

# Skyler Problem Statement

## Design constraints

- T/W ratio should be less than or equal to 0.80. Excess thrust will be neutralized by adding weight below the center of gravity of the plane.
- Propeller diameter should not be greater than 10 inches.
- Battery weight should not be more than 120 gm.
- Only electrical motors are allowed. The use of IC engines or any other means of providing thrust is prohibited.
- Use of gyroscopes (gyros) and programming assistance in receivers is prohibited.
- One of the team members should fly the aircraft and another should call the stunts as they are performed (just before).

## Format

The competition requires the participants to design and fabricate a RC Plane (no Readymade Planes are allowed) and perform a set of maneuvers. Propellers, Motors, ESC, Servos, Receiver and Transmitter are allowed as off-the-shelf items.

The arena will be an open ground. There will be two rounds in the competition.

- Qualifying round
- Maneuver Round

## 1. Qualifier Round

The best measure of the design of an aircraft can be done by climb and gliding time. In this round, participants are required to make their aircraft to climb for 20 seconds. After this, they need to perform a dead stick flight (throttle=0 or Gliding) and land at a specified location. The plane however can be maneuvered while it is gliding.

The teams will be graded based on the glide time of the aircraft. A maximum of up to 40% of teams, based on the glide time, will qualify to Maneuver Round from the Qualifier Round.

The qualifier round is essentially to select a maximum of up to 40% of teams based on their performance, who will participate in the Maneuver Round. The final winners will be based on the scores in the Maneuver round.

## 2. Maneuver Round

In this round participant have to perform a certain set of maneuvers. Each maneuver will consist of different points. Participant can perform maneuver in random order of their choice. Only two members from a team would be allowed to come into the flying area, one for flying the model and another who would call the maneuvers which have been performed by the pilot. Three teams scoring maximum points in this round would win and achieve first three positions according to their points scored.

Points for each maneuver will be awarded according to the following table:

Loop	100
Horizontal Roll	200
Vertical roll	250
Low Flying	300
Knife Edge	500
Hammer Head	700

**MARKS WILL BE AWARDED FOR SPOT LANDING ALSO**

Rules:

1. Each team would be given 2 chances for each of the rounds and the best score is considered as per the scoring procedure mentioned above for each round.
2. The timer will start from the moment the aircraft is in the air for both the rounds.
3. Awards will be announced based on the performance of the teams in the Maneuver Round.
4. To perform a particular maneuver again it is necessary for the participant to complete the set of maneuver (all the maneuvers listed) at least once.
5. In this round, each team would be given 4 minutes for each chance.
6. A member can only be a part on one team.

## General Guidelines for the Competition

1. A limited number of 2.4 GHz radios will be available with the organizers for use by the teams. Teams who do not have access to radios can inform the organizers in advance to request use of these radios.
2. Receivers installed in the aircraft have to be in 'receiver mode only'.
3. All the systems (Servos, motor, etc.) will be checked by organizers for functionality before the competition. If found not working, teams will be dismissed from the competition.
4. Pilot can position himself at any point in the arena to fly the aircraft during the rounds.
5. Metal propellers are not allowed.
6. The models can have powered take-off with a landing gear or can be launched manually by a person standing at ground level.
7. Plane should be built from scratch and not purchased models.
8. A team member can't be a part of more than one team.
9. **Only college or school students are allowed to participate (Professionals are not allowed).**
10. New members cannot be added to the teams.
11. Bring your college/student I-Card at the time of competition.
12. Any of the above mentioned rules, if found violated, teams would not be allowed to participate in the competition.