



Legend

X The standard is clearly addressed by program activities.

- This standard potentially could be addressed as part the program either by actions that the coach or teacher takes when working with the students or by conditions established by the program.

Modu	ıle Abbreviations		
WS	Starting with Workforce Skills	PS	Project Sprints and Competition
DG	Designing for the Game	14	Industry 4.0 and Your Community
BR	Building and Programming a Basic Robot	SJ	Sensors Machine Learning and Java
MM	Machines to Mechanisms	12	Improving through Iteration II
11	Improving through Iteration I	LC	Learning and Pathways and Career Exploration

ICS20 In	CS20 Intro to Computer Studies Grade 10										
ICS20	Understanding Computers	WS	DG	BR	MM	I1	PS	14	SJ	12	LC
	A1.1 use correct terminology to describe computer hardware (e.g., USB,										
	FSB, IEEE 1394 interface), speed measurements (e.g., megahertz), and size			-		-		-	-	-	
	measurements (e.g., megabytes, gigabytes);										
	A1.2 describe the functions of the internal components of a computer										
	(e.g., CPU, RAM, ROM, cache, hard drive, motherboard, power supply,										
w	video card, sound card)										
ent	A1.3 describe the functions of common computer peripheral devices (e.g.,										
Components	printer, monitor, scanner, keyboard, mouse, speakers, USB flash drive);					•		•	-		
mo:	A1.4 assess user computing needs and select appropriate hardware										
	components for different situations (e.g., a student on a fixed budget, a										
Hardware	home business user, a gaming enthusiast, a photographer, a home video										
larc	enthusiast, a distance education user, a human resources manager, an										
	accountant).										
ıcts	A2.1 explain the difference between software used for applications (e.g.,										
odı	word processor, spreadsheet, email client), programming (e.g., an	-		-		-		_	_	_	
re Products	integrated development environment), and systems (e.g., operating										
vare	system tools such as a registry editor and a defragmenting tool);										
Software	A2.2 assess user computing needs and select appropriate software for										
Š	different situations (e.g., a student on a fixed budget, a home business										





	user, a gaming enthusiast, a photographer, a home video enthusiast, a										
	distance education user, a human resources manager, an accountant).										
	A3.1 describe operating system functions that meet various user needs										
ns	(e.g., running applications, organizing files, managing users, configuring peripherals);	-					-	-			
Systems	A3.2 use file management techniques to organize and manage files (e.g., copy, move, delete, rename files; create shortcut);	Х	х	Х	х	х	х	х	х	х	х
Operating Systems	A3.3 use general keyboard shortcuts to perform common tasks (e.g., cut, copy, paste, print, print window, print screen);	Х	х	х	х	х	х	х	х	х	Х
	A3.4 describe the features and limitations of various operating systems	-						-	-		
	A4.1 identify various networking applications and protocols (e.g., VoIP, streaming media, FTP, email, instant messaging);										
mputer ng	A4.2 describe the features and functions of wired and wireless networking hardware (e.g., NICs, routers, hubs, cables, modems);			х		х		х	х	Х	
Home Computer Networking	A4.3 demonstrate an understanding of various methods for sharing network resources (e.g., shared file access, shared printer access, Internet access).	х	х	х	х	х	х	х	х	х	Х
ırity	A5.1 describe different types of malware (e.g., viruses, Trojan horses, worms, spyware, adware, malevolent macros) and common signs of an intrusion, and explain how to prevent malware attacks;							Х			
Maintenance and Security	A5.2 explain the importance of maintaining soft - ware updates (e.g., operating system updates, application software updates, virus definitions) to increase computer security and maintain hard - ware and software compatibility;			х				х	Х	X	
	A5.3 explain the importance of preventive maintenance (e.g., defragmenting a hard drive, deleting unused software and data files) to manage computer performance .	-	-	-	-	-	-	-	-	ı	1
ICS20	Introduction to Programming	WS	DG	BR	MM	l1	PS	14	SJ	12	LC
	B1.1 use correct terminology to describe programming concepts;			х		х		Х	х	Χ	
	B1.2 describe the types of data that computers can process and store (e.g., numbers, text);			х		х		х	х	X	





