Counselors are available to assist parents and students with course selections and career planning. Parents may arrange to meet with the counselor by calling the school's guidance department.

**COURSE DESCRIPTION**
In today’s extremely competitive job market, it is more important than ever to have a marketable skill. Students who complete Trade and Industrial programs have the option to enter the job market directly or to continue their studies at two- or four-year colleges, community colleges, apprenticeship programs or professional technical institutions. Students learn Virginia’s 21 Workplace Readiness Skills within the content area. Those who are completing a two-year sequence have the opportunity to verify their knowledge of the workplace readiness skills through an industry assessment.

This one-year course of student provides students with the opportunity to use 3ds max software to create, modify, light, animate and add special effects to virtual 3d models and environments that can be used to simulate activities in the medicine, transportation, military and in the gaming and advertising fields, just to name a few. Students should be co-enrolled in or previously successfully completed geometry. Some Computer Aided Drafting (CAD) experience is preferred. The majority of M & S post graduates pursue college degrees in Graphic Design, Computer Science and Engineering-related programs.

**CERTIFICATION**
Students prepare for the Auto Desk 3D Studio max Certification.

**STUDENT ORGANIZATION**
Skills USA is a co-curricular organization for all students enrolled in the trade and industrial education program. Participation in this organization provides opportunities for leadership development and recognition through competitive events at the local, regional and state levels. Students are highly encouraged to participate.

**PREREQUISITE**
None

**OPTIONS FOR NEXT COURSE**
Digital Design I, Engineering Technology I

**REQUIRED STUDENT TEXTBOOK**
None
Demonstrating Workplace Readiness Skills: Personal Qualities and People Skills
1. Demonstrate positive work ethic.
2. Demonstrate integrity.
3. Demonstrate teamwork skills.
4. Demonstrate self-representation skills.
5. Demonstrate diversity awareness.
6. Demonstrate conflict-resolution skills.
7. Demonstrate creativity and resourcefulness.

Demonstrating Workplace Readiness Skills: Professional Knowledge and Skills
8. Demonstrate effective speaking and listening skills.
9. Demonstrate effective reading and writing skills.
10. Demonstrate critical-thinking and problem-solving skills.
11. Demonstrate healthy behaviors and safety skills.
12. Demonstrate an understanding of workplace organizations, systems and climates.
13. Demonstrate lifelong-learning skills.
14. Demonstrate job-acquisition and advancement skills.
15. Demonstrate time-, task- and resource-management skills.
16. Demonstrate job-specific mathematics skills.
17. Demonstrate customer-service skills.

Demonstrating Workplace Readiness Skills: Technology Knowledge and Skills
18. Demonstrate proficiency with technologies common to a specific occupation.
19. Demonstrate information technology skills.
20. Demonstrate an understanding of Internet use and security issues.
21. Demonstrate telecommunications skills.
22. Examining All Aspects of an Industry
23. Examine aspects of planning within an industry/organization.
24. Examine aspects of management within an industry/organization.
25. Examine aspects of financial responsibility within an industry/organization.
26. Examine technical and production skills required of workers within an industry/organization.
27. Examine principles of technology that underlie an industry/organization.
28. Examine labor issues related to an industry/organization.
29. Examine community issues related to an industry/organization.
30. Examine health, safety and environmental issues related to an industry/organization.

Addressing Elements of Student Life
31. Identify the purposes and goals of the student organization.
32. Explain the benefits and responsibilities of membership in the student organization as a student and in professional/civic organizations as an adult.
33. Demonstrate leadership skills through participation in student organization activities, such as meetings, programs and projects.
34. Identify Internet safety issues and procedures for complying with acceptable use standards.

Getting Started Modeling
35. Identify different elements of the 3ds max interface.
36. Describe the functions of the elements of the 3ds max interface.
37. Explain the drawing planes used by 3ds max.
38. Set up a modeling session.
Save, close and open a 3ds max file

Creating Basic 3D Geometry (Standard Primitives)

Explain standard primitives.
Define parametric modeling.
Draw 3ds max standard primitives.

Creating Extended Primitives and Patch Grids
Define extended primitives.
Create various extended primitives.
Define patch grids.
Create a quad patch grid.
Create a tri patch grid.
Identify and practice good workplace readiness skills (work ethic and reading)

Creating Basic 3D Geometry (Shapes)
Define a 3ds max shape.
Identify the types of 3ds max spline shapes.
Create various 3ds max shapes.
Create text.
Create a section

Model Editing
Describe the different ways to reverse actions in 3ds max.
Explain different ways to select objects.
Define transforms and modifiers.

Transform objects.
Apply modifiers.
Explain and use sub-object mode.
Edit splines.
Hide and display objects.
Group, align, array and mirror objects using 3ds max tools.

Creating Compound Objects
Define loft objects, Boolean objects and terrain objects.
Create loft objects, Boolean objects and terrain objects.

Introduction to Materials and Rendering
Define rendering.
Explain materials.
Get a material from a library.
Apply a material to an object.
Create a rendering.
Save a rendering to a file.
Use image software to edit images.
Display an Active Shade viewport.
Modeling with Modifiers
79     Describe the functions of the mesh select and patch select modifiers.
80     Explain how an object with an edit patch modifier applied differs from an editable patch object.
81     Identify and use free form deformer modifiers (FFD).
82     Identify the types of materials used with a material modifier.
83     Explain the uses for xform and linked xform modifiers.
84     Identify applications for a normalize spline modifier.
85     List the major differences between world space modifiers and object space modifiers.

