

Elective Course Description

Course Name	Architectural Models
Course Number	TBD after Board approval
Length of Course	One Semester
Grade Level	7-8, 9-12
Credit Type	0.5 Elective Per Semester (for students in grades 9-12)
Grading Scale	A-F
Course Prerequisite	None
Course Summary	Students will create a series of wooden structure models culminating with a group project of a model house. Students will learn to; read blueprints, use a conversion scale, convert fractions and ratios, properly use domain specific vocabulary, and apply multiples and factors. They will also learn elements of wood construction and the importance of standardization in the manufacturing process.
Primary Materials	Pitsco True Scale House Framing Kit with Cutting Board (1 per group of 4 students), 50-pack of 36" balsa wood (1 per student), needle nose pliers (1 per student), 3-sided architect ruler (1 per student), 2x4x8 fir (12), 1/2-inch CDX plywood (2), Basic carpentry handtools (1 set)
Standards	Math: N-Q.1 Use units as a way to understand problems..., N-Q.3 Choose a level of accuracy..., A-APR.6 Rewrite simple rational expressions..., G-CO.1 Demonstrate understanding of key geometrical definitions..., G-MG.3 Apply geometric methods to solve design problems...
Assessment	Vocabulary notebook and quiz (10%), 8' & 12' wall segments project (20%), angles & conversions test (20%), participation in and completion of full model (50%).

Activities

Week 1	Introduction to scale. Practice rational conversions and compounding of multiples. Build 8' wall section.
Week 2	Framing vocabulary. Cost and efficient use of building materials. Reading blueprints part 1/2. Build 12' wall section.
Week 3	Combine 8' & 12' wall sections. Reading blueprints part 2/2. Discuss angles and Pythagorean Theorem.
Week 4	Practice conversions. Review vocabulary. Vocabulary quiz. Angles & conversions test.
Week 5	House project: Framing floor joists with post-and-beam, & subfloor
Week 6	House project: Framing exterior walls 1/2
Week 7	House project: Framing exterior walls 2/2
Week 8	Check for square, center, and symmetry; make adjustments if necessary. House project: Framing interior walls 1/2.
Week 9	House project: Framing interior walls 2/2.
Week 10	Diagram schematic for electrical, plumbing, and HVAC systems.
Week 11	Review angles. Discuss elements of different roof types. Begin building roof trusses.
Week 12	Layout and install roof trusses.
Week 13	Define sheer and tensile strength. Use 8x12 models to demonstrate effectiveness of exterior sheathing.
Week 14	Video: How to install roof and sidewall sheathing and braces. House project: Sheath roof and walls.
Week 15	House project: Finish sheathing, add dormer to roof

Week 16

Create blueprint for and build full-size 8' wall section with door or window opening including header.