EMBRY-RIDDLE Aeronautical University PRESCOTT, ARIZONA

UNMANNED AIRCRAFT SYSTEMS (UAS) CAMPUS FLIGHT POLICY

GENERAL

The flying of any/all Unmanned Aircraft Systems on the ERAU Prescott campus regardless of size, type, configuration, speed, or altitude will be governed by the policies outlined in this memorandum. The primary purpose of these policies is to address safety and privacy concerns in addition to ensuring compliance with Federal Aviation Regulation (FAR) Part 107 or the Academy of Model Aeronautics (AMA) guidelines as appropriate. These policies apply to any/all persons, groups, organizations, clubs, ERAU faculty/staff/students, as well as members of the general public, whether formally invited or otherwise, while on the ERAU PC campus. This includes operations of Unmanned Aircraft System in the airspace immediately above the Prescott campus including both the developed and undeveloped portions of the campus. Anyone operating a UAS in the airspace above the Embry-Riddle Aeronautical Prescott Campus does so with the explicit understanding that they have read and will comply with all applicable sections of this policy and its attachments. Deviations from any part of this policy will be done only under operator in-flight emergency authority or through a formal preapproved waiver process.

OPERATING RULES AND LOCATIONS

There are two main areas for the conduct of flight operations on the Embry-Riddle Prescott campus: the primary, and preferred location, is the Remote Control (RC) airfield located to the west of the Eagle Gym. The secondary area is anyplace on campus other than the RC field. There is no special approval process to conduct operations at the RC field other than compliance with either FAR Part 107 or AMA rules as applicable to the type of operations to be conducted. See Appendix A for a summary of FAR Part 107 rules, and Appendix B for AMA guidelines. Any/all operations outside of the immediate area surrounding the RC airfield requires prior written approval as outlined in the UAS Flight Request Form process found in Appendix C. FAR Part 107 is applicable for commercial operations; that is an operation that is done for hire or financial compensation. All non-commercial operations are governed by AMA rules.

SAFETY OF FLIGHT/GROUND OPERATIONS

The safety of persons on the ground, whether direct participants or otherwise, is of primary concern to all UAS operations on the ERAU campus. Every reasonable precaution will be taken to ensure that both ground and flight procedures have mitigated risk to an acceptable level prior to commencement of operations. Standard safety procedures at the ERAU campus RC field should include at a minimum:

- Take offs and landings only from prepared surfaces: this includes the carpeted areas for multi-rotor aircraft
- Operators remain behind protective fencing while flying

- Eye protection be worn at all times in addition to closed toed shoes
- A safety pilot immediately available with a manual controller in hand during autonomous operations
- Establish a geofence (vertical and horizontal) during autonomous flight
- A safety observer standing next to, and in constant verbal communication with, the UAV operator during any First-Person View (FPV) flights
- All spectators/observers will remain well clear of the runway
- Aircraft hand launch only as necessary for specified equipment operations (i.e. Swift Radioplanes Lynx M aircraft)
- For FAR Part 107 operations flights will not exceed 160'AGL

Additional safety precautions should be implemented as dictated by the type of operation and an operational risk assessment.

The RC field lies directly under the class D arrival/departure corridor into Ernest Love Airfield and presents unique challenges and responsibilities to UAS operators as a result. It is worth reiterating that manned aircraft always have the right of way and every provision will be taken, up to and including ditching of the UAS, to prevent a midair collision. See Appendix D for See and Avoid Guidance.

Safety measures outside of the vicinity of the RC field will require approval of the UAS Program Chairman (Professor Johnny Young) and completion of the UAS Flight Request Form found in Appendix C.

Experimental and flight test operations will be approved and conducted in accordance with this policy as well as applicable safety guidelines established by the flight test program manager.

Any incident/accident involving minor property damage (other than to the aircraft itself), or non-life threatening personal injury resulting from equipment operated from the ERAU PC campus will be immediately reported to campus Security and Safety at **(928) 777-3333**. For all other emergencies dial **911** to request immediate assistance from the Prescott Police, Fire, or Lifeline Ambulance as needed. If a call to 911 is made, be sure to call campus safety immediately after and request campus safety personal assistance in addition to emergency personnel.

