Studies program (68 credit hours)
Two One-Week Faculty UAS Institutes
Hosted by Virginia Tech and FAA Test Site MAAP
- 27 faculty from 12 different colleges and three high schools

**Topics:** Part 107 prep, sUAS flight operations (manual and autonomous), flight planning, sensor selection, data capture, formatting and storage, remote sensing data analysis, maintenance, campus UAS policies, and student service learning

26 faculty obtained FAA Part 107 Remote Pilot Certificate
4. UAS Outreach/Saturdays...

- Introduction to drones and demos
- Various topics
  - Applications
  - Sensors
  - FAA Regulations
- Anatomy of a drone
- Assembling a drone kit
- Learning to fly a drone
- Drone obstacle course competition
Student Service Learning Projects

Faculty-led Student Service Learning Projects in Partnership with The Nature Conservancy, NASA, US Forest Service, Virginia Tech and others

- Habitat mapping of Golden-winged Warbler and other imperiled species
- Inspections
- Land Monitoring / Land Change
- Phragmites Mapping
- Shoreline Monitoring
- Sensitive Species Mapping (future)
- Fire Effects Monitoring (future)
- Media Products for Informing the Public (future)
Kegley Dairy Farm
Pulaski, Virginia
(23 May 2018)
8 Missions
More than 2600 images

http://vsgc.odu.edu/documents/Triangle_Mesh_Vid.mp4

Lane Stadium, Blacksburg, VA (21 June 2018)
Challenges

1. Quantifying and Describing Workforce Demand
2. Challenges of Emerging Technology in the Classroom and the Field (Student Service Learning)

Indeed.com search
Local workforce need survey
Local Dacum Panel
Variety of Job Titles, Position Descriptions, and Employers
2. Challenges of Emerging Technology in the Classroom and the Field (Student Service Learning)

- Anticipate, expect, plan
  - Visit site and fly if at all possible
- Manage expectations and timeline
- Significantly increase time planned
- Airspace
- Firmware, software, apps, mobile devices (controllers too)
- Travel distance
- Cell towers
- Public interest