# Scoring

Weighted rank scoring will be implemented to maintain point value emphasis between individual and team events. The criteria and points can be found on the scorecards.

| **Event** | **Points** |
| --- | --- |
| **Tests — 150 points possible** | |
| Part 107A Quiz | 150 (50 pts/member, drop lowest score) |
| **Practicums — 400 points possible** | |
| UAV Obstacle Course | 100 |
| Scratch Programming | 100 |
| GIS Mapping & Flight Plan | 100 |
| Analysis & Evaluation of Data | 100 |
| **Team Activity - 200 points possible** |  |
| Customer Recommendation | 200 |
| *Total individual score possible* | *150* |
| **TOTAL TEAM SCORE POSSIBLE** | **750** |

**TIEBREAKERS**

## Team tiebreakers will be settled in the following order:

1. Combined individual practicum rank score.
2. Combined individual quiz score.

## Individuals tiebreakers will be settled in the following order:

1. Practicum score.
2. Part 107A quiz score.

# UAV Obstacle Course

100 points

| Chapter |  | Sta | te | Team | Number |  |
| --- | --- | --- | --- | --- | --- | --- |
| **INDICATOR** | **Very strong evidence of skill**  **5–4 points** | **Moderate evidence of skill**  **3–2 points** | **Weak evidence of skill**  **1–0 points** | **Points Earned** | **Weight** | **Total Points** |
| Technique while operating UAV | * UAV is consistently stable throughout flight with smooth landing and take off * UAV operator displays a high level of focus and awareness throughout flight * UAV does not crash during course | * UAV is sometimes stable throughout flight with a moderately smooth landing and take off * UAV operator displays a moderate level of focus and awareness throughout flight * UAV crashes 1-2 times during course | * UAV is not stable throughout flight and is unable to perform a smooth landing and take off * UAV operator is not focused or aware throughout flight * UAV crashes more than 2 times during course |  | x 4 |  |
| Pre-flight set-up | * UAV Operator inspects aircraft before loading battery, including each propeller individually making sure they turn. * UAV Operator inspects the battery for swelling and terminal damage before inserting battery and reports/records their observations. * UAV Operator inspects surrounding area to ensure safe flight take-off, landing, and operation. | * UAV Operator inspects the aircraft but not as thoroughly and/or inserts the battery prior to through inspection. * UAV Operator doesn’t inspect the entire battery or doesn’t conduct it properly. * UAV Operator fails to inspect a portion of the flight course either take-off site, landing site, or operating site. | * UAV Operator doesn’t inspect aircraft before loading battery, including each propeller individually making sure they turn. * UAV Operator doesn’t inspect the battery for swelling and terminal damage before inserting battery. * UAV Operator doesn’t inspect surrounding area to ensure safe flight take-off, landing, and operation. |  | x 4 |  |

| **INDICATOR** | **Very strong evidence of skill**  **5–4 points** | **Moderate evidence of skill**  **3–2 points** | **Weak evidence of skill 1–0 points** | **Points Earned** | **Weight** | **Total Score** |
| --- | --- | --- | --- | --- | --- | --- |
| Accuracy | * UAV follows the predetermined course and pattern throughout the flight * UAV is controlled at appropriate speeds and distance throughout entire course | * UAV follows the predetermined course and pattern some of the flight * UAV is controlled at appropriate speeds and distance some of the course | * UAV does not follow the predetermined course and pattern * UAV is not controlled at appropriate speeds and distance |  | x 4 |  |
| Image quality | * UAV captures all required photo and video markers * Images are of high quality | * UAV captures some of the required photo and video markers * Images are of moderate quality | * UAV does not capture required photo and video markers * Images are low quality |  | x 4 |  |
| Length | * Completes course within time limit | * Completes course 1-2 minutes over time limit | * Completes course more than 2 minutes over time limit |  | x 4 |  |
| **TOTAL POINTS EARNED OUT OF 100 POSSIBLE** | | | | | |  |

