

	Unit 1 Overview of Civil Engineering	Unit 2 Introduction to Pro	Unit 3 Project Planning	Unit 4 Site Planning	Unit 5 Architecture	Unit 6 Structural Engineer	Unit 7 Presentations and Reports
Civil Engineering & Architecture	<p>Compare and contrast civil engineering and architecture.</p> <p>Describe the various individuals and agencies and their roles during the design and development of a civil engineering project.</p> <p>Describe the postsecondary and career opportunities in the field of Civil Engineering and Architecture.</p> <p>Communicate the current common practices utilized in Civil Engineering and Architecture and apply them to develop a project.</p> <p>Identify the criteria and constraints, and gather information to promote viable decisions regarding the development of a project.</p> <p>Work individually and in pairs to produce a solution to a project.</p> <p>Develop an understanding of how software is used as a tool to aid in the solution and then the communication of a project.</p> <p>Communicate ideas for designing a development project using various drawing methods, sketches, graphics, or other media.</p> <p>Annotate ideas, notes, and presentations based on personal review and feedback from others and will document them.</p> <p>Describe in daily journals the advantages and disadvantages of various information-gathering, communications, and collaboration tools.</p> <p>Develop two- and three-dimensional sketches and graphics using manual and computer-assisted processes.</p> <p>Work effectively (productively) as a team.</p> <p>Communicate their ideas and information to each other.</p> <p>Determine the viability of their project ideas.</p> <p>Research zoning ordinances and regulations to determine the necessary procedures to finish the project.</p> <p>Communicate their team's design idea and explain why they believe it will be viable.</p> <p>Communicate understandings of the relationship of structures and land and the responsibility of designers to handle it.</p> <p>Determine the next steps to be taken and how they will proceed in developing their project.</p> <p>Answer essential questions and conclusions provided in the related activities.</p> <p>Conduct a survey of their personal residence and write their observations about the locations of the electrical, water, and gas lines.</p> <p>Apply concepts learned to team project.</p> <p>Develop and be able to read a contour map.</p> <p>Create a bubble diagram of a specified site.</p> <p>Apply principles of reading a contour map and creating a bubble diagram to their team project.</p> <p>Rethink the pros and cons of local, state, and federal regulations on site development.</p> <p>Write about their point of view and record it in their journal.</p> <p>Apply what they have learned to their team project.</p> <p>Interpret topographical data and design criteria to create and document the vertical and horizontal transit lines and site plan.</p> <p>Apply appropriate codes and parameters to design a suitable and assessable parking lot for a retail establishment.</p> <p>Research answers to questions identified in the prelab.</p> <p>Conduct simple experiments to determine the content and characteristics of a soil sample and use the results in the design.</p> <p>Calculate the amount of water a rainstorm will drop on a parking lot design and use that information in the design and site plan.</p> <p>Using a site plan with contours, locate and create a cut and fill plan for the proposed foundation.</p> <p>Present findings of their research on a specific utility by completing an information handout sheet.</p> <p>Communicate information to their peers using schematic symbols.</p> <p>Mathematically compute utility needs of a project and size the utility supply lines correctly.</p> <p>Analyze and determine the selection and placement of plantings to ensure the proper use of resources and determine the source of water for their site.</p> <p>Estimate the water pressure for their site.</p> <p>Select an appropriate method of managing wastewater for their site.</p> <p>Perform preliminary design calculations and layouts of the selected wastewater management system.</p> <p>Apply their knowledge of architecture styles gained from Activity 1.1 Architectural Styles to the design of the structure.</p> <p>Apply their knowledge of floor plans to the structures for their team's project.</p> <p>Research and design an appropriate energy system for the team's project.</p> <p>Calculate and determine the heat loss of gain of the energy systems used in their team project.</p> <p>Compare and contrast the various elevation views and communicate their understanding of how elevations are used.</p> <p>Draw the exterior and interior elevations of their team's project.</p> <p>Compare and contrast sections and details explaining their purposes in a set of architectural plans.</p> <p>Draw the sections and details of their team's project.</p> <p>Identify and create the necessary schedules for their team's project.</p> <p>Research and teach team members about mechanical, electrical, and protection systems.</p> <p>Determine the mechanical, electrical, and protection systems necessary for their team's project.</p> <p>Draw the diagrams for the mechanical, electrical, and protection systems for their team's project.</p> <p>Identify the work of a structural engineer.</p> <p>Determine the live and dead loads of a structure using load tables and appropriate mathematics.</p> <p>Identify the regions of the United States that are susceptible to seismic loads.</p> <p>Research the different types of loads acting on a structure and write a brief description with a diagram in their journals.</p> <p>Identify cooling materials, types of roof systems, rafters, and trusses; calculate the load for roof members; and determine the strength of columns and beams required for a structure.</p> <p>Size floor members according to loads and modify section details to show the sizing of supporting materials for their team's project.</p> <p>Research the various foundation types, draw sketches of each one, and describe their use.</p> <p>Prepare a foundation detail for their team's project.</p> <p>Conduct their presentation of their project including the appropriate drawings, renderings, models, documentation, and oral presentations regarding the design and development of a team project.</p>						
Michigan Grades 9-12 Technology Standards Linked							
TECHNOLOGY GRADES 9-12: http://www.michigan.gov/documents/9-12_150927_7.pdf	X	X	X				
SOCIAL, ETHICAL, AND HUMAN ISSUES	X	X	X				
SEHI1. explore career opportunities and identify their related technology skill requirements	X	X	X				
SEHI2. design and implement a personal learning plan that includes technology to support his/her lifelong learning goals				X			
TECHNOLOGY PRODUCTIVITY TOOLS		X	X	X			
TPT4. apply advanced software features such as an application's built-in thesaurus, templates, and styles to improve the appearance of word processing documents, spreadsheets, and presentations				X			
TPT5. identify technology tools (e.g., authoring tools or other hardware and software resources) that could be used to create a group project.			X	X			
TPT8. Use a variety of applications to plan, create, and edit a multimedia product (e.g., model, webcast, presentation,			X				
TPT9. have the opportunity to participate in real-life experiences associated with technology-related careers		X					
TECHNOLOGY COMMUNICATIONS TOOLS			X	X	X		
TCT2. use available technologies (e.g., desktop conferencing, e-mail, groupware, instantmessaging) to communicate with others on a class assignment or project				X	X		
TCT3. use a variety of media and formats to design, develop, publish, and present products (e.g., presentations, newsletters, web sites) to communicate original ideas to multiple audiences			X		X		
TCT4. collaborate in content-related projects that integrate a variety of media (e.g., print, audio, video, graphic, simulations, and models) with presentation, word processing, publishing, database, graphics design, or spreadsheet applications				X	X		
TCT5. plan and implement a collaborative project using telecommunications tools (e.g., groupware, interactive web sites, videoconferencing)				X	X		
TECHNOLOGY RESEARCH TOOLS		X					
IRT2. formulate and use evaluation criteria (authority, accuracy, relevancy, timeliness) for information located on the internet to present research findings							
TECHNOLOGY PROBLEM-SOLVING AND DECISION-MAKING TOOLS							
TPSDMT1. use a variety of technology resources (e.g., educational software, simulations, models) for problem solving and independent learning	X						