

Technical Details and Design Constraints:

Required	
Structure Type	Truss
Span	24 cm
Width	3.5 cm
Minimum/Maximum height	3 cm/10 cm
Min load that must be held (without safety factor)	66 N
Minimum factor of safety	1.5
Material	Balsa wood
Cross-section dimensions	3.18 mm x 3.18 mm
Maximum internal compressive load*	96 N
Maximum internal tensile load*	760 N
Weight	Minimized
Road bed dimensions	2 cm x 2 cm x 18 cm
Hook locations	2.5 cm and 15 cm

Assignment #1: Truss design, due Mon 11/18 (later will be accepted, but it may delay your receiving your materials).

You must submit a valid design to me before you will receive your building materials. I will not grade your design based on whether it will support the necessary load. I am only approving it as to whether it is a design that meets the building requirements and is something you can analyze with the tools we have learned in this class.

Your design should be an approximately to-scale drawing of the truss that you will build with all dimensions and angles indicated. The location of cross pieces to connect the two trusses should also be indicated. Any modifications you make to the truss you plan to build must be approved before construction.

This is an all or nothing grade (i.e. a 0 or a 5) and is worth 10% of the total project grade.

Assignment #2: Truss design equations, due Wed 11/20 (later will be accepted, but it may delay your receiving your materials).

You must submit a complete set of equations evaluating the loads in each member of your truss before you will receive your building materials. I will not be checking each and every equation in great detail. I will only spot check them to make sure they seem reasonable and are complete. I will be checking to ensure that no loads exceed the maximum loads that balsa wood can hold - i.e. that the design meets the building code.

You should perform your analysis as a function of applied load. Then when you are done, calculate the load in each member assuming the minimum required load. You must turn in the table at the end of this packet with your equations and again with your report. You should clearly indicate which members are in tension and which members are in compression. Estimate the maximum load that your truss will hold. If you make any modifications to the truss, you will need to modify your equations and recalculate the resulting member loads.

This is an all or nothing grade (i.e. a 0 or a 5) and is worth 30% of the total project grade. Each time I find problems with your equations and give them back to you to correct, your grade will be decremented. Both team members must review the equations before turning them in.

"Lucinda"

Member	Load in member in terms of w	Load in member when w=100 N	Tension or compression	Use asterix to indicate member you expect to break first	Load held by each member on test day (i.e. set w = to load you held)	Use asterix to indicate member you think DID break first

Prediction for maximum load you expect to hold:	
Maximum load held:	

I am attaching something my friend did last semester.

