



Computer Aided Drafting (CAD) III

Full Year

Fairfield Ludlowe High School - Fairfield Warde High School

COURSE DESCRIPTION

This course expands on the focused skills learned in previous courses. Students will learn advanced level application and may concentrate in any of the areas: 3D Animation, Architecture or Engineering. Examples include: fine animation of character's eyes and mouth, computer special effects (such as fire, tornados, and lightsabers), building design portfolios for college, creating architectural detail plans, "Green Building", and engineering products or inventions to solve real world problems. (Software: Inventor, Revit, 3ds Max, Maya, Mudbox, MotionBuilder, iPi Motion Capture)

COURSE OBJECTIVES

Students will be able to:

- sketch complex architectural forms and spaces using advanced perspective drawing techniques.
- create realistic and expressive architectural sketches with a variety of shading techniques.
- construct two and three point perspective drawings of three-dimensional objects.
- sketch different types of buildings, products or characters .
- apply their sketching skills to real-world design projects, such as developing detailed design proposals or creating presentation drawings.
- define and explain the different types of commercial buildings.
- explain how the factors such as climate, budget, and the needs of the end-user influenced their design decisions.
- apply the principles of design, such as balance, proportion, and unity, and how to apply them to commercial or public spaces and design.
- utilize CAD tools in increasingly creative ways to create more complex shapes and interesting designs.
- create detailed drawings of buildings and other structures using CAD software.
- create floor plans, elevations, sections, and details using CAD software.
- render and animate their designs using CAD software.
- demonstrate an understanding of basic architectural principles, such as scale, proportion, and perspective.
- accurately express their creative visions by creating their own custom shapes and components.
- design and build a model commercial structure using a variety of construction methods and through prototyping various model iterations.
- design, build and analyze physical prototype/model using a variety of tools and materials
- use prototypes to test and improve designs.
- create a simple character rig using 3D animation software.
- create controls for the character's facial expressions and other details and animate the character to produce movement over time.
- navigate character structure to alter it.
- put "skin" on a character or put an outside envelope on a rig

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- apply sustainability principles to the design world.
 - evaluate the sustainability of commercial buildings using various rating systems.
 - apply knowledge and skills from across the curriculum to solve a real-world problem.
 - conduct independent research and analyze complex information.
 - alter character movement in a predictable way.
 - create distinct character motions like: running, standing, jumping.
 - record animation clips that contain character animation.
 - design and develop characters with unique personalities and physical characteristics.
 - animate characters in a variety of poses and movements, including walking, running, jumping, and facial expressions.
 - use animation software to create their own animated short films
 - use a variety of communication tools and strategies to effectively convey their design concepts to an audience.

UNITS OF STUDY

- Unit 1 – Sketching, Drawing, Schematics and Character Sketching (3-4 weeks)
- Unit 2 – CAD Tools, 3D Modeling Techniques, & Construction Techniques (2-3 weeks)
- Unit 3 – CAD Tools, Intermediate Simulations, Texture Mapping & Unwrapping (3-4 weeks)
- Unit 4 – Construction Methods, Character Rigging and Skinning, Prototyping (6-7 weeks)
- Unit 5 – Sustainable Architecture and Character Animation Techniques (3-4 weeks)
- Unit 6 – Final Summative Project and Portfolio Expansion (8-10 weeks)

COURSE POLICIES AND REQUIREMENTS

GRADING: Generally . . . See district policy ([Policy 6146.1AR](#))

Grading Communication

- Specific grading expectations and practices will be communicated to all students and families at the start of the school year via a consistent format.
- If students or parents have questions about grading practices, they should follow the district's established chain of command structure (see district website) with the first contact being to the teacher and then to the school administration.
- Buildings will send out reminders of the importance of checking students' grades in the Grading Portal with directions.
- Teachers will notify guardians when students fall into the F range after October 1st.

Grade Reporting

- For a processed piece or "chunked" assignment that is part of a larger task, feedback and the grade shall be shared before the next step in the process, so long as students have submitted their work at those checkpoints, on time.
- Grades for summative assessments shall be entered within 10 school days from the date of submission or the date it was due, whichever is later.
- Grades for formative assessments shall be entered within 5 school days from the date of submission or the date it was due, whichever is later, and prior to any subsequent assessment.

Guidelines for Late Work :

- Teachers will accept late work for both summative and formative tasks beyond the due date.

- Teachers will not accept late work beyond the deadline for late work. The deadline is defined as the next class period from the due date of the assignment or the alternative date that the teacher and student may agree upon depending on individual circumstances.
- Teachers may reduce the total points students can achieve as a penalty for late work up to the deadline. Students will earn a zero (0) if the assignment is not submitted or is submitted after the deadline.
- Late work only consists of assignments with an expected due date. Assessments, such as tests, quizzes and in class assignments, must be taken on the scheduled date except in cases of make-up assessments due to an excused absence.

REASSESSMENT GUIDELINES:

Eligibility of assessments	Teachers of the same course will determine which summative assessments are eligible. Students can select any part of a project to reassess. Reassessments may not be allowed one week before the end of a term.
Process	Students have two class periods in which to indicate they would like to take a reassessment. Teachers will make clear to students their preferred method for students to request reassessment (<i>e.g.</i> email or filling out a simple form/spreadsheet).
Frequency	Students will have the opportunity to reassess on two summatives per year but not more than one per term (quarter).
Assessment Format	Based on discussion between the student and teacher, students will revise portions of the original assessment in which they did not show proficiency.
Gradebook impact	Original and reassessment scores will be averaged in the gradebook.

MATERIALS:

- As provided by the course.

EXPECTATIONS OF STUDENTS:

- Be Tech and Learning Ready: Come prepared with all necessary materials, including your charged device and any required software.
- Prioritize Safety: Follow all safety guidelines and procedures, especially when working with tools, equipment, or hazardous materials.
- Participate Actively: Engage in class discussions, ask questions, and contribute to group projects. Actively participate in lab activities by following instructions, working collaboratively, and cleaning up your workspace.
- Respect the Digital Realm: Treat all digital resources and equipment with care. Avoid actions that could harm or disrupt the learning environment.
- Embrace Digital Citizenship: Use technology ethically and responsibly. Be mindful of copyright laws and online etiquette.

EXTRA HELP:

- Students should seek out extra help when needed. The teacher is available for extra help before and after school as well as during prep periods.