Computer Science – ICS4U
Course Information & Evaluation

This course enables students to further develop knowledge and skills in computer science. Students will use modular design principles to create complex and fully documented programs, according to industry standards. Student teams will manage a large software development project, from planning through to project review.

Students will also analyse algorithms for effectiveness. They will investigate ethical issues in computing and further explore environmental issues, emerging technologies, areas of research in computer science, and careers in the field.

PREREQUISITE: None

Overall Expectations

Programming Concepts and Skills

A1. demonstrate the ability to use different data types and expressions when creating computer programs;

A2. describe and use modular programming concepts and principles in the creation of computer programs;

A3. design and write algorithms and subprograms to solve a variety of problems;

A4. use proper code maintenance techniques when creating computer programs.

Software Development

B1. demonstrate the ability to manage the software development process effectively, through all of its stages ñ planning, development, production, and closing;

B2. apply standard project management techniques in the context of a student-managed team project.

Computer Environments and Systems

C1.demonstrate the ability to apply modular design concepts in computer programs;

C2.analyse algorithms for their effectiveness in solving a problem.

Topics in Computer Science

D1. assess strategies and initiatives that promote environmental stewardship with respect to the use of computers and related technologies;

D2. analyse ethical issues and propose strategies to encourage ethical practices related to the use of computers;

D3. analyse the impact of emerging computer technologies on society and the economy;

D4. research and report on different areas of research in computer science, and careers related to computer science.

Strands/Units Topics

1. Problem Solving Using Computers	7. Advanced Game Design
2. Program Structure	8. Artificial Intelligence and Artificial Life
3. Conditional Statements, Repetition with Loops, Data Structures	9. Computers In Society
	10. Computer Related Career Options
4. Object Oriented Programming	11. The Future, and Sustainable Computing
5. Computers as Tools for Simulation	
6. Programming Real-world Physics	12. Summative: (x2)

Course Text and Reference Resources

Real Basic Manual, Programming reference texts. Online material

Assessment & Evaluation Policy

Refer to the attached SWL Assessment and Evaluation Policy April 2011

Attendance Policy

Students are responsible for catching up on class notes and completing any assignments or tasks involving equipment for which they were absent. *It is up to the students to ask the instructor what they missed when they return*. Parents will be contacted for any student who skips class. After three such skips, the student will be referred to the Vice-Principal.

70% Formative Evaluation

Student evaluation is based on the Overall Expectation found in the Ontario Curriculum using various forms, such as, but, not limited to, quizzes, tests, assignments, projects, presentations, safety practices, and activities.

30% Summative Evaluation

Each student will complete two summative projects representing 30% of their mark.

Certain forms of these summative evaluations (exams, final tests, performance based tasks, etc.) are time sensitive. This means they must be completed at and within a specific time. Students must be present for these summative evaluations. Any absence will result in a mark of zero, unless validated by an official certificate. (ex. Medical Certificate). Students and parents will be informed well in advance of summative evaluation dates.

Classroom Expectations

1. Students are expected to be willing and active participants in all course activities. This includes completing all assignments both on time and with sufficient effort, and honoring all of their commitments. Every student is expected to keep a neat, well-organized notebook or portfolio

2. Students will contribute to a positive learning environment by: • practicing safe work habits at all times • being respectful to others and respecting their property • treating all equipment with care and ensuring proper knowledge of its operation • reporting unsafe or hazardous situations to the instructor • reporting software or equipment problems to the instructor • cleaning up their workspace and putting everything away before they leave the class* **Electronic storage devices and headphones can be used at the discretion of the teacher * No food or drink is permitted in any of the equipment areas.**