



Course Outline

DEPARTMENT: Computer Studies

COURSE TITLE/ GRADE/ COURSE TYPE: Digital Technology and Innovations in the Changing World, Grade 10, Open

COURSE CODE: ICD20

CREDIT VALUE: 1.0

CREDIT HOURS: 110 hours

COURSE DEVELOPER: Jennifer Faubert

COURSE DEVELOPMENT DATE: July 2025

COURSE REVISER/REVISION DATE:

DEVELOPED FROM: Ministry of Education; The Ontario Curriculum, Grades 9 - 12: Computer Studies (2023)

PREREQUISITES: None

COURSE DESCRIPTION

This course helps students develop cutting-edge digital technology and computer programming skills that will support them in contributing to and leading the global economic, scientific and societal innovations of tomorrow. Students will learn and apply coding concepts and skills to build hands-on projects and investigate artificial intelligence, cyber-security, and other emerging digital technologies that connect to a wide range of fields and careers. Using critical thinking skills with a focus on digital citizenship, students will investigate the appropriate use and development of the digital technologies that they encounter every day, as well as the benefits and limitations of these technologies.

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:

A. Computational Thinking and Making Connections

Throughout this course, in connection with the learning in the other strands, students will:

A1. Computational Thinking, Planning, and Purpose:

apply computational thinking concepts and practices, and use various tools and processes to plan and develop computational artifacts for a wide variety of contexts, users, and purposes

A2. Digital Technology and Society

demonstrate an understanding of important social, cultural, economic, environmental, and ethical issues, as well as contributions and innovations involving diverse local and global communities, related to digital technology

A3. Applications, Careers, and Connections

demonstrate an understanding of real-world applications of digital technology and programming, including within various industries and careers

B. Hardware, Software, and Innovations

By the end of this course, students will:

B1. Understanding Hardware and Software

demonstrate an understanding of the functions and features of the hardware and software they encounter in their everyday life

B2. Using Hardware and Software

demonstrate an understanding of various ways to use hardware, software, and file management, and of research practices to support their own use of digital technology

B3. Cybersecurity and Data

demonstrate an understanding of safe and effective practices related to data and cybersecurity in various contexts

B4. Innovations in Digital Technology

investigate current and emerging innovations in digital technology, including automation and artificial intelligence, and assess their benefits and limitations

C. Programming

By the end of this course, students will:

C1. Programming Concepts and Algorithms

explain fundamental programming concepts and algorithms

C2. Writing Programs

use fundamental programming concepts to write simple programs

C3. Modularity and Modification

demonstrate an understanding of program components and modules

OUTLINE OF COURSE CONTENT

UNIT	UNIT DESCRIPTION	HOURS
Unit 1: Emerging Technologies	In this unit, you'll dive into the foundational concepts that shape how we live and work in a digital world. You'll explore how the Internet of Things (IoT) connects everyday objects, investigate how data is collected and used, examine the ethical and environmental responsibilities of designing technology, and learn how to protect yourself and others from cyber threats. From understanding the power of data to designing for accessibility, you'll gain a broader view of how technology impacts people and the planet—and your role as a responsible digital citizen and creator.	23 (4) Lessons
Unit 2: Foundations of Programming	In this unit, you'll begin building your programming toolkit using Python—a widely used language for everything from web development to AI. But learning to code is about more than just writing instructions. It's about thinking logically, breaking problems down into steps, and designing smart, efficient solutions. You'll learn how to structure your programs using algorithms, work with variables, handle user input, and make your code clearer through documentation	25.5 (5) Lessons

	and planning. Whether you're writing your first few lines of code or expanding your skills, this unit will help you grow your confidence as a digital problem solver.	
Unit 3: Understanding Our Digital World	In Unit 3, you'll explore how technology continues to transform the way we live, learn, work, and connect with one another. From the smart devices we use every day to the powerful role of artificial intelligence, you'll examine the social, ethical, and economic impacts of living in an increasingly digital age. You'll also learn how data is stored and secured, investigate real-world innovations made by Canadians, and reflect on how digital tools are reshaping career paths and personal choices. Whether you're choosing your next device or thinking about the future of work, this unit equips you with the digital literacy, critical thinking, and awareness needed to make informed decisions in a tech-driven world.	19.5 (4) Lessons
Unit 4: Bringing Logic to Life: Applying Python Creatively	In Unit 4, you'll bring together all the core programming skills you've developed throughout this course to build meaningful, functional, and well-documented programs. You'll explore how artificial intelligence can shape the way we code, and apply your knowledge of randomness, lists, loops, functions, and data validation. This unit challenges you to think critically, organize your code effectively, and apply best practices to read, trace, test, and improve programs. By the end, you'll design two original programs—demonstrating your mastery of Python, your problem-solving abilities, and your readiness to take on real-world challenges through code.	27 (5) Lessons
FCE	Culminating Activity + Final Exam	15 Hours
Total Hours		110

