

Wyoming Department of Education Required Virtual Education Course Syllabus

BIG HORN COUNTY SCHOOL DISTRICT #1

Program Name	WYCA	Content Area	Vocational Education
Course ID	CAOT78152	Grade Level	9, 10, 11, 12
Course Name	3D Computer Modeling	# of Credits	0.5
SCED Code	10203G0.5011	Curriculum Type	Connections Academy

COURSE DESCRIPTION

Are you interested in a career in technology? Are you curious about working in fields like virtual reality, video game design, marketing, television and motion pictures, or digital imaging? If so, 3-D Computer Modeling is a great place to start as it is the foundation for all these career paths. The student will gain a deeper understanding of graphic design and illustration as he uses 3-D animation software to create virtual three-dimensional design projects. Hone in on drawing, photography, and 3-D construction techniques and develop the skills needed to navigate within a 3-D digital modeling workspace. This course is an excellent introduction to careers in the fast-growing field of technology and design.

WYOMING CONTENT AND PERFORMANCE STANDARDS

STANDARD#	BENCHMARK
CV12.1.1	College and career-ready students evaluate current knowledge and interests in order to set career goals.
CV12.1.2	College and career-ready students explore careers including outlook, salary, needed training, duties and lifestyle utilizing all available resources including mentors and industry experts.
CV12.1.3	College and career-ready students prepare an educational and career plan to enable them to gain desired knowledge and experience.
CV12.1.4	College and career-ready students demonstrate employability skills that enable them to be responsible and contributing citizens and employees.
CV12.2.1	College and career-ready students communicate clearly, effectively, and with reason.
CV12.2.2	College and career-ready students identify and model integrity, ethical leadership and effective management skills.
CV12.2.3	College and career-ready students work productively in teams while using cultural global competence.
CV12.2.4	College and career-ready students apply safe, legal, and responsible use of information and technology as appropriate to the task.
CV12.3.1	College and career-ready students identify and define authentic problems and significant questions for investigation.
CV12.3.2	College and career-ready students identify trends, forecast possibilities, and explore complex systems and issues.
CV12.3.3	College and career-ready students employ valid and reliable research strategies and apply prior knowledge to solve a problem or complete a project.
CV12.3.4	College and career-ready students demonstrate creativity and innovation while considering the environmental, social, and economic impacts of decisions.
CV12.4.1	College and career-ready students produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (*CCSS W.11.4)
CV12.4.2	College and career-ready students determine the meaning of symbols, key terms, and other content-specific words and phrases as they are used in technical context.
CV12.4.3	College and career-ready students acquire, manipulate, analyze, diagnose, and/or report information, using the appropriate technology.
CV12.4.4	College and career-ready students precisely follow a complex multistep procedure when performing technical tasks.
CV12.5.1	College and career-ready students manage resources to develop, analyze, and implement systems and applications.
CV12.5.2	College and career-ready students productively complete tasks taking constraints, priorities and resources into account.
CV12.5.3	College and career-ready students safely and ethically use current industry-standard tools and emerging technologies.
CV12.5.4	College and career-ready students utilize technology to develop innovative solutions or products.

SCOPE AND SEQUENCE

UNIT OUTLINE	STANDARD#	OUTCOMES
<p>Unit 1: What is 3-D Modeling?</p> <p>3-D modeling is all around you. You might think of 3-D movies or great animations when you think about 3-D modeling, but it is a lot more than that. The new skyscraper downtown, that artificial limb given to a wounded veteran, or the latest spacecraft hurtling into orbit all likely depended on 3-D modeling for their design. With so many uses, 3-D modeling is an essential skill in today's world, and you will begin with some about the basics about what 3-D modeling is, how it is done, and what you can do with the skills you acquire.</p>	CV12.1.1	<ul style="list-style-type: none"> •Define 3-D modeling •Discuss how 3-D modeling enhances animation •Describe two applications of 3-D modeling in the real world •Understand key terms used in 3-D modeling •Identify the advantages and challenges of 3-D modeling
<p>Unit 2: The History of 3-D Modeling</p> <p>As long as there has been human society, art has been a part of it. Today, 3-D modeling has become an essential part of animation. While its applications go way beyond entertainment, it owes much of its development to innovative artists looking for better ways to represent the worlds they create on film. Even teenagers playing really basic video games in the 1980s were actually moving technology forward by creating a market and pushing companies to make better and better versions. So, 3-D modeling has a long history dependent on several different innovations. Exploring how and why 3-D modeling evolved gives us valuable insights into how it can be used in the future and the potential of this technology that is still being unlocked.</p>		<ul style="list-style-type: none"> •Identify key developments in the history of animation and 3-D modeling •Explain the role technology played in enhancing 3-D modeling techniques •Describe two current or future applications of 3-D modeling •Articulate social change corresponding with technological developments in 3-D modeling