# Scratch Programming Scorecard

**100 POINTS**

| Chapter | State | Team Number |
| --- | --- | --- |

| **INDICATOR** | **Very strong evidence of skill**  **5–4 points** | **Moderate evidence of skill**  **3–2 points** | **Weak evidence of skill 1–0 points** | **Points Earned** | **Weight** | **Total Score** |
| --- | --- | --- | --- | --- | --- | --- |
| Set Up | * Student has imported correct javascript and s2e files * Student was able to import controls * Student established contact between Scratch and Tello | * Student required assistance on importing controls into Scratch * Student required assistance establishing a connection between Scratch and Tello | * Student was unable to import controls into Scratch * Student was unable to establish a connection between Scratch and Tello |  | x 6 |  |
| Pattern Creation | * Student included all required elements in the patterns * Students created all necessary controls to take manual control of the drone | * Student missed 1-2 elements within the pattern * Student missed 1-2 controls to take manual control of the drone | * Student was unable to create the required patterns * Student was unable to create manual controls |  | x 6 |  |
| Pattern Execution | * Student commanded the drone to execute the pattern properly * All necessary tasks were performed | * Student missed 1-2 elements when executing the pattern | * Student was unable to execute the pattern |  | x 8 |  |

| **TOTAL POINTS EARNED OUT OF 100 POSSIBLE** | | | | | |  |
| --- | --- | --- | --- | --- | --- | --- |

# GIS Mapping & Flight Plan Scorecard

**100 POINTS**

| Chapter | State | Team Number |
| --- | --- | --- |

| **INDICATOR** | **Very strong evidence of skill**  **5–4 points** | **Moderate evidence of skill**  **3–2 points** | **Weak evidence of skill 1–0 points** | **Points Earned** | **Weight** | **Total Score** |
| --- | --- | --- | --- | --- | --- | --- |
| Field Boundary | * Demonstrates the ability to create a field boundary efficiently (using as few vestors as possible) and using a basemap. * Demonstrates the ability to adjust a field boundary completely following a set of parameters. | * Demonstrates the ability to create a field boundary using a basemap. * Demonstrates the ability to adjust a field boundary somewhat following a set of parameters. | * Unable to create a field boundary using a basemap. * Unable to adjust a field boundary following a set of parameters. |  | X 5 |  |
| Area Calculation | * Demonstrates the ability to determine the area of multiple fields with different shapes and units correctly in all instances. * Demonstrates the ability to report correct coordinates (Latitude, Longitude) of a point. * Understands all presented units and unit conversions. | * Demonstrates the ability to determine the area of multiple fields with different shapes and units correctly in some instances. * Demonstrates the ability to report mostly correct coordinates (Latitude, Longitude) of a point. * Understands some presented units and unit conversions. | * Unable to determine area of a field. * Unable to report coordinates (Latitude, Longitude) of a point. * Understands no presented units and unit conversions. |  | X 5 |  |
| Import/Export | * Demonstrates the ability to import all necessary data files to complete tasks. * Demonstrates the ability to export all necessary data files to complete tasks. | * Demonstrates the ability to import most necessary data files to complete tasks. * Demonstrates the ability to export most necessary data files to complete tasks. | * Unable to import necessary files to complete tasks. * Unable to export necessary files to complete tasks. |  | X 5 |  |
| **INDICATOR** | **Very strong evidence of skill**  **5–4 points** | **Moderate evidence of skill**  **3–2 points** | **Weak evidence of skill 1–0 points** | **Points Earned** | **Weight** | **Total Score** |
| Flight Plan | * Follows all directions on creating a flight plan. * Demonstrates the ability to correctly adjust all overlaps given a set of parameters. * Sets proper altitude for the autonomous flight. | * Follows some directions on creating a flight plan. * Demonstrates the ability to correctly adjust some overlaps given a set of parameters. * Sets mostly accurate flight altitude for autonomous flight. | * Fails to create a flight plan. * Does not adjust the overlaps. * Sets improper altitude for autonomous flight. |  | X 5 |  |
| **TOTAL POINTS EARNED OUT OF 100 POSSIBLE** | | | | | |  |

# Analysis and Evaluation of Data Scorecard

**100 POINTS**

| Chapter | State | Team Number |
| --- | --- | --- |

| **INDICATOR** | **Very strong evidence of skill**  **5–4 points** | **Moderate evidence of skill**  **3–2 points** | **Weak evidence of skill 1–0 points** | **Points Earned** | **Weight** | **Total Score** |
| --- | --- | --- | --- | --- | --- | --- |
| Evaluate UAV Imagery | * Student correctly and effectively evaluated all parts of the imagery provided | * Students correctly evaluated most parts of the imagery correctly and effectively | * Students evaluated the imagery incorrectly with little to no effectiveness |  | X5 |  |
| Diagnosis UAV Image Quality | * Demonstrates the ability to give a complete and correct diagnosis, for the problem/Issue associated with the UAV imagery provided. | * Demonstrates the ability to give a partially correct diagnosis, for the problem/Issue associated with the UAV imagery provided. | * Fails to give a correct diagnosis for the UAV Image provided and doesn't understand the problem/issue with the UAV image that was provided. |  | X5 |  |
| Add Annotations | * Demonstrated the ability to effectively locate and use the correct annotation within drone deploy as well as integrating the annotation in their analysis/evaluation of data. | * Demonstrates the ability to include annotation(s); but only somewhat effectively uses the annotation in their analysis and evaluation. | * Fails to use or include annotations in their evaluation or uses the wrong annotation tool for the evaluation of data. |  | X5 |  |