TEACHING STRATEGIES

Strategies marked with “x” are used in the course.			
Game	X	Conferencing	X
Oral Presentation	X	Demonstration	X
Simulation	X	Prompt	X
Collaborative	X	Review	X
Discussion	X	Worksheets	X
Peer Practice	X	Homework	X
Reflection	X	Independent Study	X
Inquiry Process	X	Media Presentation	X
Brainstorming	X	Media Production	X
Memorization	X	Multimedia Applications	X

STRATEGIES FOR ASSESSMENT AND EVALUATION

Assessments and evaluations will be continuous throughout the course 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

COURSE EVALUATION

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 Computer Studies. Term work will be 70% of the overall grade for the course; the evaluation will be 30% with a written exam and Culminating activity.

Term Work (70%)	Assessment	Percentage
Unit 1	Unit Test (Student Product)	8%
	Presentation (Observation)	10%
Unit 2	Unit Test (Student Product)	10%
	Student/Teacher Conference (Conversation)	10%
Unit 3	Unit Test (Student Product)	10%
Unit 4	Unit Test (Student Product)	10%
	Student/Teacher Conference (Conversation)	12%
Final Evaluation (30%)	Culminating Activity - Presentation (Observation)	15%
	Final Exam (Student Product)	15%
TOTAL		100%

Within the 70% term mark and the 30% final mark, the breakdown of the achievement chart categories will be approximately 25% Knowledge/Understanding, Application 25%, Communication 25%, and Thinking/Inquiry 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.

Assessment of Learning Skills & Work Habits:

The following learning skills and work habits will be fostered throughout this course and assessed on the report card: responsibility, organization, independent work, collaboration, initiative, self-regulation. These skills will not be included as part of the final mark unless they are identified in the provincial curriculum expectations for the course. However, it is important to remember that the development of these skills is critical to daily academic success and individual growth.

The following chart indicates the skills and look-fors for each student.

Learning Skills and Work Habits		E – Excellent G – Good S – Satisfactory N – Needs Improvement			
Responsibility				Organization	
- Fulfills responsibilities and commitments within the learning environment. - Completes and submits class work, homework, and assignments according to agreed-upon timelines. - Takes responsibility for and manages own behaviour.		- Devises and follows a plan and process for completing work and tasks. - Establishes priorities and manages time to complete tasks and achieve goals. - Identifies, gathers, evaluates, and uses information, technology, and resources to complete tasks.			
Independent Work				Collaboration	
- Independently monitors, assesses, and revises plans to complete tasks and meet goals. - Uses class time appropriately to complete tasks. - Follows instructions with minimal supervision.		- Accepts various roles and an equitable share of work in a group. - Responds positively to the ideas, opinions, values, and traditions of others. - Builds healthy peer-to-peer relationships through personal and media-assisted interactions. - Works with others to resolve conflicts and build consensus to achieve group goals. - Shares information, resources, and expertise, and promotes critical thinking to solve problems and make decisions.			
Initiative				Self-Regulation	
- Looks for and acts on new ideas and opportunities for learning. - Demonstrates the capacity for innovation and a willingness to take risks. - Demonstrates curiosity and interest in learning. - Approaches new tasks with a positive attitude. - Recognizes and advocates appropriately for the rights of self and others.		- Sets own individual goals and monitors progress towards achieving them. - Seeks clarification or assistance when needed. - Assesses and reflects critically on own strengths, needs, and interests. - Identifies learning opportunities, choices, and strategies to meet personal needs and achieve goals. - Perseveres and makes an effort when responding to challenges.			

The report card will therefore focus on two distinct but related aspects of student achievement; the achievement of curriculum expectations and the development of learning skills. The report card will contain separate sections for the reporting of these two aspects.

CONSIDERATIONS FOR PROGRAM PLANNING

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.

CHEATING AND PLAGIARISM

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. This 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 an Accounting test and then plagiarize an English essay, you will receive a zero on the essay

MISSED AND LATE ASSIGNMENTS

Teachers will make it Clear to the students and parents/guardians 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:

- Ministry of Education; The Ontario Curriculum, Grades 9 - 12: Computer Studies (2023)
- Ministry of Education; Growing Success Documents, 2010

- Access to ICD2O online course of study
- Access to a spreadsheet and word-processing software
- Access to free online Python compilers
- Access to YouTube

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