

**Palomar College Department of Earth, Space, and Environmental Sciences
Course Outline
Summer 2021**

Class Schedule:

Jun. 18 | 8:00-11:50 AM, 1:00-4:50PM
Jun. 19 | 8:00-11:50 AM, 1:00-4:50PM

Class Location:

ONLINE ([LIVE via Zoom](#))

Instructor:

Wing Cheung
Office Hours (By appointment via email)

Class Number:

51789

Office Location NS-110I

Email wcheung@palomar.edu

Phone (760)7441150 x3652

Students must attend labs at the scheduled time. The ZOOM link for attending the labs will be posted on Canvas. For more information on how to use Canvas, see <https://www2.palomar.edu/pages/atrc/canvas/canvas-information-students/>.

Palomar College offers a variety of student support services (counseling, food and nutrition, technology, tutoring), see <https://www2.palomar.edu/pages/studentlifeandleadership/quick-guide-to-student-resources/>

Geography 197: Working with LiDAR and UAS Data in ArcGIS

Overview: Through a mix of demonstrations and exercises, students will learn to visualize, process, analyze, and share Light Detection and Ranging (LiDAR) and other types of drone acquired data. In addition, class lectures will provide background information about LiDAR hardware and software, as well as common issues when working with LiDAR data.

Course Evaluation:

Class activities (see breakdown below)

- Unit 1 Assignments
- Unit 2 Assignments
- Unit 3 Assignments
- Unit 4 Assignments
- Unit 5 Assignments
- Unit 6 Assignments

Class participation and reflection

90 percent of total grade

15 percent of total grade

15 percent of total grade

15 percent of total grade

15 percent of total grade

15 percent of total grade

15 percent of total grade

10 percent of total grade

Class Lectures and Activities:

The lectures in this class will introduce students to various aspects of LiDAR data, ranging from the tools used in the collection and management of LiDAR data, to the different types of LiDAR derived output and their applications. The activities in the course will give students hands-on practice with exploring and manipulating LiDAR data, as well as generating LiDAR derived output using the ArcGIS Pro software. In addition, class activities will include demonstration

videos on topics that cannot be demonstrated in-person due to the remote nature of this course. Given the condensed nature of this course, **no late work will be accepted**.

Class participation and reflection:

Students are required to be active participants in lectures and class discussions. In addition, at the conclusion of the course, students are also required to reflect on their learning experience by completing a short writing assignment.

Student Learning Outcome: Students who complete this course should be able to analyze and interpret outputs derived from LiDAR data.

Academic Honesty:

The college's code of conduct will be rigorously enforced in this course. If you are unfamiliar with the code, you can review it here:

<http://www2.palomar.edu/pages/catalog/files/2016/04/4RightsAndResponsibilitiesPgs33-40.pdf>.

In particular, incidents involving plagiarism or the use of someone else's words, ideas, calculations, and etc without proper citations may lead to a failing grade in the course and a permanent notation on your academic transcript. For more information on the proper use of citations in your paper and assignments, please see The Purdue Online Writing Lab website: <https://owl.english.purdue.edu/>.

Additional Class Policies:

- **No late work will be accepted in this course.**
- Reasonable accommodations will be made to all students with disabilities.
- Only students who are officially registered may participate in this class. If you are given a permission code to add this class, you must officially add the class prior to the next class session. If you have difficulty using the college's computerized enrollment system to add, please notify the instructor immediately.

Required Text: None (textbook will be provided on the Canvas learning management system)

Required Equipment:

A computer that meets the minimum system requirement for ArcGIS Pro (<https://pro.arcgis.com/en/pro-app/get-started/arcgis-pro-system-requirements.htm>). If you need assistance with securing a new computer for the class, the Palomar College Foundation may be able to help: <https://www2.palomar.edu/pages/foundation/>.

Course Schedule:

Day 1 (Jun 18)	Lecture Topic	Class Activity
8-9:30	Introduction and logistics	
9:30-10:30	What is LiDAR? / Why UAS/drone LiDAR?	
10:30-11:50		Unit 1: Create a LAS dataset and explore different visualization options
11:50-1	Lunch	
1-2:15	UAS/ LiDAR Considerations: Airframe, Payload	
2:15-3:30	UAS/ LiDAR Considerations: Operation, Data Processing (part 1)	
3:30-4:30		Unit 2: Performing basic 3D measurements and terrain analyses with LAS dataset
Day 2 (Jun 19)	Lecture Topic	Class Activity
8-9	UAS/ LiDAR Considerations: Data Processing (part 2)	
9-11		Unit 3: Automated classification of LiDAR point clouds
11-11:50		Unit 4: Manual classification of LiDAR point clouds
11:50-1	Lunch	
1-1:30	Creating and sharing 3D visualizations created from LiDAR data	
1:30-3		Unit 5: Create 3D buildings from LAS dataset
3-4:30		Unit 6: Share point clouds and 3D models on ArcGIS Online