

# ADVANCED CLASS INSPECTION CHECKLIST

## General, Technical and Safety-2017

**TEAM NUMBER:** \_\_\_\_\_

**TEAM NAME:** \_\_\_\_\_

With the exception of a standard tape measure and official test blocks and gauges, team must provide any materials and/or tools required to demonstrate compliance with Technical Inspection requirements.

	PASS	FAIL	Rule
<b>Video Documentation of Proven Operational Ability</b>			8.1
<b>(Summon SAE official to view video documentation)</b>			8.1.2
Video must show a successful takeoff, payload drop and landing	_____	_____	8.1.1
Team provided video display unit clearly shows all required flight activities	_____	_____	8.1.4
SAE official must initial the two items above. Discontinue inspection if video proof does not meet requirements			

### FPV and Telemetry equipment type and frequencies

FPV system model and manufacturer: \_\_\_\_\_

FPV: Exact frequency or channel being used \_\_\_\_\_

Telemetry system model and manufacturer \_\_\_\_\_

Telemetry: Exact frequencies or channels being used \_\_\_\_\_

Note: giving the frequency band is not enough. We must have the exact frequency or channel details.

### General Aircraft Requirements

#### Aircraft Identification

			2.1
University Name and address on inside or outside of aircraft	_____	_____	2.1.1
3" minimum size team number on top and bottom of the wing	_____	_____	2.1/2.1.2
3" minimum size team number on sides of aircraft (tail or fuselage)	_____	_____	2.1/2.1.2
University name or initials clearly displayed on the wings or fuselage	_____	_____	2.1.3/4

#### Empty CG Design Requirement and Empty CG Markings

			2.3
Aircraft empty CG is located in a safe flyable position	_____	_____	2.3.1
All aircraft have the fuselage clearly marked on both sides with a classic CG symbol (at least .5" in dia.) centered on the Empty CG location	_____	_____	2.3.2
Empty CG position on aircraft matches submitted drawing	_____	_____	2.3.3/6.1.3

#### Aircraft Conformance to 2D Drawing

			6.1
Aircraft length, wingspan and height measured and compared to 2D drawing			6.1.1
Tolerance +/- .25". Any other measurement on the drawing may be inspected. Deviation from drawing requires Eng. Change Request (ECR)	_____	_____	6.1.3

**Aircraft uses a 2.4 GHz radio control system** \_\_\_\_\_

**Spinner or model aircraft type safety nut installed** \_\_\_\_\_

**No metal prop** \_\_\_\_\_

**No lead used in any portion of the aircraft or payload** \_\_\_\_\_

2.6  
2.7  
2.8  
2.9

	PASS	FAIL	Rule
<b>Payload does not contribute to the structural integrity of the airframe</b>	_____	_____	2.1
<b>Aircraft Ballast</b>			2.11
Ballast not installed in closed payload bay	_____	_____	2.11.1/.4
Ballast stations must be indicated on 2D drawing (if ballast is used)	_____	_____	2.11.2
Ballast must be properly secured to avoid shifting or falling off the aircraft	_____	_____	2.11.3
<b>Aircraft is powered only by the Engines/Motors installed in aircraft</b>			
No other forms of stored potential or kinetic energy may power the aircraft in flight	_____	_____	2.12
<b>Control surfaces, hinges and control horns secure and free from slop</b>	_____	_____	2.13
<b>All servos properly sized for aircraft</b>	_____	_____	2.14
<b>All linkages secure. If a clevis is used, it must have a keeper</b>	_____	_____	2.15
<b>Safety equipment</b>			
Team must present at least two pairs of safety glasses for inspection	_____	_____	1.17.5
<b>Advanced Class Requirements</b>			
<b>Engine Displacement</b>			8.3
Total engine displacement is .46 cubic inches or less	_____	_____	8.3.1
Teams must confirm that the displacement of the engine has not been modified	_____	_____	8.3.3
<b>Payload Requirements</b>			
<b>Static Payload Requirements</b>			
Support assembly must adequately secure static payload to airframe	_____	_____	Safety
Static payload bay completely closed off and completely separate from releasable payload	_____	_____	8.6.23.9
<b>Releasable Payload Requirements</b>			8.6.23
Releasable Payload is sand enclosed by a sewn woven fabric material			
Placing the sand inside a thin plastic bag inside the woven fabric is allowed	_____	_____	8.6.23.4
Each Releasable Payload measures no more than 10" in any linear dimension, not including streamer	_____	_____	8.6.23.7
All Releasable Payloads have a flexible and high visibility streamer attached that is 54" +/-6" long and 2.5" +/- .5" wide	_____	_____	8.6.23.10/.11
Streamer must be able to support the entire weight of the Releasable Payload	_____	_____	8.6.23.14
Releasable Payloads must be labeled with team number: 2" min size numbers (Numbers located on payload in three places: container and both ends of streamer)	_____	_____	8.6.23.15
All Releasable Payloads must weigh between 2 and 2.25 lbs.	_____	_____	8.6.23.5
All Releasable Payload packages inspected and weight checked	_____	_____	8.6.23.6
The CG of each mounted Releasable Payload may not exceed a distance 6" laterally or longitudinally from the Empty CG of the aircraft	_____	_____	8.6.23.8
Payload streamers must be stowed when in/on the aircraft and must deploy at release	_____	_____	8.6.23.13
Each Releasable Payload is independent of all others on the aircraft (No releasable payload physically attached to any other releasable payload)	_____	_____	8.6.23.2