If an aircraft experiences any incident or accident complete the ERAU Unmanned Aircraft Incident/Accident Report. An accident is considered damage to any property, other than the small UA, if the cost is greater than $500 to repair or replace the property (whichever is lower). Or a serious injury to any person or any loss of consciousness. See Appendix E for ERAU Unmanned Aircraft Incident/Accident Report

Appendix A

FAA SUMMARY OF SMALL UNMANNED AIRCRAFT RULE (PART 107)

June 21, 2016

Federal Aviation Administration, Washington, DC 20591

Operational Limitations	• Unmanned aircraft must weigh less than 55 lbs. (25 kg). • Visual line-of-sight (VLOS) only; the unmanned aircraft must remain within VLOS of the remote pilot in command and the person manipulating the flight controls of the small UAS. Alternatively, the unmanned aircraft must remain within VLOS of the visual observer. • At all times the small unmanned aircraft must remain close enough to the remote pilot in command and the person manipulating the flight controls of the small UAS for those people to be capable of seeing the aircraft with vision unaided by any device other than corrective lenses. • Small unmanned aircraft may not operate over any persons not directly participating in the operation, not under a covered structure, and not inside a covered stationary vehicle. • Daylight-only operations, or civil twilight (30 minutes before official sunrise to 30 minutes after official sunset, local time) with appropriate anti-collision lighting. • Must yield right of way to other aircraft. • May use visual observer (VO) but not required. • First-person view camera cannot satisfy "see-and-avoid" requirement but can be used as long as requirement is satisfied in other ways. • Maximum groundspeed of 100 mph (87 knots). • Maximum altitude of 400 feet above ground level (AGL) or, if higher than 400 feet AGL, remain within 400 feet of a structure. • Minimum weather visibility of 3 miles from control station. • Operations in Class B, C, D and E airspace are allowed with the required ATC permission. • Operations in Class G airspace are allowed without ATC permission. • No person may act as a remote pilot in command or VO for more than one unmanned aircraft operation at one time. • No operations from a moving aircraft. • No operations from a moving vehicle unless the operation is over a sparsely populated area. • No careless or reckless operations. • No carriage of hazardous materials. • Requires preflight inspection by the remote pilot in command. • A person may not operate a small unmanned aircraft if he or she knows or has reason to know of any physical or mental condition that would interfere with the safe operation of a small UAS. • Foreign-registered small unmanned aircraft are allowed to operate under part 107 if they satisfy the requirements of part 375. • External load operations are allowed if the object being carried by the unmanned aircraft is securely attached and does not adversely affect the flight characteristics or controllability of the aircraft. • Transportation of property for compensation or hire allowed provided that- • The aircraft, including its attached systems, payload and cargo weigh less than 55 pounds total; • The flight is conducted within visual line of sight and not from a moving vehicle or aircraft; and • The flight occurs wholly within the bounds of a State and does not involve transport between (1) Hawaii and another place in Hawaii through airspace outside Hawaii; (2) the District of Columbia

Operational Limitations Continued	and another place in the District of Columbia; or (3) a territory or possession of the United States and another place in the same territory or possession. Most of the restrictions discussed above are waivable if the applicant demonstrates that his or her operation can safely be conducted under the terms of a certificate of waiver.
Remote Pilot in Command Certification and Responsibilities	• Establishes a remote pilot in command position. • A person operating a small UAS must either hold a remote pilot airman certificate with a small UAS rating or be under the direct supervision of a person who does hold a remote pilot certificate (remote pilot in command). • To qualify for a remote pilot certificate, a person must: o Demonstrate aeronautical knowledge by either: ▪ Passing an initial aeronautical knowledge test at an FAA-approved knowledge testing center; or ▪ Hold a part 61 pilot certificate other than student pilot, complete a flight review within the previous 24 months, and complete a small UAS online training course provided by the FAA. o Be vetted by the Transportation Security Administration. o Be at least 16 years old. • Part 61 pilot certificate holders may obtain a temporary remote pilot certificate immediately upon submission of their application for a permanent certificate. Other applicants will obtain a temporary remote pilot certificate upon successful completion of TSA security vetting. The FAA anticipates that it will be able to issue a temporary remote pilot certificate within 10 business days after receiving a completed remote pilot certificate application. • Until international standards are developed, foreign certificated UAS pilots will be required to obtain an FAA- issued remote pilot certificate with a small UAS rating. A remote pilot in command must: • Make available to the FAA, upon request, the small UAS for inspection or testing, and any associated documents/records required to be kept under the rule. • Report to the FAA within 10 days of any operation that results in at least serious injury, loss of consciousness, or property damage of at least $500. • Conduct a preflight inspection, to include specific aircraft and control station systems checks, to ensure the small UAS is in a condition for safe operation. • Ensure that the small unmanned aircraft complies with the existing registration requirements specified in § 91.203(a)(2). A remote pilot in command may deviate from the requirements of this rule in response to an in-flight emergency.
Aircraft Requirements	• FAA airworthiness certification is not required. However, the remote pilot in command must conduct a preflight check of the small UAS to ensure that it is in a condition for safe operation
Model Aircraft	• Part 107 does not apply to model aircraft that satisfy all of the criteria specified in section 336 of Public Law 112-95. • The rule codifies the FAA's enforcement authority in part 101 by prohibiting model aircraft operators from endangering the safety of the NAS.

