

# Drone Program Syllabus

2 Semester Course (last mod: Aug. 2020)

## Semester 1: Building, Programming, Repairing

1. History of Drones
2. How they work
  - a. Bernoulli's Principle
  - b. Basics of Flight
  - c. Video Presentations
3. Vocabulary
  - a. General aeronautical
  - b. Drone specific
4. Building Basic Quads
  - a. Common materials (project motors to order)
5. Building a Drone
  - a. STEM Ranger
  - b. STEM Dragon
6. Repair Basics
  - a. Basic Troubleshooting
  - b. Soldering
  - c. Computer Diagnostics (if pertinent)
7. Programming Drones for Autonomous Flight
  - a. Tello EDU
  - b. Tello Standard
8. GIS - Geographical Information Systems??
  - a. Guest Lecturers
  - b. Survey Basics
  - c. Surveying Software/Interfaces

## Semester 2: FAA 107 Certification Work & Flying

1. History of Drones (Review from Sem 1)
2. How they work (Review from Sem 1)
  - a. Bernoulli's Principle
  - b. YouTube
3. Vocabulary (Review from Sem 1)
4. Remote Pilot Certification & Privileges
5. Regulations
6. National Airspace System
  - a. Interpreting a sectional chart\*\*
  - b. DFW Sectional Charts needed for order
  - c.
7. Weather
8. Loading and Performance
9. Operations
  - a. Pre-flight Inspection
  - b. Communication Procedures
    - i. Phonetic alphabet
    - ii. Aviation Phraseology
    - iii. UAS Frequencies
  - c. Emergency Procedures
    - i. Lost Link
    - ii. Flight Termination
    - iii. Flyaways
    - iv. Loss of GPS
    - v. Battery Fires
  - d. Aeronautical Decision Making
  - e. Physiology
10. FAA 107 - Test Readiness Prep
11. Flight Training
  - a. Take-off and landing (indoor)
  - b. Hovering
  - c. Flying forward, turning, reverse
  - d. Landing on a moving platform
  - e. Take-off and landing (outdoor)
12. Entrepreneurship