| **INDICATOR** | **Very strong evidence of skill**  **5–4 points** | **Moderate evidence of skill**  **3–2 points** | **Weak evidence of skill 1–0 points** | **Points Earned** | **Weight** | **Total Score** |
| --- | --- | --- | --- | --- | --- | --- |
| Procedure/  Correction action needed | * Fully and completely understands the diagnosis procedure required * Performs a successful export of the drone deploy document | * Partially but not completely understands the correct diagnosis procedure required. * Does perform a successful export of drone deploy or mostly correctly export of the drone deploy document | * Has little to no understanding of the correct diagnosis procedure required * Doesn’t export drone deploy document correctly |  | X5 |  |
| **TOTAL POINTS EARNED OUT OF 100 POSSIBLE** | | | | | |  |

Team Event Scorecard

**200 POINTS**

| Chapter | State | Team Number |
| --- | --- | --- |

| **INDICATOR** | **Very strong evidence of skill**  **5–4 points** | **Moderate evidence of skill**  **3–2 points** | **Weak evidence of skill 1–0 points** | **Points Earned** | **Weight** | **Total Score** |
| --- | --- | --- | --- | --- | --- | --- |
| Selection of proper hybrids | * Selected the correct top 3 hybrids based off of soil type zones | * Selected at least 2 of the correct hybrids | * Selected only 1 or none of the correct hybrids |  | x 5 |  |
| Use of data in justification | * Clearly utilized the data provided to create a recommendation * Clearly interacted with the data by demonstrating working knowledge of soil type distinctions | * Mostly utilized the data to provide a recommendation * Somewhat interacted with the data but information is lacking | * Unclear utilization of the data in writing the recommendation * Lacks evidence of interaction with the data |  | x 5 |  |
| Evidence of customer needs | * Displays clear understanding of customers needs by stating those needs within justification | * Somewhat clear understanding of customers needs by stating at least 2 of said needs within justification | * No clear understanding of customer needs and no customer need was stated within the justification |  | x 5 |  |
| Format | * Justification is formatted in an easily understood format * Format is very aesthetically pleasing and nice to look at * Justification was formatted in the correct program (Microsoft Word and exported to PDF) | * Justification is formatted in a moderately easily understood format * Format is average * Justification was not formatted in the correct program | * Justification is not formatted in an easily understood format * Format is not pleasing to look at * Justification was not formatted in the correct program |  | x 5 |  |
| Grammar/  Professional writing | * Largely error-free, no spelling or grammatical errors | * Minor errors in spelling and grammar | * Multiple spelling and grammar errors that interfere with comprehension |  | x 4 |  |

| Communication | * All team members effectively communicate with each other throughout the entire activity | * Most team members communicate fairly effectively with each other during most of the activity | * Communication between team members is ineffective and sporadic during the activity |  | x 4 |  |
| --- | --- | --- | --- | --- | --- | --- |
| Team organization | * Team started right away, had no down time and was not rushed at the end of the task | * Team was delayed in starting, had down time and was somewhat rushed at the end of the task | * Team delayed starting, had long down times and did not complete all tasks during the allotted time |  | x 4 |  |
| Time Management | * All team members managed their time efficiently | * Most team members managed their time fairly efficiently | * One (or no) team member managed their time efficiently |  | x 4 |  |
| Work distribution | * Work was evenly distributed between all team members and all team members were employed at all times | * Work was distributed between two or three team members and these members were employed most of the time | * Work was completed by only one team member with little employment of the other members |  | x 4 |  |
| **TOTAL POINTS EARNED OUT OF 200 POSSIBLE** | | | | | |  |

**Team Scorecard**

**750 POINTS**

| Chapter | State | Team Number |
| --- | --- | --- |

|  | **Possible Score** | **Member Score** |
| --- | --- | --- |
| Practicum scores | 400 |  |
| Team Activity | 200 |  |
| Test scores | 150 |  |
| **TOTAL POINTS EARNED OUT OF 750 POSSIBLE** | |  |