

William D. Ford Career and Technical Center

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2024-2025

3D Visualization and IT

State CIP: 11.0201 Computer Programming, Programmer
Course Number: V7110
PSN: 19024

Instructor: Griffin Watson

NOTICE: It may be necessary to modify this document during the year. A current version will be available online.

Course Description

This course introduces students to 3D modeling and animation using the Maya software. Students will also be developing their 3D modeling skills as they start to explore the field of 3D art.

The instructor also has an in-class tech library which is an added resource. This library is conveniently set in the classroom and students are encouraged to use these items to accomplish course assignments. When time permits, students may also pursue self-directed learning in advanced/specialized topics such as databases, Java, C++, art, IT, and animation.

Electronic Resources

The course employs a great deal of technology and therefore utilizes many online resources. The instructor will supply students with links that range from instructor-created materials to online tutorials applicable to student tasks. In addition, students are encouraged to enrich the learning community by sharing exceptional resources they find.

One final student resource is the course website. Students register at this site at the beginning of the year and then receive agendas, resources, assignments, etc. by logging in each day. The site is Internet-based and available to the student (as well as parents/guardians) at any time. The starting page for the site is:

<http://classroom.google.com>

Course Credit

This is a year-long course (2 semesters) that meets each weekday (Monday through Friday). Upon successful completion of each semester, students earn 1.5 credits*. Articulation credit may be earned based on instructor review.

Projects

Students will create many games/programs throughout the course. Periodically, people outside of class will review/evaluate student work. The goal of these projects is to give students direct experience creating, documenting, and evaluating code projects and game creations. Some example projects include:

- Tea Set
- Weapon rack
- Room Design
- Scene Animation

- Portfolio

State CTE Competencies & Units Covered:

- CTE Competencies B1 - Sem 1
 - Identify and analyze customer needs
- CTE Competencies B2 - Sem 1
 - Demonstrate effective use of tools
- CTE Competencies B3 - Sem 1
 - Demonstrate software applications to data solutions
- CTE Competencies B4 - Sem 1
 - Create Proper Technical/end-user documentation
- CTE Competencies B5 - Sem 1
 - Demonstrate Knowledge of secure programming and software patching
- CTE Competencies B6 - Sem 1
 - Describe the nature and types of business structures
- CTE Competencies B7 - Sem 1
 - Employ project management skills to oversee development
- CTE Competencies B8 - Sem 1
 - Implement quality control systems
- CTE Competencies B9 - Sem 1
 - Understand and describe the software dev cycle
- CTE Competencies B10 - Sem 1
 - Demonstrate knowledge of device cross-platform development
- CTE Competencies C1 - Sem 1
 - Importance of professional ethics and legal responsibilities
- CTE Competencies C2 - Sem 1
 - Applying copyright laws
- CTE Competencies C3 - Sem 1
 - Use design processes to produce IT products and services
- CTE Competencies C4 - Sem 1
 - Demonstrate equity, inclusion, diversity, and accessibility
- CTE Competencies C5 - Sem 1
 - ADA compliance
- CTE Competencies C6 - Sem 1
 - Employee rights and responsibilities
- CTE Competencies C7 - Sem 1
 - Develop professional portfolio
- CTE Competencies A1 - Sem 2
 - Knowledge of hardware components and software applications
- CTE Competencies A2 - Sem 2
 - Identify and compare new IT trends
- CTE Competencies A3 - Sem 2
 - Backup solutions
- CTE Competencies A4 - Sem 2
 - Recognize and analyze potential IT security and threats
- CTE Competencies A5 - Sem 2
 - Demonstrate knowledge of network integrity
- CTE Competencies A6 - Sem 2
 - Identify and describe quality assurance
- CTE Competencies A7 - Sem 2

- Interpret documentation and analyze data

Timeline Planning

Below is a general indication of topics covered during a 10-week marking period; *modifications may be necessary*.

Semester 1 Topics

MP 1

Intros and Surveys, 3D modeling techniques and styles, 3D lighting, 3D texturing, 3D rendering, Programming Languages, Google Classroom, File Types and Sizes, Pre-tests, PBiS, Intro G Suite, Memory, and Binary, Intro Python, Python Challenges, Safety: Basic Office/ Tech, File and Folders, Video Tutorials Creation, Excel: Data Entry and Analysis, Intro to Agile Development Model

MP 2

Inventory game, Intro to Git, Safety: Cybersecurity, Python Skills Test, Excel Graphs, 3D modeling Feedback and Analysis, Exam Preparation, Review, and Exams

Semester 2 Topics

MP 3

3D Animation Introduction, Program Modifications, Testing, and Quality Assurance, Agile Collaborative Software Development, Git Repositories, Personal Goals and Skills, Large Scale Projects, Team Pipeline Workflow

MP 4

IoT Advanced Projects, Exploration: More Tools for Development, Software Revisions, IoT Competition, Portfolio, and Final Project, Presentations and Review

Evaluation and Grading

Students are evaluated in a variety of ways. In addition to regular assignments and coursework, students are given Skills Tests upon completion of certain units. These tests are designed to determine both how well a student can explain key concepts (in written form) as well as how well he/she can perform certain skills (actually creating solutions using the computer). Students earn points for assignments and these are then the basis for determining a marking period grade. A student's grade is determined by how many of the available points he/she has earned. Based on the percentage of points earned, a student will be assigned a letter grade:

89% or higher = A

88.9% - 79% = B

78.9% - 69% = C

68.9% - 59% = D

under 58.9% = E

Student Leadership

All students will apply their knowledge and leadership skills through classroom competitions. The goal of these competitions is for students to develop workplace competencies, such as teamwork, leadership, communication, critical thinking, and academic proficiency that are aligned with industry standards and expectations. Leadership skills are fostered by encouraging students to develop and participate in planning and decision-making, as well as running for elected positions within the classroom. All projects are developed and evaluated by people in the industry. Students may also participate in individual contests with other Career Tech Centers and post-secondary institutions.