<p>Unit 3: Tools of the Trade</p> <p>When you turn on your computer and perform a basic function, like checking your favorite social media site, you are actually drawing on the work of a lot of different elements of the computer. From the most basic line of code that tells the computer what to do, to the operating system that makes sure that it prioritizes the task you are working on now, every element of the job your computer is doing was perfectly planned. Everything that makes a computer work comes from decades of technology. Just as 3-D modeling depends on a long history of art, the computers that make it happen have their own histories. Because computers play such an integral role in 3-D modeling, it is helpful to know some of the basics about how they operate.</p>	<p>CV12.3.1, CV12.3.3, CV12.4.1, CV12.4.2, CV12.4.3, CV12.5.4</p>	<ul style="list-style-type: none"> •Discuss the history of operating systems and programming languages •Explain the distinct functions of software and hardware •Define different types of memory •Identify the three types of program design approaches
<p>Unit 4: Digital Citizenship and Ethics</p> <p>Working in 3-D modeling isn't all fun and games, and an important part of this career is using the resources of the internet wisely and well. Like any society, the online community has expectations of appropriate behavior. In addition, the accessibility of information has raised some new challenges as digital artists want to share their work while making sure that they still get the credit that they deserve. Understanding the basics of copyright and other kinds of permission ensures that you will stay on the right side of the code of conduct, not to mention the law. One of the most exciting elements of 3-D modeling is the rate of change and the new possibilities that emerging technology brings.</p>	<p>CV12.1.4, CV12.2.1, CV12.2.2, CV12.2.4, CV12.3.1, CV12.3.4, CV12.4.1, CV12.4.2, CV12.4.3, CV12.5.3, CV12.5.4</p>	<ul style="list-style-type: none"> •Discuss the importance of responsible digital citizenship •Understand copyright dynamics and its application in 3-D modeling •Demonstrate proper attribution and appropriate sources •Analyze the role of emerging technology in 3-D modeling
<p>Unit 5: Creating 3-D Environments in Blender</p> <p>Now that you know a little bit about digital citizenship and copyrights, now you can see what you can do with 3-D modeling. There are free, open source programs available to get you started, so all you need to do is download them and start developing those valuable skills. Blender is one of these software programs that offers the opportunity to start exploring the world of 3-D modeling with no commitment or expectation. Besides being readily available to anyone, this digital tool offers detailed tutorial videos for beginners, which makes it the perfect first step. These tips are easily found on the website and will take you through the details of how to design your first 3-D character, making excellent use of the digital tools available on the platform. Because Blender is such a popular program, there are also plenty of tutorials and tips available online. If you have questions or find yourself struggling with certain elements, a quick internet search will likely save the day.</p>	<p>CV12.3.1, CV12.4.2, CV12.4.3, CV12.4.4, CV12.5.1, CV12.5.2, CV12.5.4</p>	<ul style="list-style-type: none"> •Understand the appropriate uses of 3-D objects and related digital tools •Use the proper digital tools and resources when planning, managing, and executing a project •Understand the underlying difference between 3-D animation software and the animation manipulation interface •Explain the contrasts among various 3-D modeling techniques
<p>Unit 6: Visual Elements</p> <p>You've likely heard the old adage, "a picture paints a thousand words." Even today, this statement rings true, especially in the imaginative world of art and design. Regardless of the medium you use, every model, video, or creation you produce is infused somehow with your ideas and emotions. The question is simply, "what do you want to say?" Ultimately, the words available to you through 3-D modeling are limitless and will eventually be spoken through the object you create.</p>	<p>CV12.3.1, CV12.4.3, CV12.4.4, CV12.5.1, CV12.5.2, CV12.5.4</p>	<ul style="list-style-type: none"> •Explain the process of visualization as it applies to 3-D modeling •Identify and apply color theories using a digital format •Critique visual structures through the use of basic design principles •Understand how lighting and perspective create overall effect •Discuss how visual simulation can be implemented in various industries