

# torontoeschool

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Course Name/Grade/Type:	Introduction to Computer Science, Grade 11, University Preparation
Course Code:	ICS3U
Credit Value:	1.0
Prerequisite:	None
Curriculum Policy:	The Ontario Curriculum, Grades 10 –12, Computer Studies, 2008
Department:	Computer Studies
Textbook:	None – notes and references will be on course webpage
Hours:	110
Developed By/Date:	Toronto eSchool, 2016
Course Description:	This course introduces students to computer science. Students will design software independently and as part of a team, using industry-standard programming tools and applying the software development life-cycle model. They will also write and use subprograms within computer programs. Students will develop creative solutions for various types of problems as their understanding of the computing environment grows. They will also explore environmental and ergonomic issues, emerging research in computer science, and global career trends in computer-related fields.

## Overall Expectations:

By the end of this course, students will:

Strand	Overall Expectations
<b>Programming Concepts and Skills</b>	A1. demonstrate the ability to use different data types, including one-dimensional arrays, in computer programs

	<p>A2. demonstrate the ability to use control structures and simple algorithms in computer programs</p> <p>A3. demonstrate the ability to use subprograms within computer programs</p> <p>A4. use proper code maintenance techniques and conventions when creating computer programs</p>
<b>Software development</b>	<p>B1. use a variety of problem-solving strategies to solve different types of problems independently and as part of a team</p> <p>B2. design software solutions to meet a variety of challenges</p> <p>B3. design algorithms according to specifications</p> <p>B4. apply a software development life-cycle model to a software development project</p>
<b>Computer Environments And Systems</b>	<p>C1. relate the specifications of computer components to user requirements</p> <p>C2. use appropriate file maintenance practices to organize and safeguard data</p> <p>C3. demonstrate an understanding of the software development process</p>
<b>Topics In Computer Science</b>	<p>D1. describe policies on computer use that promote environmental stewardship and sustainability</p> <p>D2. demonstrate an understanding of emerging areas of computer science research</p> <p>D3. describe postsecondary education and career prospects related to computer studies</p>

**Course Contents:**

<b>Unit</b>	<b>Topics and Descriptions</b>	<b>Time</b>
1	<p><b>The Computing Environment</b></p> <p>In this unit, students will examine the fundamental aspects of the computing environment: hardware, specifications peripheral devices, software and applications, operating systems and basic programming codes and languages.</p>	16 hours
2	<p><b>The Basics of Programming</b></p> <p>The essential philosophies and logic surrounding programming, including models for input, output, processing, and all related terminology will be studied. Programming basics will be introduced. Simple programs will be constructed, using a number of different logical, calculation and algorithm strategies.</p>	18 hours
3	<p><b>Introduction to Functions</b></p> <p>Expanding upon the material covered in Unit II, students will develop more advanced programs, and delve into the real-life aspects of clarifying program specifications from clients, describing phases, milestones and products of software development, and the strategies behind debugging and troubleshooting.</p>	18 hours

4	<b>Information Storage</b>  Drawing upon knowledge from the course so far, students will use various problem solving strategies to collect inputs, store information, and generate outputs. The differences between source code and machine code will be examined.	18 hours
5	<b>Using Data Structures</b>  This unit focuses upon the essential skills of structuring arrays, and writing programs that declare, initialize, modify and access these arrays. Strategies to plan programming/problem solving procedures will be proposed. Students will write algorithms with nested structures, and sub-programs, and algorithms that perform simple data management tasks.	17 hours
6	<b>Software Development and Graphics</b>  Independent study unit. A culminating project involving knowledge from the whole of the course as well as potential real life application.	13 hours
	<b>Final Evaluation</b>  The final assessment task will be comprised of two parts: a programming project representing the stages in the software development lifecycle and a final exam. Each of these two parts will constitute 15% of the final mark.	10 hours
	<b>Total</b>	<b>110 hours</b>

All course material is online, no textbook purchase required. Resources and references for course materials will be provided on course webpage. Students are expected to watch and read all lecture videos and reading materials provided, and complete relevant exercises at student's time of convenience.

Assignments are submitted electronically. Tests are completed online at a time convenient for the student, and the course ends in a final exam which the student writes under the supervision of a proctor approved by Toronto eSchool at a predetermined time and place. The final mark and report card are then forwarded to the student's home school.

