

2009 UE Flight Competition Rules

7 Apr 09

Contest Scoring

The contest objective is to make a flight with the largest Mission Score, defined as:

$$\text{Mission Score} = W_{\text{pay}} + k V_{\text{max}}$$

W_{pay} = payload weight carried on the best single Payload Flight

V_{max} = maximum speed without payload, averaged over two best Speed Flights

k = 0.9 N / (m/s)

Payload Rules

1. “Payload” is defined as any weight which when removed, still leaves the airplane capable of controlled sustained flight. Cutting pieces from the airframe is not allowed (e.g. you can’t clip the wingtips or shave the fuselage, and count the clippings as payload).
2. Payload will be provided in the form of metal rods 8–12 inches long, which can be taped to the fuselage. You may also use your own payload.
3. The payload must be carried within 1 inch of the aircraft centerline.

Flight Rules

1. For a Payload Flight, the aircraft may be hand-launched.
2. For a Speed Flight, the aircraft must take off from the ground. Pushing is allowed.
3. For a Payload Flight, the launch must occur before the Starting Line. Two laps must then be flown around the course, and touchdown must occur after the Starting Line.
4. Any ground contact during a Payload Flight lap will invalidate that lap.
5. Contact with the walls or ceiling girders is allowed, but is, um . . . not recommended.
6. The maximum speed during a Speed Flight will be calculated via the elapsed time over a straight ~ 100 ft course, which can be traversed at any time during the flight.

Aircraft Rules

1. Must use the provided Speed-280 motor, directly driving a propeller.
2. Must use one of the provided 6-cell 350 mAh NiCd batteries.
3. Must use the provided two servos.
4. The wing must be constructed entirely from one of the foams available in the Gelb lab. No other structural wing material is allowed. The wing must be built from no more than 6 pieces of foam, glued together.
5. Local wing reinforcements or decorations are permitted as long as they don’t substantially increase the foam wing’s bending properties. Examples: guard tape along leading edge, center hard points, breakage patches, flashing neon **Aero Astro** insignia, etc.
6. The landing gear must prevent ground-propeller contact during a moderate landing impact.

Piloting Skill Bonus

1. One member from each team is expected to learn RC flying sufficiently well to perform at least one Payload Flight and one Speed Flight.
2. At the student pilot's option, any flight can be performed with the assistance of a flight instructor, who can take over control at any time to avoid a mishap.
3. The flight instructor will assign a Flying Proficiency Score using the following scale:
 0. Valid scoring competition flight not completed
 5. Student had almost no control — I took over almost the whole flight
 10. Student had passable control — I took over for brief periods
 15. Student had very good control — I took over for a few minor corrections
 20. Student had complete control — I never had to touch the sticks
 20. No flight instructor participated in the flight
4. The Flying Proficiency Score is a bonus added to the term grade points of each of the team members. Joe B does not receive this bonus.