

PROGRAM BENEFITS

- BC is recognized as an international digital entertainment centre for console and mobile game production, and app design. As a result, video game production companies, including EA Sports, Capcom, Black Tusk Studios, Relic Entertainment, United Front Games have strategically chosen locations in Metro Vancouver and employment opportunities in this industry are expanding.
- DigiPen courses provide students with an opportunity to participate in the curriculum of a recognized video game university (DigiPen) while gaining valuable experience in hands on game creation.
- Cross Curricular connections will include Math, Geometry, Physics, Computer Science and the Arts.
- Earn elective credits in grades 10, 11 and 12.

COURSE SEQUENCE

Year 1 (2 BLOCKS)

Game Programming Level 1: 2D Video Games

This class launches students into the world of computer programming through the practice of writing code for video games. The emphasis in this course is on learning the foundational programming concepts — including variables, conditional statements, and loops — that form the basis of games and other programs. Students are also introduced to concepts in physics, graphics, and audio libraries while programming the logic for a series of 2D games.

Students will learn:

- Coding basics such as variables, conditionals, iterations, and functions
- Basic video game programming concepts, including character behaviors, sound effects, music, and processing user input
- Game development math concepts such as 2D coordinate systems, vectors, linear equations, and quadratics
- Physics topics such as gravity, friction, opposing forces, and momentum

Video Game Development Level 1

This course looks at the other disciplines needed to create a game, including game design, art production, and sound design. You will gain not only a new appreciation for the hard work that went into making your favorite games, but also the tools to start bringing your own game ideas to life.

Students will learn:

- The video game production process, including writing design documents, game testing, and problem solving
- Game design principles, including game balance and effective interface design
- Art production processes and tools

Year 2 (2 BLOCKS)

Game Programming Level 2: 2D and 3D Video Games

Expanding on the knowledge and skills learned in Game Programming Level 1, students will study more advanced programming concepts — allowing them to create more exciting and robust projects. Topics covered include functions and graphical programming. This includes larger projects that incorporate concepts from both Game Programming Level 1 and Level 2.

Students will learn:

- Intermediate programming techniques
- Graphics principles and Cartesian mathematical concepts
- Design and execution of larger programming projects

Video Game Development Level 2

Building on what you learned in Video Game Development Level 1, you will dive deeper into the other disciplines needed to create a game, including game design, art production, and sound design. You will be creating an art style guide and a mock game screen for your game. As well as learning about the theories and principles of good game design.

Students will learn:

- Principles and theories of 2D game design and system design
- Art production process using thumbnails, research, value composition, and final render

Year 3-5

Game Programming and Game Development Level 3: 2D and 3D Video Games

Students will form game development teams and create their own 2D or 3D game. Students will also learn more in-depth skills needed to create those games such as creating animation and 3D modeling.

Students will learn:

- Principles of animation and creating animations in the Unity Game Engine
- 3D modeling using Blender
- Principles and theories of 3D game design and system design
- Skills needed to work as a part of a game development team

Mobile App Development

Mobile devices like phones and tablets have created countless new possibilities for skilled software developers. This class teaches you how to program mobile apps while building on the programming concepts learned in the earlier courses. Students will create a variety of applications for a tablet computer to see just how developers take advantage of these powerful devices.

Students will learn:

- User experience, interface design, and programming using Java
- Math concepts like variables, number systems, and coordinate systems
- Unique mobile app development challenges, including the distribution process and channels for mobile apps

FURTHER OPPORTUNITIES

The District will be connecting with relevant partner groups to facilitate the possibilities of:

- Advanced credit in Computing Science Departments of local colleges/universities or at the DigiPen Redmond or Singapore campuses.
- Workplace practicums with local game development companies.

Based out of Redmond, Washington, the DigiPen Institute of Technology offers a variety of programs in Computer Science, Animation, Video Game Development, and Game Design.