Madison Public Schools

Architectural Design Unit 2: Final Design

Unit Focus

In Unit 2, students will be carrying the conceptual design of their client to fruition. Emphasis will be on learning how architectural software can assist in the design process by modeling, visualizing and analyzing building designs. The PBA will have the students creating the artifacts (working drawings, visual tours and presentation model) for the presentation to their client for final approval.

Stage 1: Desired Results - Key Understandings

Established Goals

Connecticut Goals and Standards
Computer Aided Drafting and Design: 12

- Apply conventional Computer Aided Drafting and Design processes and procedures accurately, appropriately, and safely. *CADD.02.01*
- Describe physical objects as geometric entities.* *CADD.02.02*
- Express a design of an object as a 3D model.*(A5) *CADD.02.07*
- Evaluate the choice and placement of dimensions, notes and annotations to clearly communicate design intent.*(A7) *CADD.02.09*
- Revise a design and update finished drawings appropriately.*(A8) *CADD.02.10*
- Apply dimensioning to various objects and features. *CADD.03.04*
- Demonstrate the methods of creating a title block. *CADD.03.08*
- Understand the commands and concepts necessary for producing drawings through traditional or computer-aided means. *CADD.05.01*
- Differentiate the various techniques for viewing objects. *CADD.05.03*
- Use the concepts of geometric construction in the development of design drawings. *CADD.05.04*
- Create and edit basic geometry.*(E23) *CADD.05.10*
- Generate a 2-D multi-view drawing.*(E27)

Transfer

T1 Explore and hone techniques, skills, methods, and processes to create and innovate
T2 Develop a product/solution that adheres to key parameters (e.g., cost, timeline, restrictions, available resources and audience).

Meaning

Understandings	Essential Questions
U1 An efficient floor plan design is important to make a building functional. **U2** CAD software is used to develop visual representation of design ideas in 2D and 3D drawings.	**Q1** What are important factors when planning a residential floor plan? **Q2** What is the work triangle and why is it crucial in the design of a kitchen? **Q3** How do you calculate stair layout for residential construction? **Q4** How do you draw a residential floor plan using symbols, CAD and drawing techniques? **Q5** How can design ideas be successfully communicated?

Acquisition of Knowledge and Skill

Knowledge	Skills
K1 A kitchen is split up into three stations called: Storage, Cooking and Cleanup. **K2** The total distance of the "work triangle" cannot exceed 22'. **K3** Kitchen types: galley, U-shaped, Penninsula, L-	**S1** Create a scale and dimensioned floor plan using a computer aided drafting software. **S2** Create a kitchen that is efficient, has all of the stations and complies with the "work triangle" rule. **S3** Create and modify functional stairs using a computer

Stage 1: Desired Results - Key Understandings

CADD.05.14 • Generate a pictorial drawing.*(E28) *CADD.05.15* • Create a 3-D model from a 2-D drawing.*(G35) *CADD.06.06* • Interpret basic views and dimensions in a working drawing.*(D17) *CADD.09.01* • Prepare and conduct effective portfolio oral presentation(s). *CADD.10.03* *Design and Development: 8* • Evaluate the effectiveness of a model and recommend necessary changes. *DD.02.12* **Student Growth and Development 21st Century Capacities Matrix** *Creative Thinking* • Innovation: Students will be able to take an existing solution or object in order to consider limitations and possible transformations. *MM.2.1* *Collaboration/Communication* • Product Creation: Students will be able to effectively use a medium to communicate important information (findings, ideas, feelings, issues, etc.) for a given purpose. *MM.3.2* • Presentation: Students will be able to relay information and ideas to an authentic audience (other than the teacher) to promote collective understanding. *MM.3.3*	shaped, Island, Corridor and One-Wall. **K4** Roof types: Gable, Hip, Gambrel, Mansard, Butterfly, Shed, Flat, Pleated, Winged Gable and Dutch Hip. **K5** A floor plan is a scaled diagram showing locations, sizes, materials and components contained within a given structure. **K6** A foundation is the lowest structural component of a building upon which all other members rest. **K7** Stairs are inclined hallways that provide access from area to another. **K8** When designing stairs, the three major factors to consider in determining the total length of the stairwell are: treads, risers and width. **K9** Roof Vocabulary: slope, pitch, span, ridge, rafter, valleys, flashing, underlayment. **K10** View orientations of a structure can be manipulated to better show the purpose and/or aesthetic values to a given client. **K11** The underlying purpose of Construction Documents is to document and convey design intent such that construction is in keeping with it.	aided drafting software. **S4** Create and modify roof types for any given structure using a computer aided drafting software. **S5** Calculate the total run of a staircase for a given space by manipulating variables such as height, tread width, riser height and overall height.