Duncan, J. (2016). *Small Unmanned Aircraft Systems Advisory Circular 107-2* (2nd ed.). Federal Aviation Administration. Retrieved from https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_107-2.pdf

Appendix B

ACADEMY OF MODEL AERONAUTICS SAFETY CODE

January 1, 2014

A model aircraft is a non-human-carrying aircraft capable of sustained flight in the atmosphere. It may not exceed limitations of this code and is intended exclusively for sport, recreation, education and/or competition. All model flights must be conducted in accordance with this safety code and any additional rules specific to the flying site.

A. GENERAL

1. Model aircraft will not be flown:

   (a) In a careless or reckless manner.

   (b) At a location where model aircraft activities are prohibited.

2. Model aircraft pilots will:

   (a) Yield the right of way to all human-carrying aircraft.

   (b) See and avoid all aircraft and a spotter must be used when appropriate. (AMA Document #540-D.)

   (c) Not fly higher than approximately 400 feet above ground level within three (3) miles of an airport without notifying the airport operator.

   (d) Not interfere with operations and traffic patterns at any airport, heliport or seaplane base except where there is a mixed-use agreement.

   (e) Not exceed a takeoff weight, including fuel, of 55 pounds unless in compliance with the AMA Large Model Airplane program. (AMA Document 520-A.)

   (f) Ensure the aircraft is identified with the name and address or AMA number of the owner on the inside or affixed to the outside of the model aircraft. (This does not apply to model aircraft flown indoors.)

   (g) Not operate aircraft with metal-blade propellers or with gaseous boosts except for helicopters operated under the provisions of AMA Document #555.

   (h) Not operate model aircraft while under the influence of alcohol or while using any drug that could adversely affect the pilot's ability to safely control the model.

   (i) Not operate model aircraft carrying pyrotechnic devices that explode or burn, or any device which propels a projectile or drops any object that creates a hazard to persons or property.

Exceptions:

• Free Flight fuses or devices that burn producing smoke and are securely attached to the model aircraft during flight.

• Rocket motors (using solid propellant) up to a G-series size may be used provided they remain attached to the model during flight. Model rockets may be flown in accordance with the National Model Rocketry Safety Code but may not be launched from model aircraft.

• Officially designated AMA Air Show Teams (AST) are authorized to use devices and practices as defined within the Team AMA Program Document. (AMA Document #718.)

(j) Not operate a turbine-powered aircraft, unless in compliance with the AMA turbine regulations. (AMA Document #510-A.)

3. Model aircraft will not be flown in AMA sanctioned events, air shows or model demonstration unless:

(a) The aircraft, control system and pilot skills have successfully demonstrated all maneuvers intended or anticipated prior to the specific event.

(b) An inexperienced pilot is assisted by an experienced pilot.

4. When and where required by rule, helmets must be properly worn and fastened. They must be OSHA, DOT, ANSI, SNELL or NOCSAE approved or comply with comparable standards.

B. RADIO CONTROL (RC)

1. All pilots shall avoid flying directly over unprotected people, vessels, vehicles or structures and shall avoid endangerment of life and property of others.

2. A successful radio equipment ground-range check in accordance with manufacturer's recommendations will be completed before the first flight of a new or repaired model aircraft.

3. At all flying sites a safety line(s) must be established in front of which all flying takes place. (AMA Document #706.)

(a) Only personnel associated with flying the model aircraft are allowed at or in front of the safety line.

(b) At air shows or demonstrations, a straight safety line must be established.

(c) An area away from the safety line must be maintained for spectators.

(d) Intentional flying behind the safety line is prohibited.

4. RC model aircraft must use the radio-control frequencies currently allowed by the Federal Communications Commission (FCC). Only individuals properly licensed by the FCC are authorized to operate equipment on Amateur Band frequencies.

5. RC model aircraft will not knowingly operate within three (3) miles of any pre-existing flying site without a frequency-management agreement. (AMA Documents #922 and #923.)

6. With the exception of events flown under official AMA Competition Regulations, excluding takeoff and landing, no powered model may be flown outdoors closer than 25 feet to any individual, except for the pilot and the pilot's helper(s) located at the flightline.

7. Under no circumstances may a pilot or other person touch an outdoor model aircraft in flight while it is still under power, except to divert it from striking an individual.

8. RC night flying requires a lighting system providing the pilot with a clear view of the model's attitude and orientation at all times. Hand-held illumination systems are inadequate for night flying operations.

9. The pilot of an RC model aircraft shall:

(a) Maintain control during the entire flight, maintaining visual contact without enhancement other than by corrective lenses prescribed for the pilot.

(b) Fly using the assistance of a camera or First-Person View (FPV) only in accordance with the procedures outlined in AMA Document #550.

