



Department of Teaching & Learning
Parent/Student Course Information

Software and Game Development
(BE 6641)

One Credit, One Year

Grades 10 - 12

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

You can play a game on Xbox or on your phone, but can you actually “create a game” for them? Software and Game Development serves as an introduction for students interested in learning fundamental programming concepts, using Game Maker, Visual Studio, C# and the Unity Game Engine. Advanced Software and Game Development students are introduced to Database programming, Mobil App development and advanced programming concepts using Java. End of course projects have included games created in Unity Game Engine, Unreal Game Engine, games using the Oculus Rift and programming the TCC Planetarium. Students will prepare for the National Occupational Competency Testing Institute (NOCTI) assessment in Computer Programming in the first year. During the second year, they will take the Microsoft Office Specialist Access Certification and be eligible to sit for the AP Computer Science Exam.

CERTIFICATION

Students will prepare for the National Occupational Competency Testing Institute (NOCTI) assessment in Computer Programming.

STUDENT ORGANIZATION

The Future Business Leaders of America (FBLA) is the co-curricular organization for secondary Business and Information Technology students. The organization enhances occupational preparation for students by helping them attain the following goals: leadership skills; knowledge of the American enterprise system; self-confidence; improvement of home, business, and community; scholarship; citizenship; and career goals.

PREREQUISITE

None

OPTIONS FOR NEXT COURSE

Advanced Software and Game Development

REQUIRED STUDENT TEXTBOOK

None

COMPETENCIES FOR SOFTWARE AND GAME DEVELOPMENT

Demonstrating Workplace Readiness Skills: Personal Qualities and People Skills

- 001 Demonstrate positive work ethic.
- 002 Demonstrate integrity.
- 003 Demonstrate teamwork skills.
- 004 Demonstrate self-representation skills.
- 005 Demonstrate diversity awareness.
- 006 Demonstrate conflict-resolution skills.
- 007 Demonstrate creativity and resourcefulness.

Demonstrating Workplace Readiness Skills: Professional Knowledge and Skills

- 008 Demonstrate effective speaking and listening skills.
- 009 Demonstrate effective reading and writing skills.
- 010 Demonstrate critical-thinking and problem-solving skills.
- 011 Demonstrate healthy behaviors and safety skills.
- 012 Demonstrate an understanding of workplace organizations, systems and climates.
- 013 Demonstrate lifelong-learning skills.
- 014 Demonstrate job-acquisition and advancement skills.
- 015 Demonstrate time-, task- and resource-management skills.
- 016 Demonstrate job-specific mathematics skills.
- 017 Demonstrate customer-service skills.

Demonstrating Workplace Readiness Skills: Technology Knowledge and Skills

- 018 Demonstrate proficiency with technologies common to a specific occupation.
- 019 Demonstrate information technology skills.
- 020 Demonstrate an understanding of Internet use and security issues.
- 021 Demonstrate telecommunications skills.

Examining All Aspects of an Industry

- 022 Examine aspects of planning within an industry/organization.
- 023 Examine aspects of management within an industry/organization.
- 024 Examine aspects of financial responsibility within an industry/organization.
- 025 Examine technical and production skills required of workers within an industry/organization.
- 026 Examine principles of technology that underlie an industry/organization.
- 027 Examine labor issues related to an industry/organization.
- 028 Examine community issues related to an industry/organization.
- 029 Examine health, safety and environmental issues related to an industry/organization.

Addressing Elements of Student Life

- 030 Identify the purposes and goals of the student organization.
- 031 Explain the benefits and responsibilities of membership in the student organization as a student and in professional/civic organizations as an adult.
- 032 Demonstrate leadership skills through participation in student organization activities, such as meetings, programs and projects.
- 033 Identify Internet safety issues and procedures for complying with acceptable use standards.

Exploring Programming Concepts

- 034 Describe the development of computers and current industry trends in the programming field.
- 035 Describe the development of programming languages and applications.
- 036 Describe the functions of computer hardware, software and computer theory.

- 037 Compare computer operating systems.
- 038 Identify the software development life cycle (SDLC).
- 039 Describe the development environment for a specific programming language.

Using Algorithmic Procedures

- 040 Analyze the problem statement.
- 041 Create possible solutions to the problem.
- 042 Determine the best solution to the problem.

Implementing Programming Procedures

- 043 Design a program using an algorithm, pseudocode, a flowchart and/or a decision table.
- 044 Code the program, using a programming language.
- 045 Test the program with sample data.
- 046 Debug the program.
- 047 Document the program.
- 048 Describe maintenance procedures.

Mastering Programming Fundamentals

- 049 Identify syntax errors of a given programming language.
- 050 Identify industry standards for a graphical user interface (GUI).
- 051 Create a graphical user interface that adheres to industry standards.
- 052 Code a program that will produce formatted output.
- 053 Code an application that uses arithmetic operations and built-in functions.
- 054 Write a program that uses variables and constants.
- 055 Write a program accepting user input.
- 056 Write a program that uses arrays.
- 057 Write a modular program that uses functions or methods.
- 058 Write a program that uses conditional structures.
- 059 Write a program that uses looping structures.
- 060 Write a program that uses counters and/or accumulators.
- 061 Identify the purpose of an executable file.

Developing Interactive Multimedia Applications

- 062 Create an object-oriented program.
- 063 Code a program to display graphics.
- 064 Code a program to incorporate multimedia.
- 065 Code a program to animate objects.
- 066 Examine the history of game design and development.
- 067 Analyze the impact of intellectual property law on game design.
- 068 Identify the target markets for game applications.
- 069 Identify game genres.
- 070 Examine a variety of game programming platforms.
- 071 Create a storyboard.
- 072 Code a program from the storyboard.
- 073 Create an object within the context of a game.
- 074 Specify behaviors of an object within the context of a game.
- 075 Develop a game program that uses a scoring method.
- 076 Create a game program with multiple levels.

Using Web Technology

- 077 Explain how to locate resources and references to aid program development.

- 078 Evaluate the validity of sample code obtained from the Internet and other sources.
- 079 Develop a Web page using HTML and/or JavaScript.
- 080 Publish a program link on a Web page.

Preparing for Industry Certification

- 081 Describe the process and requirements for obtaining industry certifications related to the Programming course.
- 082 Identify testing skills/strategies for a certification examination.
- 083 Demonstrate ability to successfully complete selected practice examinations (e.g., practice questions similar to those on certification exams).
- 084 Successfully complete an industry certification examination representative of skills learned in this course (e.g., MCP, IC3, NOCTI).

Developing Employability Skills

- 085 Identify careers in the information technology industry.
- 086 Describe ways that computer programs can be used in business and industry.
- 087 Create or update a résumé.
- 088 Investigate information technology educational and job opportunities.
- 089 Assemble a professional portfolio.
- 090 Describe basic employment activities.
- 091 Deliver an oral presentation of the professional portfolio.
- 092 Identify potential education and employment barriers for nontraditional groups and ways to overcome those barriers.

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

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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.

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