Curriculum Units by Fellows of the Yale-New Haven Teachers Institute
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The Physics of Bridges

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“The Physics of Bridges” is a curriculum unit that will explain how scientists and engineers utilize physical science concepts when building a bridge. Students will enjoy the many “hands on” activities planned in the unit. One activity is the compression test, which measures the amount of stress different types of wood can sustain. Students can also build trusses utilizing computer software that identifies which members experience tension and compression forces and calculates the amount of force a support gives on a truss when a load is applied. The final projects include building a model bridge and taking a field trip to view bridges in Connecticut and New York.

The concepts that will be explored in this curriculum include Newton’s Third Law of Motion (action-reaction forces), forces acting in tension or compression, stresses a material experiences when equal and opposite tension and/or compression forces are exerted on a structure, stress-strain curves, static equilibrium, vibration, and resonance.

(Recommended for Physics, grades 10-12, and Science, grades 7-12.)