(c) Fly using the assistance of autopilot or stabilization system only in accordance with the procedures outlined in AMA Document #560.

C. FREE FLIGHT

1. Must be at least 100 feet downwind of spectators and automobile parking when the model aircraft is launched.

2. Launch area must be clear of all individuals except mechanics, officials, and other fliers.

3. An effective device will be used to extinguish any fuse on the model aircraft after the fuse has completed its function.

D. CONTROL LINE

1. The complete control system (including the safety thong where applicable) must have an inspection and pull test prior to flying.

2. The pull test will be in accordance with the current Competition Regulations for the applicable model aircraft category.

3. Model aircraft not fitting a specific category shall use those pull-test requirements as indicated for Control Line Precision Aerobatics.

4. The flying area must be clear of all utility wires or poles and a model aircraft will not be flown closer than 50 feet to any above-ground electric utility lines.

5. The flying area must be clear of all nonessential participants and spectators before the engine is started.

(2014). *Academy of Model Aeronautics National Model Aircraft Safety Code*. Retrieved 11 April 2017, from https://www.modelaircraft.org/files/105.pdf

Appendix C

EMBRY-RIDDLE AERONAUTICAL UNIVERSITY (ERAU) Prescott Campus (PC)

UAS Flight Request Form

INSTRUCTIONS: This form **must** be filled out prior to any UAS flight conducted on ERAU-PC outside the RC field or lower Intramural field. To ensure students and faculty comply with current FAA regulations, this form **should** be filled out prior to any UAS flight officially associated with ERAU-PC. Where information is not applicable to your event, enter N/A.
Submit the completed form to the Program Chair of UAS or designated college faculty rep at least 7 days prior to flight.

Requestor: _____ **Date:** _____
Phone #_____ **Email**: _____
College or Department: _____

FLIGHT INFORMATION
Date of Flight (dd/mm/yyyy): _____ **Time of Flight:** _____
Location of Flight:_____
Planned Duration of Flight: _____ **Max Planned Altitude:** _____
Aircraft Registration #: _____
Aircraft Type: _____ **Aircraft Weight:** _____
Is this flight being conducted for commercial or non-academic purposes? YES___NO___
If YES, this flight must be conducted by a student or instructor in the UAS program.
Purpose / Description of Flight:
_____
_____
_____
_____
_____

REMOTE PILOT IN COMMAND (RPIC) / OBSERVER / OPERATOR INFORMATION

Is RPIC/Observer/Operator an Academy of Model Aeronautics (AMA) Member? YES__ NO __ **If Yes,** **AMA#** _____ **UAS Certificate #**_____ _____ **Signature of RPIC/Observer/Operator**	**Is the RPIC/Observer/Operator an Academy of Model Aeronautics (AMA) Member?** YES__ NO __ **If Yes,** **AMA#** _____ **UAS Certificate #**_____ _____ **Signature of PIC/Observer/Operator**

REQUIRED SIGNATURES
College/Staff: _____ **Date:** _____
COA UAS: _____ **Date:** _____
Campus Safety: _____ **Date:** _____

Appendix D

See and Avoid Guidance

GENERAL

- The primary means to avoid collisions between all aircraft flying within our National Airspace System (NAS) is "See and Avoid."

- Vigilance must be maintained by each person operating an aircraft (whether model or manned) so as to "see and avoid" other aircraft.

- Model aircraft must avoid manned aircraft. Our privilege to fly model aircraft in the NAS depends on our commitment to remain "well clear" of manned aircraft.

- Simply avoiding an actual collision is not enough. A "near miss" is not acceptable.

- Unless flying at a mixed-use site where manned and model aircraft routinely share airspace through their own site-specific rules, model aircraft must fly sufficiently far away from manned aircraft so as not to create a collision hazard.

- Model aircraft flying must not only be safe, but must be perceived to be safe by the greater manned aviation community. Modelers must continually demonstrate their respect for the safety of manned aircraft by remaining vigilant and well clear.

- Whenever a potential conflict arises between model aircraft and manned aircraft, the pilot of the model aircraft must always give way to the manned aircraft.

- The pilot of a model aircraft must never assume the pilot of a manned aircraft can see the= model or will perform any maneuver to avoid the model's flight path.

- Visual Line of Sight is required by the Safety Code. It means that visual contact with the aircraft must be maintained without enhancement other than by corrective lenses prescribed for the model aircraft pilot. All RC flying must remain clear of clouds smoke or any other obstruction to the line of sight.

- "Blue Sky" is a term used to explain the method used to increase separation between a model and a manned aircraft in the same vicinity. The modeler should maneuver the aircraft in such a way as to increase the amount of blue sky perceived between the model and the manned aircraft. By increasing the blue sky separation, the question about depth perception is taken out of the equation and the modeler need not worry whether the model is closer to him than the manned aircraft or further away. Increasing the blue sky between the model and the manned aircraft automatically increases separation between them.

