



# Windsor Secondary School

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At Windsor Secondary School we strive to treat each other with respect and dignity, appreciate diversity, actively pursue lifelong learning through different opportunities and value everyone's right to work and learn in a safe, supportive, challenging environment.

## COURSE OUTLINE

**SUBJECT:** Computer Programming 12  
(<https://curriculum.gov.bc.ca/curriculum/adst/12/computer-programming>)

**BIG IDEAS:**

The design cycle is an ongoing reflective process.

Personal design choices require self-exploration, collaboration, and evaluation and refinement of skills.

Tools and technologies can be adapted for specific purposes.

### CURRICULAR COMPETENCIES:

*Students are expected to be able to do the following:*

#### Applied Design

##### Understanding context

- Conduct user-centred research to understand design opportunities and barriers

##### Defining

- Establish a point of view for a chosen design opportunity
- Identify potential users, intended impact, and possible unintended negative consequences
- Make decisions about premises and constraints that define the design space

##### Ideating

- Identify gaps to explore a design space
- Generate ideas and add to others' ideas to create possibilities, and prioritize them for prototyping
- Critically analyze how competing social, ethical, and sustainability considerations impact designed solutions to meet global needs for preferred futures
- Work with users throughout the design process

##### Prototyping

- Identify and apply sources of inspiration and information
- Choose an appropriate form, scale, and level of detail for prototyping, and plan procedures for prototyping multiple ideas
- Analyze the design for the life cycle and evaluate its impacts
- Construct prototypes, making changes to tools, materials, and procedures as needed
- Record iterations of prototyping

## Testing

- Identify feedback most needed and possible sources of feedback
- Develop an appropriate test of the prototype
- Collect feedback to critically evaluate design and make changes to product design or processes
- Iterate the prototype or abandon the design idea

## Making

- Identify appropriate tools, technologies, materials, processes, and time needed for production
- Use project management processes when working individually or collaboratively to coordinate production

## Sharing

- Share progress while creating to increase feedback, collaboration, and, if applicable, marketing
- Decide on how and with whom to share or promote their product, creativity, and, if applicable, intellectual property
- Consider how others might build upon the design concept
- Critically reflect on their design thinking and processes, and identify new design goals
- Assess ability to work effectively both as individuals and collaboratively while implementing project management processes

## Applied Skills

- Apply safety procedures for themselves, co-workers, and users in both physical and digital environments
- Identify and assess skills needed for design interests, and develop specific plans to learn or refine them over time

## Applied Technologies

- Explore existing, new, and emerging tools, technologies, and systems to evaluate their suitability for their design interests
- Evaluate impacts, including unintended negative consequences, of choices made about technology use
- Analyze the role technologies play in societal change
- Examine how cultural beliefs, values, and ethical positions affect the development and use of technologies

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## CONTENT:

*Students are expected to know the following:*

- design opportunities
- design cycle
- advanced programming structures
- standardized source code documentation
- self-documenting code
- collaboration tools for programming
- advanced pair programming
- user interface design
- error handling
- debugging tools
- management of complexity
- uses of pre-built data structures

- bug reports and feature requests from users
- appropriate use of technology, including digital citizenship, etiquette, and literacy
- interpersonal skills necessary to work effectively within the IT sector