**UASTEP Advisory Committee Minutes**

**Date**: 7/16/2020, 1-2:30PM

**Location**: Zoom (Virtual)

**Key Highlights:**

**Members Present:**

1. Wing Cheung, Palomar College
2. Ken Yanow, Southwestern College
3. Mark Bealo, Palomar College
4. Vince DiNoto, Jefferson Community and Technical College
5. Alina George, FAA
6. Gus Calderon, Airspace Consulting
7. Candiya Mann, Washington State University
8. Dave West, Vista High School
9. Emily Perkins, USGS
10. John Prevo, Palomar College
11. Michelle Palmer, Aerial Fleet
12. Michael Guest, Palomar College
13. Scott Painter, Birds Eye Aerial
14. Sean Figg, Palomar College
15. Tom O’Connor, General Atomics
16. Vincent Lostetter, Vista High School
17. William Mcneese, Palomar College
18. Isaac Hernandez, Scout Drone USA
19. Jesus Ulloa-Higuera (Leo), Sweetwater Union High School District
20. Steven Katz, Flying Lions
21. Cody Long, LA Times
22. Kenji Stinson, Scout Drone USA
23. Chris Carter, Virginia Space Grant Consortium
24. Mike Noble, General Atomics
25. Jeff Dunagan, General Atomics
26. Joseph Kerski, Esri (email)

1. **Introductions**
2. **Approval of past meeting minutes**

Mark moved for approval. Cody seconded. Minutes were approved by the committee.

1. **Review of grant activities** 
   1. Goal 1:
      1. Certificate and degree implemented at Palomar College
      2. Certificate implemented at Southwestern College
      3. Developed noncredit program at Palomar College called Getting Started with Drone Safety and Careers consisting of 2 courses:
         1. Introduction to Drone Safety and Applications
         2. Careers in the Drone Industry
      4. Submitted application to become a FAA UAS Collegiate Training Initiative participant
   2. Goal 2:

Workshop was conducted in Oct 2019. The workshop had 13 participants representing 10 disciplines. Their finished products can be accessed at <http://uastep.org/workshops/>.

* 1. Goal 3:

Ongoing course articulation agreements with Vista High School, National University, UCSD Extension, and Arizona State University with no major changes.

* 1. Goal 4:

Drone summer camp postponed until Summer 2021, and Sweetwater Union HS Drone Competition prematurely ended its 2020 season due to COVID-19. Potential support from General Atomics to support those activities in the future.

**4. Curriculum and Program Review**

Committee members were asked to look over the course outline and objectives for each of the three new courses that were developed in the 2019-2020 grant year and offer feedback. The courses are:

* [GCIP 278 Aerial LiDAR Operation](https://palomar.curricunet.com/Report/Course/GetReport/10705?reportId=99)
  + Areas the class should focus on are: construction (Isaac), volumetric/cut-fill (Steven), ensuring pedestrians follow social distancing guidelines (Leo), vegetation monitoring, health, habitat monitoring (Emily)
* [GEOG 145 LiDAR Data Processing and GIS Integration](https://palomar.curricunet.com/Report/Course/GetReport/10666?reportId=99)
  + The separation of GCIP 278 from GEOG 145 is good, since some workers may solely process data rather than fly (Scott)
* [N GEOG 901 Careers in the Drone Industry](https://palomar.curricunet.com/Report/Course/GetReport/10826?reportId=99)
  + The class should also focus on public service applications including what Chula Vista PD is doing (Leo), Palomar/Southwestern/Vista HS classes are invited to contact Flying Lions for field trip to observe CVPD operations (Steven)
  + This course is excellent especially for displaced workers or workers seeking to change careers (Alina)

Committee members were also encouraged to review and comment on other required courses for the drone certificate and associate’s degree, which are:

* [GCIP 168 Digital Imaging with Drones](http://www.curricunet.com/palomar/reports/course_outline_html.cfm?courses_id=26687)
* [GCIP 268 Digital Imaging with Drones II](http://www.curricunet.com/palomar/reports/course_outline_html.cfm?courses_id=28487)
* [GEOG 110 Meteorology: Weather and Climate](http://www.curricunet.com/palomar/reports/course_outline_html.cfm?courses_id=14130)
* [GEOG 120 Digital Earth: An Introduction to Geographic Information Systems](http://www.curricunet.com/palomar/reports/course_outline_html.cfm?courses_id=4702)
* [GEOG 140 Introduction to Remote Sensing and Drone Data Processing](http://www.curricunet.com/palomar/reports/course_outline_html.cfm?courses_id=4097)
* [GEOL 158 sUAS Procedures and Regulations (Part 107 License Exam Prep) course](http://www.curricunet.com/palomar/reports/course_outline_html.cfm?courses_id=29018)
  + The different types of manual and pre-programmed missions covered in GCIP 168 and 268 are valuable for students (Steven)