	B1.3 explain the difference between constants and variables used in				х	Х	
	programming;						
	B1.4 determine the expressions and instructions to use in a programming	х	х	х	х	Χ	
	statement, taking into account the order of operations (e.g., precedence of						
ς,	arithmetic operators, assignment operators, and relational operators);						
Sept	B1.5 identify situations in which decision and looping structures are	х	Х	х	Х	Χ	
onc	required;						
Programming Concepts	B1.6 describe the function of Boolean operators (e.g., AND, OR, NOT),				х	Χ	
i E	comparison operators (i.e., equal to, not equal to, greater than, less than,						
ал	greater than or equal to, less than or equal to), and arithmetic operators						
lg O	(e.g., addition, subtraction, multiplication, division, exponentiation,						
۵	parentheses), and use them correctly in programming.						
	B2.1 use a visual problem-solving model (e.g., IPO [Input, Process, Output]	x	Х		Х	Х	
	chart; HIPO [Hierarchy plus Input, Process, Output] chart and diagram;						
	flow chart; storyboard) to plan the content of a program;						
	B2.2 use variables, expressions, and assignment statements to store and				Х	Х	
	manipulate numbers and text in a program (e.g., in a quiz program, in a						
	unit conversion program);						
	B2.3 write keyboard input and screen output statements that conform to				Х		
	program specifications;						
	B2.4 write a program that includes a decision structure for two or more				Х		
	choices (e.g., guessing game, rock-paper-scissors game, multiple-choice						
St	quiz, trivia game);						
ran	B2.5 write programs that use looping structures effectively (e.g., simple				-		
90 80	animation, simple board games, coin toss);						
P B	B2.6 explain the difference between syntax, logic, and run-time errors;	Х	Х		X		
tin	B2.7 compare and contrast the use of different programming				Х		
Writing Programs	environments to solve the same problem (e.g., a solution developed in a						
<u> </u>	programming language versus one developed using a spreadsheet).	V			,,		
	B3.1 write clear and maintainable code using proper programming	X	X		Х		
	standards (e.g., indentation; naming conventions for constants, variables,						
	and expressions);						





	B3.2 write clear and maintainable internal documentation to a specific set of standards (e.g., program header: author, revision date, program name,	-	-	-	-	-	-	-	-	-	-
9	program description; table of variable names and descriptions);										
Code Maintenance	B3.3 use a tracing technique to understand program flow and to identify					-		-	Х	-	
ter	and correct logic and run-time errors in a computer program;										
Code Maint	B3.4 demonstrate the ability to validate a computer program using test					х	х		Х		
	cases.										
ICS20	Computers and Society	WS	DG	BR	MM	11	PS	14	SJ	12	LC
	C1.1 describe a variety of adaptive technologies that help to improve							-			
	computer accessibility (e.g., text-to-speech, speech-to-text, adapted										
	mouse, font control, ergonomic keyboard, virtual keyboard, sticky keys,										
	colour contrast, image magnifier);										
	C1.2 explain the impact on privacy of techniques for collecting and							-			
	processing data (e.g., camera phones, reward programs, targeted										
	advertising, digital rights management, monitoring software);										
	C1.3 describe how portable computing devices (e.g., PDA, cell phone, GPS,							Х			
	laptop) affect our everyday lives;										
	C1.4 describe how electronic access to information (e.g., instant							-			
	messaging, webcasts, social networking sites, wikis, blogs, video sharing										
act	sites) influences our everyday lives, as well as the lives of people in various										
Social Impact	countries around the world, in both positive and negative ways;										
=	C1.5 describe issues associated with access to online services (e.g.,							-			
OCË	reliability of passwords, network security, identity theft, the permanence										
S	of information released onto the Internet).										
	C2.1 describe the negative effects of computers and computer use on the							-			
	environment (e.g., chemicals from electronic waste dumped in landfills –										
	domestic or overseas – leaching into soil and groundwater; unnecessary										
	use of paper; heavy power consumption) and on human health (e.g.,										
	effects of exposure to radiation, musculoskeletal disorders, eye strain,										
	mental health and behavioural problems created or exacerbated by social										
	isolation);										
	C2.2 identify measures that help reduce the negative effects of computers	-						-			
	on the environment (e.g., lab regulations, school policies, corporate										





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	policies, provincial policies, paperless workplaces) and on human health										
	(e.g., ergonomic standards)										
	C2.3 describe ways in which computers are or could be used to reduce	-						-			
_	resource use and to support environmental protection measures (e.g.,										
- Bud	computer modelling to reduce use of physical resources; interpretation of										
inta ip a lity	large amounts of environmental data; management of natural resources;										
me Ash abi	programmable temperature control to reduce energy consumption);										
Environmental Stewardship and Sustainability	C2.4 describe, on the basis of research, how and where recycled electronic							-			
ivii ew usta	waste is processed, and identify local companies and institutions that offer										
필장장	such services.										
	C3.1 describe legal and ethical issues related to the use of computers (e.g.,							Χ			
	music and video file downloading, spyware, identity theft, phishing,										
s al	keystroke logging, packet sniffing, cyberbullying);										
Ethical Issues	C3.2 describe safeguards (e.g., effective passwords, secure websites,							Χ			
Et Is	firewalls, biometric data) for preventing the unethical use of computers.										
	C4.1 research and describe trends in careers that require computer skills,										Χ
	using local and national sources (e.g., local newspaper, national										
	newspaper, career websites);										
	C4.2 research and report on postsecondary educational programs leading										Χ
ies	to careers in the field of information systems and computer science (e.g.,										
nit Ti	institutions offering relevant programs, industry certifications, courses of										
l fr	study, entrance requirements, length of programs, costs);										
Postsecondary Opportunities	C4.3 identify groups and programs that are available to support students										Χ
	who are interested in pursuing non-traditional career choices in computer-										
	related fields (e.g., mentoring programs, virtual networking/support										
puo	groups, specialized postsecondary programs, relevant trade/industry										İ
Soci	associations);										İ
sts	C4.4 identify the Essential Skills and work habits that are important for	х	х	х	х	х	х	х	х	х	Х
Ро	success in computer studies, as defined in the Ontario Skills Passport										İ