
PETERS TOWNSHIP HIGH SCHOOL

COURSE SYLLABUS: ARCHITECTURE ENGINEERING II

Course Overview and Essential Skills

The Architecture and Engineering II course's goal is to advance the student preparation to a pre-architectural/engineering program. This course will further investigate how the structure is designed and built beyond the layout of spaces between walls. Students will incorporate green building concepts and sustainable design in architecture. These concepts will be the foundation for students in choosing proper building materials and utility needs. Students will design and fabricate a scale model of their dream home as a culminating project.

Course Textbook and Required Materials

- TEXTBOOK: Architecture residential drawing and design; Goodheart-Willcox, Kicklighter; 2000
- ArchiCAD 16
- Computer Lab

Course Outline of Material Covered:

Unit or Topic	Concepts/Skills/Resources	Timeframe
THE WORLD OF ARCHITECTURE	<ul style="list-style-type: none"> • identify the historical influences that helped shape today's home designs • recognize and describe the elements of contemporary dwellings • discuss current trends in architecture 	Three Weeks
CONSERVATION AND ENVIRONMENTAL DESIGN	<ul style="list-style-type: none"> • recognize different technologies to improve construction methods and provide alternative sources • improve energy efficiency to reduce oil dependence and address environmental concerns • Design and construct buildings with renewable materials, earthen materials and recycled materials 	FOUR WEEKS
ELECTRICAL FLOOR PLAN	<ul style="list-style-type: none"> • design electrical circuits based on needs supported by national and local codes. • calculate the service entrance size and plan the electrical schematic. • select energy efficient appliances 	TWO WEEKS

	<ul style="list-style-type: none"> develop and draw an electrical residential floor plan 	
PLUMBING FLOOR PLAN	<ul style="list-style-type: none"> design water delivery system and waste removal system supported by national and local codes. explore the different types of materials and select the appropriate material based on the homes need. incorporate energy-conserving methods to the plumbing plan develop and draw an plumbing residential floor plan 	TWO WEEKS
HVAC FLOOR PLAN	<ul style="list-style-type: none"> implement BOCA codes to regulate the thermal energy transfers to or from the exterior walls. establish general code requirements for common heating and cooling equipment and duct systems. identify and analyze the best system for providing the HVAC requirements. develop and draw an HVAC residential floor plan 	TWO WEEKS
ARCHITECTURAL MODELS	<ul style="list-style-type: none"> explain the various types of architectural models used to represent residential structures recognize the differences between presentation and design study models identify the criteria for a 3D CADD fly-thru construct a scaled model of student designed house 	ONE MONTH
COMPUTER APPLICATIONS	<ul style="list-style-type: none"> explore computers applications within architecture and construction recognize the advantages of computer analyses for the contractor or designer define terms related to computer applications in architecture 	ONE MONTH

**Depending on the needs of the class or changes in the school year, the course outline is subject to change.*