



TORONTO WORLD SCHOOL

COURSE OUTLINE

Department: COMPUTER STUDIES

Course Developer: Miguel Velasco

Course Development Date: April 2024

Course Reviser/ Revision Date: TBD

Course Title/ Grade/ Type: Introduction to Computer Science, Grade 11

Course Code: ICS3U

Credit: 1.00

Total Hours: 110 hours

Policy Document: The Ontario Curriculum Grades 10 and 12 Computer Studies (Revised 2008)

Prerequisite: None

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 CURRICULUM EXPECTATIONS

Throughout the course, students will be provided with numerous and varied opportunities to demonstrate the full extent of their achievement of the curriculum expectations, across all four categories of knowledge and skills. Evaluations will reflect each student's most consistent level of achievement. The overall learning expectations for this course are encompassed in the following strands:

PROGRAMMING CONCEPTS AND SKILLS

By the end of this course, students will:

1. demonstrate the ability to use different data types, including one-dimensional arrays, in computer programs;
2. demonstrate the ability to use control structures and simple algorithms in computer programs;
3. demonstrate the ability to use subprograms within computer programs;
4. use proper code maintenance techniques and conventions when creating computer programs.

SOFTWARE DEVELOPMENT

By the end of this course, students will:

1. use a variety of problem-solving strategies to solve different types of problems independently and as part of a team;
2. design software solutions to meet a variety of challenges;
3. design algorithms according to specifications;
4. apply a software development life-cycle model to a software development project

COMPUTER ENVIRONMENTS AND SYSTEMS

By the end of this course, students will:

1. relate the specifications of computer components to user requirements;

2. use appropriate file maintenance practices to organize and safeguard data;
3. demonstrate an understanding of the software development process

TOPICS IN COMPUTER SCIENCE

By the end of this course, students will:

1. describe policies on computer use that promote environmental stewardship and sustainability;
2. demonstrate an understanding of emerging areas of computer science research;
3. describe postsecondary education and career prospects related to computer studies.

OUTLINE OF COURSE CONTENT

UNIT	UNIT DESCRIPTION	HOURS
Unit 1: Basics Of Computer Science	In this unit students will examine fundamental aspects of the computing environment including hardware specifications, peripheral devices, software and applications, operating systems and basic programming codes and languages.	28 hours
Unit 2: Basics Of Java Programming & Coding	This Unit covers the essential basics of the Java programming language. The concepts which are covered will form the building blocks of the Java programming language. These concepts are important and crucial as they are basic concepts of Java programming language.	26 hours
Unit 3: The next level programming in Java with IPO mode in Java	This unit will teach you about the logical structures that make programming powerful: loops. This unit will take you to the next level of how you think about and code a program. You will learn about a different way in which you can break down a programming problem and simplify to make the designing and coding process easier for yourself. You will also see more advanced ways of storing data and dealing with input in your programs.	26 hours

Unit 4: Advanced Programming & World of Technology	In this Unit students will learn about the fundamentals of the advanced programming with project planning and SDLC cycle. Investigate the career guidance for the computer science and Benefits of computer science to the Modern Life.	20 hours
Culminating Activity & Final Conference	Culminating Activity: Final Project Final: Student/Teacher Conference	10
Total Hours		110

TEACHING STRATEGIES

Strategies marked with “x” are used in the course.			
Game	X	Conferencing	X
Oral Presentation	X	Demonstration	X
Stimulation	X	Prompt	X
Survey	X	Review	X
Role Playing	X	Textbook	X
Collaborative	X	Workbook/Worksheets	X
Discussion	X	Homework	X
Interview	X	Independent Study	X
Peer Practice	X	Memorization	X
Peer Teaching	X	Note Taking	X
Reflection	X	Questioning Process	X
Inquiry Process	X	Research Process	X
Communication Applications	X	Classifying	X
Email Applications	X	Expressing Another Point of View	X

Strategies for Assessment and Evaluation of Student Performance

Diagnostic assessment is used at the beginning of a unit to assist in determining a starting point for instruction. Assessment for Learning (AFL) provides information to students as they are learning and refining their skills. Assessment as Learning (AAL) acts as a stepping-stone for students to begin applying their understanding using critical thinking; it bridges the gap between AFL and AOL. Assessment of Learning (AOL), at the end of units and course, provides students with the opportunity to synthesize/apply/demonstrate their learning and the achievement of the expectations. The following is a list of specific assessment/evaluation strategies that the teacher may use but is not limited to.

