

# MINDS-i DRONES CURRICULUM

Unmanned  
Aerial  
Vehicles

## MINDS-i STEM INTEGRATED ROBOTICS: UAV DRONES LAB

The MINDS-i Drone Curriculum is designed to teach students the complex systems of drone technology aligned with 21st century teaching standards. Designed as an interactive approach to applied learning, students will explore the fields of science, technology, engineering, and math. Students will become familiar with the basics of drone systems, robotics, and programming in a team based environment.

### STEM as a System

MINDS-i's robotics education platform is simple to use, extraordinarily durable, and infinitely modifiable. The high-technology platform and curriculum will prepare students with the skills they need to excel in the 21st century.

### Continuous Learning and Improvement

Inspire a rigorous college and career relevant experience by teaching STEM education through drones.

### Course Design

Each lab is designed for three to five students including a half semester (45 Hours) of lesson plans and materials. Foundations is the recommended prerequisite to the MINDS-i Drone Curriculum.



GPS & Compass



Telemetry



Dashboard



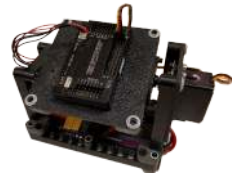
Drone Module



RC Control



Flight Simulator



Gimbal Kit



Aidex Corporation  
58 E South Street  
Rossville, IN 46065  
(800) 251-9935  
info@aidex.com  
www.aidex.com



MCK-UALB-MR2

# Curriculum Outline - 45 Hour

## Unit 1: Introduction to MINDS-i

- 1.1 Introduction to MINDS-i
- 1.2 Student Performance Development Process
- 1.3 What is a Drone?

## Unit 2: Drone Code & Sensors

- 2.1 Testing the Micro-Controller
- 2.2 Parts & Purposes
- 2.3 Drone Technologies Part 1
  - Gyro & Accelerometer
- 2.4 Drone Technologies Part 2

## Unit 3: UAV Flight Principles

- 3.1 Physics of Flight
- 3.2 UAV Build
- 3.3 Flight Dynamics
- 3.4 Autopilot & PID Tuning
- 3.5 Simulated Flight
- 3.6 Manual Flight
- 3.7 FAA Pilot Certification

## Unit 4: Applied Systems Thinking

- 4.1 Systems Thinking
- 4.2 Interrelationship Diagram

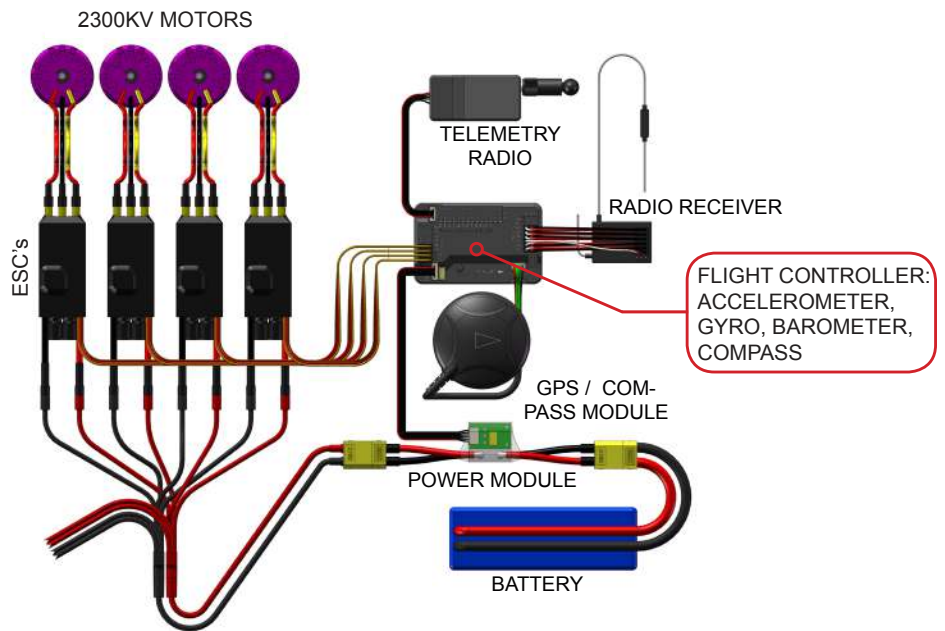
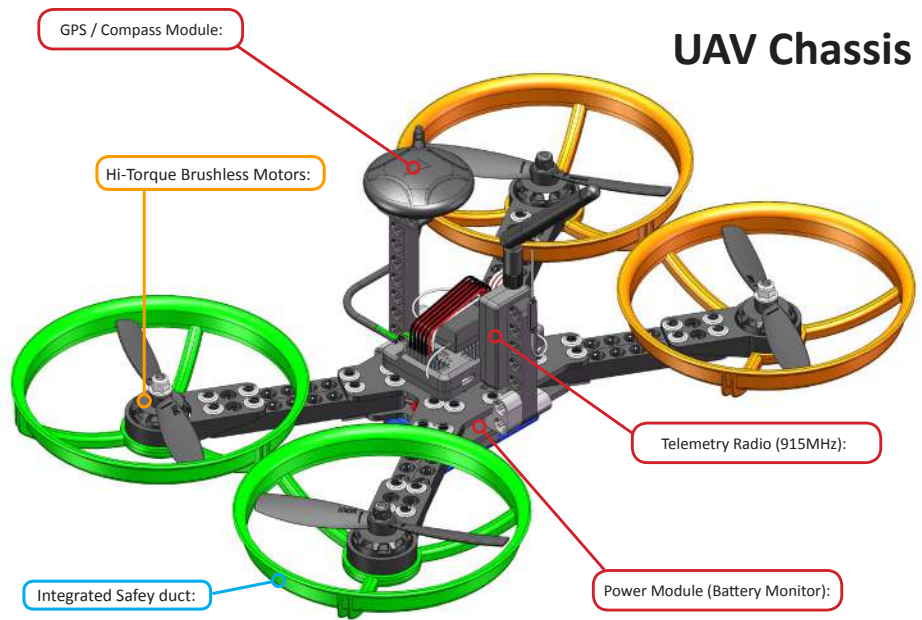
## Unit 5: Culminating Project