- A modeler should never place any consideration for the well-being of the model aircraft above the safety of manned aircraft. Maneuvering to avoid the conflict may require that the model aircraft be sacrificed.

- Free flight models should not be launched with relatively low altitude manned aircraft in sight and downwind or headed downwind from the launch site.

SPOTTERS

- Before a flight, the pilot must insure that the spotter understands his/her duties and expectations.

- A spotter should be used to assist in monitoring the surrounding airspace for manned aircraft whenever a flight is expected to exceed 400 feet above the ground and that operation is expected to be in proximity to known manned aircraft traffic such as at a mixed-use facility or within three miles of an airport. The spotter must have sufficient visual acuity and be mature enough to take this responsibility very seriously.

- A spotter should also be prepared to assist his/her pilot in the event that another model aircraft or spectators become endangered or in turn are perceived to be a danger to the pilot or the pilot's model aircraft.

- If a model aircraft pilot experiences what he or she considers a near miss with a manned aircraft, that model aircraft pilot should notify AMA Headquarters with a written report of the incident, including action taken by the model aircraft pilot to avoid the manned aircraft. This report is intended to help the modeler, the club, and the AMA capture as much detail as possible so that it may be used to assist all parties in recalling the particulars of the incident at a later time. Call 1-800-435-9262 (1-800-IFLYAMA) extension 230 or 251 for assistance with this report.

"SEE AND AVOID" GUIDANCE. Academy of Model Aeronautics. Retrieved 10 April 2017, from http://www.modelaircraft.org/files/540-D.pdf

Appendix E

EMBRY-RIDDLE AERONAUTICAL UNIVERSITY (ERAU) Prescott Campus (PC)
Unmanned Aircraft Incident/Accident Report Form

Instructions: This report must be submitted 1-5 hours after any UAS incident or accident. An accident is considered damage to any property, other than the small UA, if the cost is greater than $500 to repair or replace the property (whichever is lower). Or a serious injury to any person or any loss of consciousness.

UAS Pilots Name: _____ Date: _____

Phone #_____ Date of Incident (dd/mm/yyyy): _____

FLIGHT INFORMATION

Time of Flight:_____ Location of Flight:_____ Duration of Flight:_____

Max Altitude: _____ Aircraft Registration #: _____Aircraft Type: _____

Aircraft Weight: _____ Type of Ground Control Station_____ Collision (Y/N)_____

If YES; collision with what (terrain, persons, aircraft or other objects)?_____

_____

Description of Flight/Incident (weather, speed of UAS, type of op, direction of flight, Lat & Long) :

_____

_____

_____

_____

Description of Crew (Pilot in command, flight instructor, visual observer, student UAS pilot):

_____

_____

Malfunctions During Flight (Loss of link, fly-away, landing/takeoff failure, Nav System Failures):

_____

_____

_____

Deviations from ERAU-PC policies, FAR 107 or AMA (LOS broken, Altitude >400ft, etc.)

_____

_____

_____

Persons injured and extent of injuries; if any:

_____

_____

_____

Damage and extent of Damage; if any:

_____

_____

_____

Signature: _____

EMBRY-RIDDLE Aeronautical University PRESCOTT, ARIZONA

Unmanned Aircraft Systems Map

MAP AREAS

There are three main areas to conduct Unmanned Aircraft Systems (UAS) flight operations on the Embry-Riddle Prescott campus:

The Remote Control (R/C) airfield is the preferred location for the majority of UAS/RC operations. The Lower Intramural Field may also be used between Sunrise - Sunset. No special approval process is needed to fly in these areas. These areas are marked in green on map.

- Remote Control (R/C) airfield: located to the west of the Eagle Gym. **This is the ONLY location authorized for UAS/drone racing.**
- Lower Field: located just north of the softball field. **NO UAS/DRONE RACING!**