#### **Assessment and Evaluation of Student Achievement:**

The purpose of assessment and evaluation is to improve student learning. Assessment and evaluation is based on the provincial curriculum expectations and the achievement levels outlined in the curriculum document. In order to ensure that assessment and evaluation are valid and reliable, and that they lead to the improvement of student learning, teachers use a variety of strategies throughout the course, including: providing students with feedback about their work (known as assessment for learning), helping to set learning goals and monitor their own progress (known as assessment as learning), and evaluation and reporting of progress in the form of grades and marks (known as assessment of learning).

The evaluation for this course is based on the student’s achievement of curriculum expectations and the demonstrated skills required for effective learning. The percentage grade represents the quality of the student’s overall achievement of the expectations for the course and reflects the corresponding level of achievement as described in the achievement chart for the discipline. A credit is granted and recorded for this course if the student’s grade is 50% or higher. The final grade for this course will be determined as follows:

- 70% of the grade will be based upon evaluations conducted throughout the course. This portion of the grade will reflect the student’s most consistent level of achievement throughout the course, although special consideration will be given to more recent evidence of achievement.
- 30% of the grade will be based on a final assessment task that occurs at or near the end of the course. In the case of this course, this final assessment task will take in two parts, a major comprehensive programming project and a final exam to be completed online under the supervision of a pre-approved proctor. Each of the two parts worth 15%, a total of 30% of the student’s final mark in the course.

The Achievement Chart for this Course of Study will be employed to guide students in assessing their own learning and planning strategies for improvement. Students will have the opportunity to complete the Ministry of Education exemplar projects or their equivalents for this Course of Study.

Overall and specific expectations will be assessed and evaluated based upon the following criteria:

- Knowledge / Understanding: 25%
- Thinking Skills: 25%
- Communication Skills: 20%
- Application / Making Connections: 30%

<b>A Summary Description of Achievement in Each Percentage Grade Range and Corresponding Level of Achievement</b>		
<b>Percentage Grade Range</b>	<b>Achievement Level</b>	<b>Summary Description</b>
80-100%	Level 4	A very high to outstanding level of achievement. Achievement is above the provincial standard.
70-79%	Level 3	A high level of achievement. Achievement is at the provincial standard.
60-69%	Level 2	A moderate level of achievement. Achievement is below, but approaching, the provincial standard.
50-59%	Level 1	A passable level of achievement. Achievement is below the provincial standard.
below 50%	Level R	Insufficient achievement of curriculum expectations. A credit will not be granted.

**Mark Breakdowns and Evaluation:**

I. Term Work:	70%
• Unit Assignments	25%
• Lesson Assignments	25%
• Communication and Discussion	20%
II. Final Evaluation:	30%
• Final Assignment	15%
• Final Exam	15%

**Late and Missed Assignments:**

Students are expected to:

- be responsible for providing evidence of their achievement of the overall expectations within the time frame specified by the teacher, and in a form approved by the teacher
- understand that there will be consequences for not completing assignments for evaluation and/or for submitting those assignments late
- use time productively, both online and offline

All submissions will be online and should be completed within given time frame. Late assignments will be assessed a penalty of 10% per a day, until day 10, in which no submission will be allowed.

Late or missed work accompanied by a doctor's note will receive no penalty.

**Academic Responsibility and Integrity:**

Practice is a crucial part for Computer Science. Students are expected to use all resources provided online, complete all exercises provided prior to solutions posted. Additionally, students are highly encouraged to go to our online discussion forum to ask questions and discuss course materials. Please do not post solutions to assignment questions on forum before due dates to avoid committing plagiarism.

It is essential for both educational and ethical reasons that each person does his/her own work. There is a distinction between getting help and copying. Learning tasks that students complete, as well as all assignments, tests and exams which students submit for evaluation must be their own work. Plagiarism, including electronic theft and misrepresentation of original work, cheating, theft of evaluation instruments, use of unauthorized aids and false representation of identity will result in appropriate consequences. Penalty for each plagiarized work is a 10% reduction in the final grade.

**Additional Information:**

Toronto e School is an electronic learning environment which provides and expects both online and offline learning activities. For more information about this, please refer to the School Information and School Calendar page under "About Us" section at the Toronto e School website ([torontoeschool.com](http://torontoeschool.com)).