- 5.1 Preparing for the Challenge
- 5.2 Cleanup / Organization

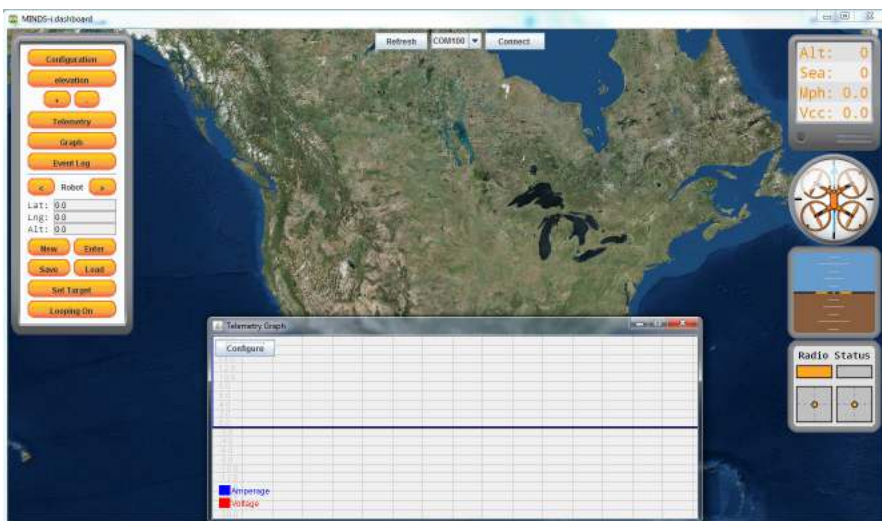
STEM Integrated Robotics UAV Drones covers a multitude of engineering concepts including

- Programming
- Physics
- Mechanical Systems
- Electrical and Electronic Systems
- Hands on Activities and Capstone Projects in each Semester

## UAV Chassis



## MINDS-i Dashboard Software & Mega 2560 Hardware



- Open Source Software
- Easy to use Graphical Interface
- Drag and Drop Installation (w/Radio Driver)
- Save and Load GPS Paths
- Live Location Tracking
- Wirelessly Adjust Settings
- Capable of Navigating to 100 Waypoints
- Customizable Graphs
  - Latitude, longitude, Yaw/Direction, Pitch, Roll, Ground Speed, Voltage, Amperage and Altitude
- Full Telemetry Logging
- Inclinometer Gauges
- Windows 10, OS X & Linux Ready