	PASS	FAIL	Rule
<b>Releasable Payload System and Payload Specialist</b>			8.12
The primary pilot may not have access to or activate the releasable payload(s)	_____	_____	8.12.1
The Releasable Payload mechanism cannot be controlled from or connected to the primary pilot's transmitter in any way	_____	_____	8.12.4
Payload release uses a second 2.4 GHz radio system or some other method based on their DAS or telemetry system	_____	_____	8.12.5
If payload release is automatic, the payload specialist must have a manual override	_____	_____	8.12.3
Each Releasable Payload mechanism is reliable and functional	_____	_____	Safety
<b>No Autonomous Flight Systems</b>			8.10.
Autonomous flight systems that cause the aircraft to navigate without direct pilot control input are not allowed. Gyros and stability assist are allowed	_____	_____	8.8/8.7
<b>Data Acquisition System (DAS)</b>			8.9
DAS provides real time altitude reading in feet on ground station and registers a change when the model is lifted into the air	_____	_____	8.9.1/4
DAS records exact altitude on the ground station when payload release is activated	_____	_____	8.9.2
DAS recording must be stored on ground station and ground station must support playback on demand	_____	_____	8.9.3
DAS altitude measurement must have a precision of at least 1 foot.	_____	_____	8.9.4
DAS system must use a red arming plug to power up electronics-	_____	_____	8.9.5
Discrete removable red arming plug must be on top of aircraft and at least 12" from prop	_____	_____	8.9.5
DAS arming/reset switch (optional). If manual, it must be located at least 12" from prop. Wireless remote arming/reset switch is allowed	_____	_____	8.9.6
DAS does not use 2.4 GHz unless it is part of the RC system being used	_____	_____	8.9.7
Functional test of DAS	_____	_____	8.11
<b>First Person View System (FPV)</b>			8.10
FPV system must transmit a live real time video signal to the ground station	_____	_____	8.10.3
FPV system does not transmit on 2.4 GHz	_____	_____	8.10.4
FPV system must use a Red arming plug to power up FPV system	_____	_____	8.10.5
( Discrete removable Red arming plug must be on top of aircraft and at least 12" from prop)			

Note: the aircraft can use one red arming plug for both the FPV and the DAS systems, if desired

	PASS	FAIL	Rule
<b>Radio Control System</b>			
All servos installed properly and securely	_____	_____	6.4
Power switch installed properly	_____	_____	Safety
1000 mAh minimum radio battery, properly secured. If NiCad or NiMH, pack must be 5 cells. Lipo or LiFE must be at least 2 cells. Regulator allowed.	_____	_____	8.4/Safety
Receiver mounted securely and vibration protected	_____	_____	6.4
All flight control, throttle and ground steering servos operate correctly and without clashing or overloading	_____	_____	6.4
Throttle operation correct: idle to full	_____	_____	6.4
Throttle kill set (low throttle, switch or trim kill)	_____	_____	Safety
Test radio fail safe functional: Throttle must go to idle if TX signal lost	_____	_____	2.6
<b>Engine(s) and Gear Boxes (if applicable)</b>			
Properly mounted and secure	_____	_____	6.4
Prop and prop nut tight	_____	_____	6.4
<b>Wings and tail assemblies free of warps and mounted securely.</b>	_____	_____	6.4
<b>Landing Gear and Wheels</b>			
Landing gear mounted securely	_____	_____	6.4
Wheel collars secure	_____	_____	6.4
<b>Aircraft does not use rubber bands for wing retention</b>	_____	_____	8.5
<b>Inspection Sticker(s)</b>			
All airframe parts stickered after technical inspection (wings, fuselage, tail if removable, expellable cargo, spare airframe parts, if any)	_____	_____	

**First Inspection** \_\_\_\_\_

**Second Inspection** \_\_\_\_\_

**Instructions: First inspector notes pass or fail items. If anything does not pass, that item must be corrected by the team and re-inspected by the second inspector.**