

45-minute Drone Camp for 13-18-year-old target audience:

#### OUTLINE:

\*We have 50 minutes, but they only have 3 minutes between classes so outlining a 45-minute timeline based on the time it takes for them to arrive and get settled and ready to start after a quick introduction\*

- 10 minutes in UAS Introduction/Career Opportunities: PowerPoint Slides
- 5 minutes going over safety procedures for flying and the basics of flying the UAS: PowerPoint Slides
- 20-minute flight time: UAS challenge that applies to real-world UAS operations: Early Fire Detection and Mitigation
- 5-7-minutes for students to return drones to table and settle with a demonstration of Infra Red from Zach on how you could find heat sources such as fire and people (search and rescue) using a larger more sophisticated drone. The time left will be on Q&A.

#### Fire Detection Activity:

Teams will practice real-world search patterns, such as a raster pattern to survey simulated Tribal lands using Forward Motion Video. We will have pictures in the gym that will show wildfires and each picture will have a lat/long written on it. The team will identify the fire, and write down the coordinates. (Coordinates will be real-world coordinates of where recent wildfires on the reservation have occurred. They will be able to take these coordinates into the classroom and use the GIS software their teacher told us they have to plot the fires). We will run 3 separate 5-minute scenarios to allow a team to have 3 opportunities to fly. (Each time we will set the photo with new coordinates in a different location for the team). At the end of the exercise, we will have 5 minutes left to allow anyone in the team who has not flown a chance to fly the drone.

18 November Arrive to New Town

19 November New Town Schedule:

08:00-09:15: Set-Up

09:27-10:37: First Session

10:40-11:34: Second Session

11:37-12:31: Third Session

1:02-1:56: Fourth Session

1:59-2:53: Fifth Session

2:56-3:50: Sixth Session

4:00-4:30: Cleanup

20 November Twin Butte Schedule:

0800-9:45: Setup

09:55-10:45: Session 1 (Include students in the first 3 periods of the day meeting in gym)

10:45-11:35: Session 2 (Include students in 4-7 periods of the day meeting in gym)

11:40-12:15: Cleanup

12:30-3:00: Drive back to New Town/Minot

\*5:30 PM is the earliest I can get to Minot so can't make any flights out and drive from Twin Buttes to Grand Forks is too long after working 5 hours

21 November Fly home or drive

Resources:

To allow maximum exposure for all students, the desired number of drones would be 8, which would allow for class sizes ranging upwards of 30. The minimum amount would be 6. We would have 4 groups flying the fire mitigation activity with 4 practicing basic flight maneuvers, with a trade-out at the 10-minute/halfway point.

If we could have 8 groups flying at once, the desire would be to have a minimum 5 UND reps to supervise (1 for each of the fire mitigation groups and 1 watching the basic flight maneuvers) However, 6 would be the desired amount to have 2 watching the basic flight maneuvers (1 per group of 2) and 4 helping with the fire mitigation exercise (1 per each group).

\*New Town has the largest number of students. For Twin Buttes we could do with 4 UND reps as we will only be running 6 groups maximum\*