



Due on or before **March 17, 2006**

- Identification of team and roles
- Brief description of task and results

- Data table for all three tests
- Graph (failure moment vs. wing weight) for all three tests

- Design:** Three-view scale drawing of wing design selected for 1st round (major dimensions labeled!) with predicted advantages and limitations of each wing.
- Building:** Description and pictures of major design components; description and rationale for deviations from planned wings.
- Testing:** Description of testing process; quantitative and qualitative data (including pictures); identify mode and probable cause of failure
- Lessons learned from initial test:** Description of events from 1st round of testing that led to better wings, testing or process during the following rounds.
 - Design
 - Building
 - Testing
 - Process

- Design:** Three-view scale drawing of wing design selected for 2nd round (major dimensions labeled!) with predicted advantages and limitations of each wing.
- Building:** Description and pictures of major design components; description and rationale for deviations from planned wings.
- Testing:** Description of testing process; quantitative and qualitative data (including pictures); identify mode and probable cause of failure
- Lessons learned from initial test:** Description of events from 2nd round of testing that led to better wings, testing or process during the following rounds.
 - Design
 - Building
 - Testing
 - Process

- Design:** Three-view scale drawing of wing design selected for 3rd round (major dimensions labeled!) with predicted advantages and limitations of each wing.
 - Building:** Description and pictures of major design components; description and rationale for deviations from planned wings.
 - Testing:** Description of testing process; quantitative and qualitative data (including pictures); identify mode and probable cause of failure
 - Lessons learned from initial test:** Description of events from 3rd round of testing that would lead to better wings, testing or process in future tests.
 - Design
 - Building
 - Testing
 - Process
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- Suggest further tests that might help answer still unanswered questions.
 - Describe how your next wing could be lighter, stronger, stiffer or easier to assemble.
 - Identify three or more strengths and three or more limitations of test(s) and model(s) used, recommending improvements and other potential applications.

VOCABULARY:

applied loads (external loads)	aerospace engineer
internal loads	design engineer
tension	structural engineer
compression	stress engineer
bending	manufacturing engineer
bending moment	test engineer
bending moment diagram	test coupon
shear	design
shear force diagram	plan
structural failure	build
failure mode	inspect
buckling	test
torsion	document
stress	structure
strain	metallic materials
strength	composite materials
stiffness	density
static loads	tensile strength
fatigue loads	tensile test
stress/strain curve	joint
elongation	
strain gage	