Assessment and Evaluation

Evaluation in this course will be continuous throughout the year and will include a variety of evaluation methods. The tools highlighted in yellow will be used for the three different types of assessments:

Assessment as Learning	Assessment for Learning	Assessment of Learning
Student Product ☐ Journals/Letters/Emails (checklist) ☐ Learning Logs (anecdotal) ☐ Learning Goals (Checklist) ☐ Entrance tickets ☐ Exit tickets	Student Product ☐ Assignment ☐ Journals/Letters/Emails (checklist) ☐ Pre-tests (scale/rubric) ☐ Peer feedback (anecdotal/checklist) ☐ Entrance ticket ☐ Vocabulary notebooks (anecdotal)	Student Product ☐ Assignment ☐ Journals/Letters/Emails (checklist) ☐ Tests (scale/rubric) ☐ Exam ☐ Reports (rubric) ☐ Essays (rubric)
Observation ☐ Whole class discussions (anecdotal) ☐ Self-proofreading (checklist)	Observation ☐ Class discussions (anecdotal) ☐ Debate (rubric) ☐ Performance tasks (anecdotal/scale)	Observation ☐ PowerPoint presentations (rubric) ☐ Performance tasks (anecdotal/scale)
Conversation ☐ Student teacher conferences (checklist) ☐ Small Group Discussions (checklist) ☐ Pair work (checklist)	Conversation ☐ Student teacher conferences (checklist) ☐ Small group discussions (checklist) ☐ Pair work (anecdotal) ☐ Peer-feedback (anecdotal) ☐ Peer-editing (anecdotal) ☐ Oral pre-tests (scale/rubric)	Conversation ☐ Student teacher conferences (checklist) ☐ Question and Answer Session (checklist) ☐ Oral tests (scale/rubric)

Online Activities (within LMS)	Offline Activities
Watching video lectures Watching additional resource videos Completing interactive activities Communicating with teachers Participating in virtual conferences Completing online quizzes Reviewing peer submissions Submitting all AAL, AFL, & AOL Assessment and Evaluations	Reading materials for the course Reviewing materials for the course Completing assignments Completing practice activities Preparing presentations Reviewing for exams and unit tests Researching topics on the internet Recording and producing presentations Practicing processes and skills Completing proctored unit tests and exams

The Final Grade:

The percentage grade represents the quality of the students' overall achievement of the expectations for the course and reflects the corresponding achievement as described in the achievement chart for Science. The distribution of marks into a grade is based on the departmental assessment and evaluation guide for the course and will reflect the student's most consistent level of achievement where appropriate. Comments on the development of learning skills and contributions to the course will be provided on reports. Term work will be 70% of the overall grade for the course; the final evaluation will be 30% of the overall grade, incorporating a Final project worth 20% and a student/teacher conference worth 10%.

Assessment and Percentage of Final Mark	
(Term) 70%	Unit 1 Assignment - Programming Language - (7%) [SP]
	Unit 1 Assignment - Inside the Computer - (7%) [SP]
	Unit 2 Assignment - Number Conversion - (8%) [SP]
	Unit 2 Test - (8%) [SP]
	Unit 3 Code Project - (10%) [SP/OBS/CONV]
	Unit 3 Assignment - Array in Java (10%) [SP]
	Unit 4 Cyber Threat - (10%) [SP/OBS] Unit 4 Careers in Computer Science - (10%) [SP/OBS]
30%	Final Project - (20%) [SP/OBS] Final - Student/Teacher Conference (10%) [CONV]

- Each Assessment of Learning (AoL) will be broken into the following categories and given the following weights: Knowledge/Understanding (25%), Inquiry/Thinking (25%), Communication (25%), and Application/Making Connections (25%).

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

Program Planning Considerations:

English language learners: As our school can have multilingual student population, special accommodation will be made to bring a rich diversity of background knowledge and experience to the classroom.