Employability

As a facility, the William D. Ford Career Technical Center has chosen to address “Employability” as a key area to both track and promote employer-desired practices. As a result of building discussions and input from our local business partners, we have found that attendance, attitude, and effort (work ethic) are primary concerns related to a person’s employability. A score reflecting each student’s overall **employability is tracked weekly and graded.**

In order to be successful in a career you have to be at your job on time. Students parents will be notified after 3 days of unexcused absences. After 5 days of unexcused absences, the family will receive a letter, and after 10 days of unexcused absences, the issue will be brought to the principals who will decide what actions will take place from there. If a student is tardy, they miss out on that day's warm-up assignment points. 5 tardies will result in a call home. 10 Tardies will result in a loss of the student's parking permit if they have one. Anything further than that will be forwarded to the principals.

The classroom policies regarding classroom conduct prioritize an atmosphere of focused learning and active participation. Students are kindly reminded that eating during class is restricted to a designated 10-minute break, ensuring minimal disruption to the learning environment. If a student brings food to the classroom, it will have to remain in their bag until our 10-minute break. If a student arrives late with food, the school may talk to the student about the importance of being on time and ready for class. This measure is in place to maintain a clean and distraction-free setting. Additionally, students are encouraged to remain attentive during lessons, and the policy against sleeping in class supports this goal. It's understood that attentive engagement enhances the learning experience for all. Furthermore, the school recognizes the significance of minimizing digital distractions. Therefore, students are required to refrain from using their phones during lectures and to address any unfinished assignments during class time. These guidelines collectively contribute to a conducive learning atmosphere that fosters concentration, interaction, and academic growth.

Students may receive high marks by consistently working productively, taking a leadership role, assisting other students, or seeking out additional topics of study/work from the instructor. Students will be marked down if their behavior/attitude is inappropriate. Some examples of inappropriate behavior include tardiness, not doing work, being unable to work well with others, and abusing equipment and/or school property.

Work-Based Learning

Work-based learning is a valuable experience in which every student in Career and Technical Education is required to participate. All students will be given opportunities to attend at least one field experience each school year. Those students who do not attend the scheduled experience(s) will be required to find a site where they will spend a minimum of one class period in a business related to their program of study. The student will be required to get the teacher’s signed permission, and the parent/guardian’s signed permission, fill out a training agreement to be signed by the site supervisor and provide their transportation to and from the site. Upon completion of the field experience, the student will turn in a question-and-answer assignment provided by the teacher regarding the experience.

This year, it will be the student's job to find 2 positions to shadow over the year. 1 will be in the fall, and 1 will be in the spring. This has to be anything related to the technology field. The positions they can shadow can be IT jobs, Game Design positions, Animation, and so on. Students will write a small report

Additional Activities & Optional Credentials

- National Career-Technical Honor Society (min. course GPA & overall GPA)
- IT Fundamentals Pro Certification

- Microsoft Office Specialist Certification (multiple options available)
- Google Certification
- Advanced Placement Test in Computer Science
- Year 2 of Course: Students must receive an 85% or above in both the first and second semester of their first year, miss less than 20 days for the school year, and receive permission from the Instructor to attend.

Students in this course are eligible to sit for the Programming YouScience exam(s), YouScience 3D Art Exam, and Python PCEP Exams if they receive an A, which provides industry credential(s) that will support students in gaining employment in the future. William D. Ford Career Technical Center's students with a grade of C or higher are eligible. This opportunity is offered at no cost to families.

Post Secondary Articulated Credit

Students may be eligible to receive free college credit for the successful completion of this course. The qualifications and number of college credit hours available vary by program and the college with which it is affiliated. This course has articulated credit agreements with the following colleges/ universities:

- Baker College
- Ferris State University
- Washtenaw Community College
- Schoolcraft College
- Wayne County Community College

Classroom Rules & Acceptable Use Policy

We have an impressive array of equipment available for **students' educational use**. Students must behave appropriately and use district property as intended. To ensure safety and equipment availability, parents and students are asked to **review and sign off** on the following expectations and guidelines.

1. District Equipment & Property

- a. School tools (computers, cameras, scanners, tablets, microphones, etc.) are the property of the district and are to be used **solely** in the pursuit of learning and mastering course skills.
- b. Any use of district property not related to class activities and assigned coursework is not allowed.
- c. If a student is unsure how to use equipment *properly* he/she is responsible for checking with the instructor. If the appropriateness of the activity is unclear, students shall seek permission beforehand.
- d. Students are expected to know and follow proper techniques for using any equipment used in class. If a student is unclear about how to use/care for equipment, he/she shall seek assistance beforehand.
- e. **Tampering with equipment in the classroom and/or network is taken seriously and has resulted in disciplinary and/or legal action.**

2. Classroom Safety

- a. Students are expected to know and follow proper safety measures for day-to-day activities as well as for emergencies. Procedures are discussed & demonstrated in class.

3. Personal Electronics

- a. To encourage a proper focus on classroom activities and learning, students are expected to **keep personal electronic devices turned off unless permitted by the instructor**. Examples of devices include cell phones, MP3/music players, and game systems. If a student uses a device during break time, he/she is responsible for having the item properly **turned off when the break ends**. If a device is needed *before school or after class has ended*, students shall **put it away during class time**. Students are responsible for the security of items they bring to school.
- b. Students who use devices when NOT given appropriate permission will surrender their equipment to the teacher until the remainder of the class period. If a student accumulates three infractions, disciplinary action will be taken. Non-compliance will result in disciplinary action.

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