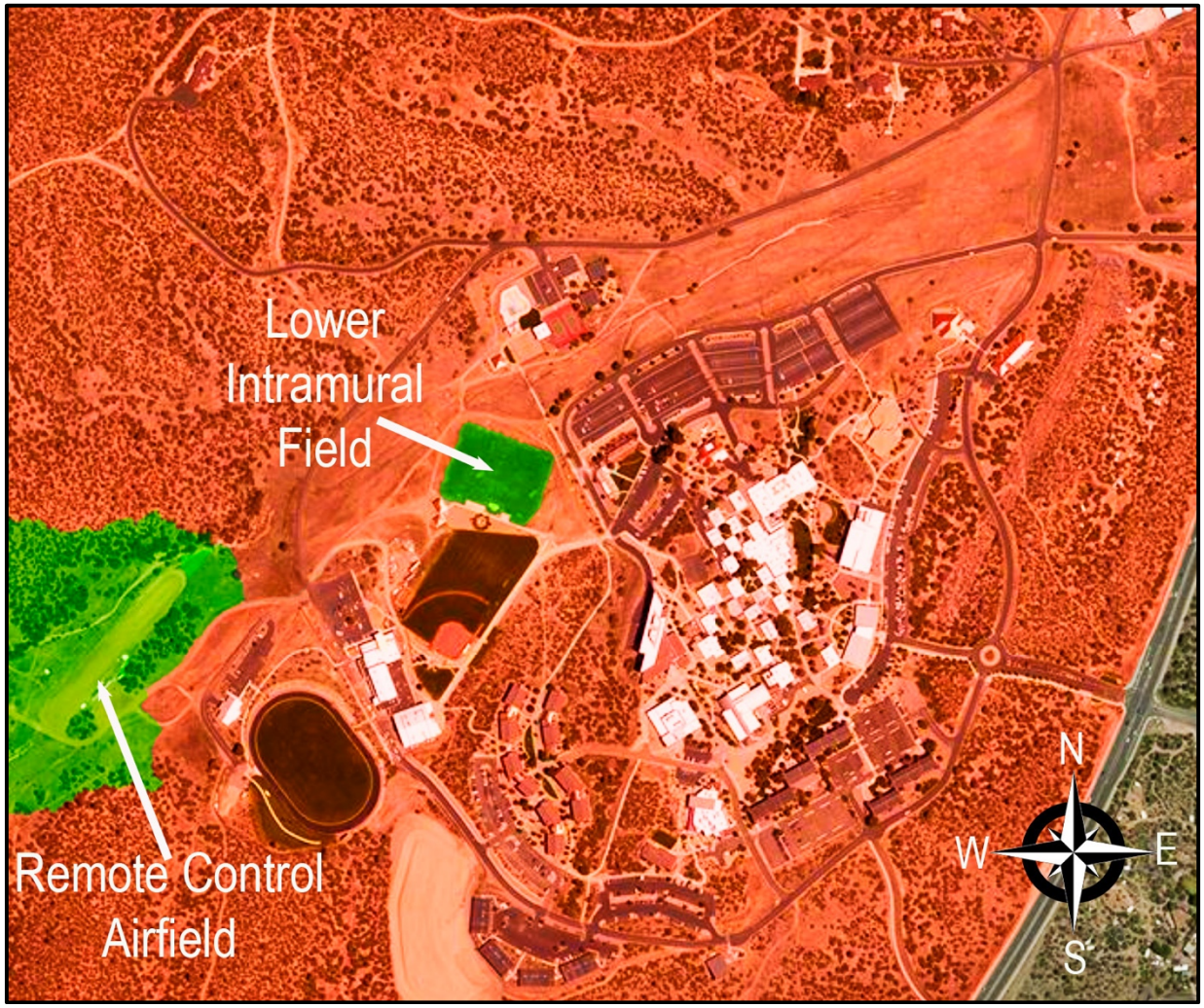
The third area is anyplace on campus other than the R/C field or Lower Intramural Field. This area requires a UAS campus request form to be submitted for approval. These areas are marked in red on map.

NOTES:

- **All flights must be in compliance with ERAU UAS policies, Federal Aviation Regulation (FAR) Part 107 or Academy of Model Aeronautics (AMA) rules as applicable to the type of operations being conducted.**

- **Before every flight a UAS Pre-Flight Risk Assessment should be filled out.**

EMBRY-RIDDLE ARIZONA



EMBRY-RIDDLE Aeronautical University
PRESCOTT, ARIZONA

UAS PREFLIGHT RISK ASSESSMENT

		1	2	3	4	5	Rating
Operational Factors	Type of Operation	Normal	Demo	Training/ Recurrency	Initial Flight	Test Flight	
	Duration of Operation	< 1 hour	1-2 hours	2-4 hours	4-6 hours	>6 hours	
	Simultaneous Operations	1 AV		2 AVs	3 AVs	>3 AVs	
	Single Person Operations						
Pilot in Command Factors	Hours of Rest in Last 24 Hours	>8	7-8	5-6	3-5	<3	
	# of Flights in Type	>100	50-100	25-50	5-25	<5	
	# of Flights in Last 90 Days	>20	15-20	10-14	5-9	<5	
	Total UAS Hours	>500	100-500	50-100	25-50	<25	
Environmental Factors	Current Wind	<8 kts	9-12 kts	13-15 kts	16-20 kts	>20 kts	
	Forecast Wind for Landing Time	<8 kts	9-12 kts	13-15 kts	15-20 kts	>20 kts	
	Weather Forecast for Operation	Clear	Reducing Visibility	Precip		T-Storm	
	Surrounding Area	Open Field *(or Indoor, with no spectators)*	Vegetation	Mountainous *(or Indoor, with spectators)*	Urban	Crowds/ Assemblies	
					Total Risk Score→		