TWS courses can provide a wide range of options to address the needs of ESL/ELD students. Assessment and evaluation exercises will help ESL students in mastering the English language. In addition, since all occupations require employees with a wide range of English skills and abilities, many students will learn how the operation of their own physical world can contribute to their success in their social world. The student whose first language is not English enters Ontario Secondary schools with diverse linguistic and cultural backgrounds. All of these students bring a rich array of background knowledge and experience to the classroom, and all teachers must share in the responsibility for their English-language development. Teachers must incorporate appropriate strategies for instructions and assessment to facilitate the success of the English language learners in their classrooms. These strategies include:

- modification of some or all of the course expectations so that they are challenging but attainable for the learner at his or her present level of English proficiency, given the necessary support from the teacher;
- use of a variety of instructional strategies (e.g., extensive use of visual cues, scaffolding, manipulatives, pictures, diagrams, graphic organizers; attention to

clarity of instructions);

- modelling of preferred ways of working in English; previewing of textbooks; pre-teaching of key vocabulary; peer tutoring; strategic use of students' first languages);
- use of a variety of learning resources (e.g., visual material, simplified text, bilingual dictionaries, materials that reflect cultural diversity);
- use of assessment accommodations (e.g., granting of extra time; simplification of language used in problems and instructions; use of oral interviews, learning logs, portfolios, demonstrations, visual representations, and tasks requiring completion of graphic organizers or cloze sentences instead of tasks that depend heavily on proficiency in English).

Literacy education: Communication skills are fundamental to the development of literacy. Fostering students' communication skills is an important part of the teacher's role in the curriculum. When students read they need to understand vocabulary and terminology. Students are encouraged to use language with care and precision in order to communicate effectively. Students are encouraged to ask questions to their peers/teachers and to also be proactive with solving their own questions.

The role of information and communications technology: Information and communication technologies (ICT) provide a range of tools that can significantly extend and enrich teachers' instructional strategies and support students' learning. Teachers can use ICT tools and resources both for whole-class instruction and to design programs that meet diverse student needs. Technology can help to reduce the time spent on routine tasks, allowing students to devote more of their efforts to thinking and concept development.

Information technology is considered a learning tool that must be accessed by students when the situation is appropriate. As a result, students will develop transferable skills through their experience with word processing, internet research, and presentation software, as would be expected in any environment.

Technology also makes possible simulations of complex systems that can be useful for problem-solving purposes or when field studies on a particular topic are not feasible. Information and communications technologies can be used in the classroom to connect students to other schools, at home and abroad, and to bring the global community into the local classroom. Although the Internet is a powerful electronic learning tool, there are potential risks attached to its use. All students must be made aware of issues of Internet privacy, safety, and responsible use, as well as of the ways in which this technology is being abused – for example, when it is used to promote hatred.

Teachers, too, will find the various ICT tools useful in their teaching practice, both for whole class instruction and for the design of curriculum units that contain varied approaches to learning to meet diverse student needs.

Equity and Inclusive Education: The TWS equity and inclusive education strategy

focuses on respecting diversity, promoting inclusive education, and identifying and eliminating discriminatory biases, systemic barriers, and power dynamics that limit the ability of students to learn, grow, and contribute to society. In an environment based on the principles of inclusive education, all students, parents, caregivers, and other members of the school community - regardless of ancestry, culture, ethnicity, sex, physical or intellectual ability, race, religion, gender identity, sexual orientation, socio-economic status, or other similar factors - are welcomed, included, treated fairly, and respected. Diversity is valued, and all members of the TWS community feel safe, comfortable, and accepted. Every student is supported and inspired to succeed in a culture of high expectations for learning. In an inclusive education system, all students see themselves reflected in the curriculum, their physical surroundings, and the broader environment, so that they can feel engaged in and empowered by their learning experiences. In addition, TWS differentiates the instruction and assessment strategies to take into account the background and experiences, as well as the interests, aptitudes, and learning needs, of all students.