Given the required coursework for the Palomar program, which of the following areas seem to be the best fit for our program? (participants can vote for more than 1 answer choice)

1. **Arts, Media, and Design (7 votes)**
2. **Health and Public Services (1 vote)**
3. **Science, Technology, Engineering, Math (17 votes)**
4. Trade and Industry
5. **Business (3 votes)**
6. Humanities and Languages
7. Social and Behavioral Sciences

Open discussion about Southwestern College’s Drone program:

* Here is the link to the Certificate of Achievement program:

<http://catalog.swccd.edu/associate-degree-certificate-programs/drone-technology-applications/drone-certofachievement/>

* Here is the one for the Certificate of Proficiency:

<http://catalog.swccd.edu/associate-degree-certificate-programs/drone-technology-applications/drone-certofproficiency/>

* And here is the link to the program front page:

<https://www.swccd.edu/programs-and-academics/career-education/information-communication-technologies-and-digital-media/drone-technology-and-applications/index.aspx>

**5. Emerging trends (20’)**

* The committee was asked to provide recommendations about thermal cameras, [FPV glasses](https://www.bhphotovideo.com/c/product/1464533-REG/epson_v11h756120_moverio_bt_300_drone_fpv.html/?ap=y&ap=y&smp=y&smp=y&lsft=BI%3A514&gclid=EAIaIQobChMI5bys__jU6gIVYQiICR05nwyJEAQYASABEgJqcvD_BwE), and underwater ROV:
  1. Thermal Camera
     + DJI cameras and functionalities are good (Vince)
     + “Most used thermal camera for DJI drones in Industry is the XT2-640 13mm.” (Steven)
  2. FPV glasses
     + “Not used–[but] LOVE the idea!” (Dave)
     + Know of someone that uses and loves FPV glasses, but not currently using it at the company (Steven)
  3. Underwater ROV
     + Interested in learning more (Dave)
* The committee was asked if academic programs should shift away from DJI drones and introduce US-made drones in classes
  1. Diversification and decreasing reliance on DJI will be good (William, Scott)
  2. The federal government does not allow any Chinese made products to be flown so it would be good to diversify (Emily)
  3. Diversification is needed, “using only DJI or Chinese products limits our ability to work with many governmental clients.” (Isaac)
  4. DJI drones cannot be used on any Federal Government projects or contracts (Alina)
  5. Some alternatives to DJI include Parrot, Kinofly - INova, SUI - Endurance, CENSYS – Centurion (Scott)

**6. Labor market discussion (25’)**

* What to teach students:
  1. Expose students to different sensors, such as LiDAR and thermal sensors (William)
     + “Our organization looks for sensor operators that have experience working with multiple camera payloads and varying terrains” (Mike, Jeff)
     + “A breadth of sensor operator experience differentiating between mobile or stationary objects, and terrain is beneficial to applicants” (Mike, Jeff)
  2. Manual operations and programmed flights (Steven)
  3. Give students more flight time (Isaac)
     + Company may require 100 hour of flight time, but it really depends on the client’s requirement (Scott)
     + Require 50 hours of Part 107 flight time. Encourage students to get their Part 107 asap, and log their flights that were conducted under Part 107 (Steven)
     + In cases where companies are working with larger UAS, applicants need a valid commercial pilot’s license with instrument rating prior to hire (Mike, Jeff)
  4. Preparation of waivers/authorizations. There could be a niche for students who are very good at this (Steven)
     + Waivers and authorizations are currently prepared by individual pilots or flight operations departments at companies, but would be helpful for some companies to have an expert who is in charge of their preparations (Steven, William, Scott)
     + Businesses currently specializing in writing waivers and COAs are booming, but UAS type certification with the safety burden being placed on manufacturers may be the future (Gus)
  5. Maintainers that like to tinker with, repair, maintain, and build drones will be in high demand due to retirements and the expanding utilization of Unmanned Aircraft Systems (Mike, Jeff)
     + “People with skills such as technical writing, UAS building and design, risk management, aviation, and software development will always have lots of opportunities” (Gus)
* Industries in need of drone operators:
  1. Construction, solar panel and power inspection (William)
  2. Utilities (Scott, Steven)
  3. Construction and environmental mapping (Steven)
  4. “UAV operator demand is not slowing down. I think it is gathering seam in many additional sectors of society” (Joseph)
* Other topics
  1. COVID is not slowing down demand for drone operators. Graduates from Palomar CC and Southwestern CC have been employed by Birds Eye Aerial (Scott)
  2. Companies are increasing hiring more employees for drone jobs (rather than contracting out) due to the law and also “because it is the right thing to do” (Steven, Scott)
  3. There are still a lot of short-term and temporary jobs out there for contractors (Steven, Scott)