No unusual hazards. Use normal flight planning and operating procedures. Requires PIC signoff.	10-25
Somewhat elevated risk. Conduct flight planning with extra care. Review personal minimums and operating procedures to ensure that all standards are being met. Consider alternatives to reduce risk. Requires Full-Time UAS Staff Position signoff.	25-35 (or any 2 single scores of 4)
Consider delaying flight until conditions improve and risk is reduced. Requires UAS Program Chair signoff. Conditions present much higher than normal risk. Conduct flight planning with extra care and review all elements to identify those that could be modified to reduce risk. If available, consult with a more experienced pilot or instructor for guidance before flight. Develop contingency plans before flight to deal with high risk items. Decide beforehand on alternates and brief crewmembers on special precautions to be taken during the flight.	>35 Total (or any single score of 5)

EMBRY-RIDDLE Aeronautical University
PRESCOTT, ARIZONA

UNMANNED AIRCRAFT SYSTEMS DO'S AND DON'TS

The following is a do's and don'ts list for Unmanned Aircraft Systems (UAS) operations on Embry-Riddle Aeronautical University, Prescott Campus.

Do's

DO comply with ERAU UAS policies and altitude restrictions, Federal Aviation Regulation (FAR) Part 107 and Academy of Model Aeronautics (AMA) rules.

DO wear eye protection while operating UAS.

DO complete a UAS Risk Assessment before every fight; consider all risks to UAS operations.

DO utilize a Visual Observer (VO) or spotter and use constant verbal communication.

DO takeoff and land from prepared surfaces.

DO respect the privacy of others when flying UAS.

DO insure all spectators/observers will remain well clear of the runways and launch areas during takeoffs and landings.

DO stay away from spinning rotors and propellers.

DO stay vigilant when flying UAS and maintain efficient "see and avoid" practices.

DO complete a UAS preflight checklists and inspect unmanned aircraft before every flight.

DO keep an eye on weather and check weather products (METAR/TAF).

DO have fun flying UAS.

Don'ts

DON'T fly anywhere other than the R/C field and the Lower Intramural Field without approval via UAS Campus Request Form.

DON'T fly a UAS without registering it with the FAA.

DON'T wear open toed shoes (sandals); wear appropriate attire for UAS flight.

DON'T hand catch hand launch or land/catch a UAS unless necessary for specified UAS operations.

DON'T drone race anywhere but the R/C field.

DON'T fly First Person View (FPV) flights without a visual observer.

DON'T fly over people or vehicles.

DON'T launch or recover a UAS closer than 15 feet from any persons.

DON'T lose visual line of sight.

DON'T fly when having any doubt about UAS operations.

DON'T fly recklessly, under the influence or at night.

DON'T interfere with any manned operations.

DON'T fly over ERAU sporting events.

EMBRY-RIDDLE Aeronautical University PRESCOTT, ARIZONA

SEE AND AVOID TIPS

The primary means to avoid damage, injury or collisions between aircraft while flying within our National Airspace System (NAS) is "See and Avoid." Vigilance must be maintained by each person operating an aircraft (unmanned or manned) so as to "see and avoid" other aircraft. The following are unmanned aircraft system (UAS) tips to help maintain efficient "see and avoid" practices:

Have a "Spotter" or Visual Observer (VO)- Make every effort to bring a spotter/VO to assist in monitoring the surrounding airspace for manned aircraft for any flight especially if the operation is expected to be in proximity to known manned aircraft traffic or within three miles of an airport. A VO must have sufficient visual keenness, must take this responsibility very seriously and be prepared to assist his/her unmanned pilot in the event that another aircraft or persons become endangered or are perceived to be a danger by the unmanned aircraft. Before every flight, the pilot should insure the VO/spotter understands their duties and expectations.

Unmanned aircraft must avoid manned aircraft- Our privilege to fly unmanned aircraft in the NAS depends on our commitment to remain well clear of manned aircraft. A "near miss" is not acceptable, simply avoiding an actual collision is not enough.

Remain vigilant and well clear- Unmanned aircraft flying must not only be safe; it must be perceived to be safe by the greater manned aviation community. Unmanned aircraft must fly sufficiently far away from manned aircraft so as not to create a collision hazard.

UAS always give way to manned aircraft- Whenever a potential conflict arises between unmanned aircraft and manned aircraft, the pilot of the UAS must always give way to the manned aircraft. UAS pilots should never place the well-being of an unmanned aircraft above the safety of manned aircraft. Maneuvering to avoid the conflict may require that the unmanned aircraft be sacrificed.