Advanced Compound Objects
86     Explain how to loft multiple shapes.
87     Create complex loft objects.
88     Explain the purpose of the Snap: spinner for a loft object.
89     Identify components of the Deformation dialog box.
90     Define and apply deformations.
91     Remove a twist from a loft object.
92     Explain morph, connect, Shape Merge and mesher objects.
93     Create a snapshot of displacement scene.

Adding Lighting
94     Create and use properly colored light and different types of lights.
95     Explain what a light is in relation to 3D modeling and animation.
96     Identify the four types of basic lighting in 3ds max.
97     Summarize lighting theory.

Adding Cameras
98     Define what a camera is in 3ds max.
99     Create cameras.
100    Define safe frame.
101    Explain and use camera matching.
102    Animate a camera.
103    Link a camera to an object for animation.

Hierarchy and Linking
97     Explain a hierarchy and list several advantages of its use.
98     Define terms used to describe hierarchies.
99     List the two types of hierarchical relationships 3ds max can create.
100    Explain the two general rules that apply to hierarchies.
101    Link child objects to parent objects.
102    Adjust pivot points.
103    Specify inheritance.
104    Lock object transformations.
105    Assign a link constraint.

Creating Basic Materials
106    List the types of materials you can create with 3ds max.
107    Explain the characteristics of different shading types.
108    Identify the components of a material’s color.
Explain opacity and diffuse color.
Create basic materials.

**Animation Concepts**
Use 3-D modeling to define computer animation.
Identify the purpose of and analyze an existing storyboard.
Explain keys.
Set the animation length.
Define object motion blur and image motion blur.
Apply motion blur.
Use the Snapshot tool.
Define a dummy object.
Use a dummy object.
Use key elements of design to create storyboard.

**Rendering and Animation Concepts**
Explain the purpose of a preview animation.
Create a preview animation.
Change the background.
Set the animation output size.
Define alpha channel and explain its purpose.
Explain and apply rendering effects.
Render a final animation.

**Using Track View**
Identify parts of the Track View interface.
Define Track View.
Use block controllers.
Control object visibility using Track View.
Add notes and sound using Track View.
Add and adjust keys.
Explain the dope sheet and curve editor.

**Careers and Electronic Portfolio**
Create an Electronic Career Portfolio.
Generate a multi-media portfolio that includes examples of original student work.
Create documents for job seeking and placement. (Resume, cover letter, application, thank you)
Research careers related to computer animation.
Identify Internet safety issues and procedures for complying with acceptable use.
Aaron C. Spence, Ed.D., Superintendent
Virginia Beach City Public Schools
2512 George Mason Drive, Virginia Beach, VA  23456-0038

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For further information please call (757) 263-1070.

Notice of Non-Discrimination Policy
Virginia Beach City Public Schools does not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation/gender identity, pregnancy, childbirth or related medical condition, disability, marital status, age, genetic information or veteran status in its programs and activities and provides equal access to the Boy Scouts and other designated youth groups. School Board policies and regulations (including, but not limited to, Policies 2-33,4-4, 5-7, 5-19, 5-20, 5-44, 6-7, 6-33, 7-48, 7-49, 7-57 and Regulations 2-33.1, 4-4.1, 4-4.2, 4-4.3, 4-6.1, 5-44.1,7-11.1, 7-17.1 and 7-57.1) provide equal access to courses, programs, counseling services, physical education and athletic, vocational education, instructional materials and extracurricular activities.

To seek resolution of grievances resulting from alleged discrimination or to report violations of these policies, please contact the Title VI/Title IX Coordinator/Director of Student Leadership at (757) 263-2020, 1413 Laskin Road, Virginia Beach, Virginia, 23451 (for student complaints) or the Section 504/ADA Coordinator/Chief Human Resources Officer at (757) 263-1133, 2512 George Mason Drive, Municipal Center, Building 6, Virginia Beach, Virginia, 23456 (for employees or other citizens). Concerns about the application of Section 504 of the Rehabilitation Act should be addressed to the Section 504 Coordinator/ Executive Director of Student Support Services at (757) 263-1980, 2512 George Mason Drive, Virginia Beach, Virginia, 23456 or the Section 504 Coordinator at the student’s school. For students who are eligible or suspected of being eligible for special education or related services under IDEA, please contact the Office of Programs for Exceptional Children at (757) 263-2400, Laskin Road Annex, 1413 Laskin Road, Virginia Beach, Virginia, 23451.

Alternative formats of this publication which may include taped, Braille, or large print materials are available upon request for individuals with disabilities. Call or write The Department of Teaching and Learning, Virginia Beach City Public Schools, 2512 George Mason Drive, P.O. Box 6038, Virginia Beach, VA 23456-0038. Telephone 263-1070 (voice); fax 263-1424; 263-1240 (TDD) or email at Charles.Hurd@vbschools.com.

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CHARTING THE COURSE

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