Rules of thumb for plane design

This is a good place to start then you can experiment with changes to see what happens.

The ratio of the wing span to wing root chord should be 5 or 6:
- Example: If the wing root cord is 6" then the entire wing span should be 30" - 36" long.

Note: The wing root chord is that portion of the wing that attaches to the fuselage, measured from the leading edge to the trailing edge of the wing.

The wing thickness should be 12% to 14% of the wing root chord:
- Example: If the wing root chord is 6" then the widest part of the wing should be 3/4" thick.

Note: Foam profile planes do not follow this rule of thumb but still fly.

The aileron surface area should be 10% - 12% of half of the wing surface:
- Example: If half a wing is 6" x 18" then the wing surface is 108 sq inches. The aileron shape should equal 11 - 13 square inches of surface area.

The fuselage length should be 70% - 75% of the wing span:
- Example: If the wing is 36" long, then the fuselage should be 25" - 27" long.

The distance from the leading edge of the wing to the back of the prop should be 15% of the wingspan:
- Example: If the wingspan is 36" then the distance from the back of the prop to the leading edge of the wing should be 5.4".

The leading edge of the wing to the stabilizer should be 3 times the wing root chord:
- Example: If the wing chord is 6" then leading edge of the wing to the stabilizer should be 18".

The horizontal stabilizer should be 25% of the wing area:
- Example: If the wing is a rectangle, 36"L x 6"W, it has a wing area of 216 sq inches. 25% of 216 = 54 sq inches. The shape of your horizontal stabilizer should equal 54 sq inches.

The elevator (attached to the horizontal stabilizer) should be 25% of the horizontal stabilizer surface area:
- Example: If the Horizontal Stabilizer is 54 sq inches then the elevator surface area should equal 13.5 sq inches.

The vertical stabilizer should be 10% of the wing area:
- Example: If the wing is a rectangular 36" x 6" shape it has a surface area of 216 sq inches. 10% of 216 = 21.6 sq inches. The shape of your horizontal stabilizer should equal 21.6 sq inches of surface.

The rudder (attached to the vertical stabilizer) should be 25% of the vertical stabilizer surface area:
- Example: If the vertical stabilizer is 21.6 sq inches then the rudder surface area should equal 5.4 sq inches.

The plane should balance at 25% - 33% of the wing root chord:
- Example: If the wing root chord is 6" from the leading edge to the trailing edge of the wing then the Center of Gravity (COG) should be located 1.5" - 2" from the leading edge of the wing.

Note: This general rule is more for rectangle shaped wings, not necessarily for odd shaped or delta shaped wings.