Assume the UAS can not be seen by other aircraft- The pilot of an unmanned aircraft must never assume the pilot of a manned aircraft can see the unmanned aircraft or will perform any maneuver to avoid it. UAS should not be launched with relatively low altitude manned aircraft in sight and downwind or headed downwind from the launch site.

Maintain Visual Line of Sight- Visual contact with UAS must be maintained without enhancement other than by corrective lenses prescribed for the unmanned aircraft pilot. All unmanned operations must remain clear of clouds smoke or any other obstruction to line of sight.

Use "Blue Sky" method- This method is used to increase separation between UAS and a manned aircraft in the same vicinity. The operator should maneuver the aircraft in such a way as to increase the amount of blue sky perceived between the UAS and the manned aircraft. By increasing the blue sky separation, the question about depth perception is taken out of the equation and the modeler need not worry whether the UAS is closer to him than the manned aircraft or further away. Increasing the blue sky between the model and the manned aircraft automatically increases separation between them.

WHEN IN DOUBT – DON'T FLY !!!

Reference *"SEE AND AVOID" GUIDANCE. Academy of Model Aeronautics*. Retrieved 10 April 2017, from http://www.modelaircraft.org/files/540-D.pdf

EMBRY-RIDDLE AERONAUTICAL UNIVERSITY (ERAU) Prescott Campus (PC)

UAS Flight Request Form

INSTRUCTIONS: This form **must** be filled out prior to any UAS flight conducted on ERAU-PC outside the RC field or lower Intramural field. To ensure students and faculty comply with current FAA regulations, this form **should** be filled out prior to any UAS flight officially associated with ERAU-PC. Where information is not applicable to your event, enter N/A.
Submit the completed form to the Program Chair of UAS or designated college faculty rep at least 7 days prior to flight.

Requestor: _____ **Date:** _____
Phone #_____ **Email**: _____
College or Department: _____

FLIGHT INFORMATION

Date of Flight (dd/mm/yyyy): _____ **Time of Flight:** _____
Location of Flight:_____
Planned Duration of Flight: _____ **Max Planned Altitude:** _____
Aircraft Registration #: _____
Aircraft Type: _____ **Aircraft Weight:** _____
Is this flight being conducted for commercial or non-academic purposes? YES___NO___
If YES, this flight must be conducted by a student or instructor in the UAS program.
Purpose / Description of Flight:

_____
_____
_____
_____
_____

REMOTE PILOT IN COMMAND (RPIC) / OBSERVER / OPERATOR INFORMATION

Is RPIC/Observer/Operator an Academy of Model Aeronautics (AMA) Member? YES__ NO __ **If Yes,** **AMA#** _____ **UAS Certificate #**_____ _____ **Signature of RPIC/Observer/Operator**	**Is the RPIC/Observer/Operator an Academy of Model Aeronautics (AMA) Member?** YES__ NO __ **If Yes,** **AMA#** _____ **UAS Certificate #**_____ _____ **Signature of PIC/Observer/Operator**

REQUIRED SIGNATURES

College/Staff: _____ **Date:** _____
COA UAS: _____ **Date:** _____
Campus Safety: _____ **Date:** _____

EMBRY-RIDDLE AERONAUTICAL UNIVERSITY (ERAU) Prescott Campus (PC)
Unmanned Aircraft Incident/Accident Report Form

Instructions: This report must be submitted 1-5 hours after any UAS incident or accident. An accident is considered damage to any property, other than the small UA, if the cost is greater than $500 to repair or replace the property (whichever is lower). Or a serious injury to any person or any loss of consciousness.

UAS Pilots Name: _____ Date: _____

Phone #_____ Date of Incident (dd/mm/yyyy): _____

FLIGHT INFORMATION

Time of Flight:_____ Location of Flight:_____ Duration of Flight:_____

Max Altitude: _____ Aircraft Registration #: _____Aircraft Type: _____

Aircraft Weight: _____ Type of Ground Control Station_____ Collision (Y/N)_____

If YES; collision with what (terrain, persons, aircraft or other objects)?_____

_____

Description of Flight/Incident (weather, speed of UAS, type of op, direction of flight, Lat & Long) :

_____

_____

_____

_____

Description of Crew (Pilot in command, flight instructor, visual observer, student UAS pilot):

_____

_____

Malfunctions During Flight (Loss of link, fly-away, landing/takeoff failure, Nav System Failures):

_____

_____

_____

Deviations from ERAU-PC policies, FAR 107 or AMA (LOS broken, Altitude >400ft, etc.)

_____

_____

_____

Persons injured and extent of injuries; if any:

_____

_____

_____

Damage and extent of Damage; if any:

_____

_____

_____

Signature: _____