

Civil Engineering Teaching Materials for Grades 9-12

Activity Title	Activity Description	Area	Topic	Grade	Source	Required Time	Special Materials
Flood!	Construct a model of a river system with levees.	Hydraulic, Hydrology & Water Resources	Dams - Levees	9-12	NOVA	45 min.	Large container, Modeling clay
Underwater Dream Machine	Build your own submarine and make it neutrally buoyant in a diving tank	Hydraulic, Hydrology & Water Resources	Buoyancy	9-12	NOVA	n/a	Dishwashing liquid
Car of the Future	How to decrease the carbon footprint of your city's public transportation system through the use of various new technologies and/or alternative fuels?	Transportation	Traffic Emissions	9-12	NOVA	Four class periods	
Tasty Arch	Build an arch that supports itself with no mortar.	Structural & Construction	Arches	9-12	NOVA	45 min.	
Tall Tower Challenge	Engineer the tallest tower you can build that can support the weight of a golf ball for 2 minutes, using just straws, pipe cleaners, and paperclips.	Structural & Construction	Towers	9-12	Try Engineering	1 hour	
Popsicle Bridge	Design and build your own bridge out of up to 200 popsicle sticks and glue.	Structural & Construction	Bridges	9-12	Try Engineering	3 45-min. sessions	
Design and Build File Folder Bridges	A hands-on model bridge-building project that provides students with an opportunity to learn how engineers use math, science, and technology to design real structures.	Structural & Construction	Trusses, Bridges	9-12	Bridge Design Contest	Five in-depth, multi-session activities over a minimum of several weeks (Each being built upon the previous one)	
West Point Bridge Design Contest	Use West Point Bridge Design software to design a truss bridge online.	Structural & Construction	Materials, forces and loads, shapes and strength	9-12	Bridge Design Contest	Three rounds, over the course of 5 months	WPBD software
SimCity	Learn valuable lessons by playing mayor through a city building simulation game	General Civil	Budgeting, Urban Planning, Managing Environment, Design Transportation Systems, Understanding Utilities and Services,	6+	SimCity	n/a	SimCity simulation game