First Nation, Métis and Inuit Education Policy Framework

The new First Nation, Métis and Inuit Education Policy Framework is a key part of the strategy. The framework includes approaches for schools and school boards that will boost Aboriginal student achievement, help close the gap in achievement between Aboriginal and non-Aboriginal students, and improving students' literacy and numeracy skills, training teachers in teaching methods that are appropriate for Aboriginal students, and encouraging more parents to get involved in their children's education or school. The framework also sets out strategies to integrate First Nations, Métis and Inuit cultures, histories and perspectives throughout the Ontario curriculum. This will increase knowledge and awareness among all students.

Plagiarism/Cheating:

Any incident of plagiarism or cheating will result in a resubmission/rewrite of that particular assignment/test at the end of the course on the student's own time and at his/her own expense to pay for the creation and marking of a new assessment. The incident will be documented in the office. A second incident of plagiarism or cheating in any course will result in a mark of zero for that assignment. For example, if you cheat on a math test and then plagiarize an English essay, you will receive a zero on the essay.

Missed and Late Assignment Policy:

Teachers will make it Clear to the students and parents/guardian early in the school year that they are responsible not only for their behaviour in the classroom/school but also 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. Students must understand that there will be consequences for not completing assignments for evaluation or for

submitting those assignments late. Where in the teacher's professional judgment it is appropriate to do so, a number of strategies will be used to encourage the student to modify his/her behaviour. Some of these may include:

- Asking the student to clarify the reason for not completing the assignment taking into consideration legitimate reasons for missed deadlines
- Maintaining ongoing communication with students and/or parents about due dates and late assignments, and scheduling conferences with parents if the problem persists
- Setting up a student contract
- Providing alternative assignments or tests/exams where, in the teacher's professional judgment, it is reasonable and appropriate to do so
- Deducting marks for late assignments, up to and including the full value of the assignment

Students and parent/guardians will be informed in a timely fashion via phone call, face to face conference, e-mail and if need be a formal letter about the importance of submitting assignments for evaluation when they are due and about the consequences for students who submit assignments late or fail to submit assignments. **If the above measures have been put into place and the behaviour of the student has not provided sufficient evidence, then 0 will be inserted as the mark for the missed assignment.**

Resources

Growing Success: Assessment Evaluation and Reporting in Ontario Schools, First Edition Covering Grades 1-12

Core Java Fundamentals Volumes I, II, 8th Ed. 2008

www.codingbat.com

Attendance Policy:

Consistent log-in is crucial to a student's success in Toronto World School's online program. The guidelines of the Ministry of Education require that students receive at least 110 hours of scheduled instruction time for each credit course. Attendance patterns will be monitored to ensure a student is actively logging into their course.

Students who have not completed the course within 12 months of enrolment will be automatically removed from the course. Only under extenuating circumstances, with proper documentation and the permission of the Principal, can a student be reinstated.

Acceptable Online Use Policy

Toronto World School uses the ConnectED Integrated Learning Platform and is intended for educational purposes only. The use of this program or any tools within TWS systems, other than for educational purposes, is strictly prohibited. The inappropriate uses include, but are not limited to, criminal, obscene, commercial, cyber-bullying or illegal purposes.

The administration has the right to review all student work in order to determine the appropriateness of computer use. If TWS online programs are deemed to be used inappropriately, the Administration will levy consequences which may include suspensions and/or removal from the program. In some cases, further action may be taken including contacting day schools, legal representation or the police.

Students need to be very vigilant in order to prevent them getting into a situation where they may be suspected for inappropriate use.

Therefore, students are reminded to

- Always protect their passwords and not share them with anyone
- Always inform their teachers of suspicious messages or other incidents that they encounter
- Always only access content that is intended for educational use.

Hardware/software requirements:

Hardware:

- PC running Windows 8 or higher
- Mac running Apple OS X or higher
- Chromebook running Chrome OS

High speed internet is recommended with access to a computer with the following:

- A processor of 2GHz or faster
- 4 GB RAM or greater
- A high speed internet connection of 1.5 MB/s or faster
- Keyboard and mouse
- Headphone/Speakers/Microphone/Camera

Recommended Software:

- Adobe Reader, Shockwave, Flash Player, Java, Office suite

Browser:

- Mozilla Firefox4 or higher, Internet Explorer 7 or higher, Safari 5 or higher, Google Chrome 11 or higher

