

TEJ 20

Computer Technology, Grade 10

Teacher Mr. Roller

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Room 266, Computer/Engineering Lab

Required Materials Binder, lined paper, pen / pencil

Course Enhancement Fee Total \$41.99 + tax

(This covers the purchase of an electronics kit that will be used extensively throughout the course and into grade 11

and 12)

Course Profile

This course introduces students to computer systems and the control of external devices. Students will develop knowledge and skills in computer hardware, circuit analysis, programming, and networks, and will build systems that use computer programs and interfaces to control and/or respond to external devices such as temperature sensors, buttons, LEDs, motors, and buzzers. Students will disassemble and reassemble computers and small networks by installing and configuring appropriate hardware and software. Students will also develop an awareness of related environmental and societal issues, and will learn about secondary and postsecondary pathways and career opportunities in computer technology.

Prerequisite: None.

Course Outline

Computer Hardware - looking at computer history, memory densities, peripherals, motherboard connectivity, BIOS/UEFI, CPU architectures and instruction execution at the assembly/machine level **Number Systems** - a look at the binary, decimal and hexadecimal number systems. Number conversion. One's and two's complement representation for binary subtraction.

Circuit Analysis - resistor identification, Ohm's law, series and parallel resistance, breadboarding, use of electronic measuring equipment.

Coding/Hardware Interfacing - using the Arduino programming language (based on the C language) and it's associated libraries to interact with motors, LEDs, LED displays, LCDs, buttons and buzzers. Arduino language data types, conditional structures (introduction to logic), control structures, arrays, and functions.

Networks - internet hardware, internet infrastructure, a look at various types of cyber attacks, TCP/IP protocol, IP addressing

Course Evaluation

Course evaluation is divided into 70% term work and 30% final summative task. Details of how the 70% term mark is derived are included below. For explanations of the Ministry expectations, please follow this link:

http://www.edu.gov.on.ca/eng/curriculum/secondary/teched910curr09.pdf

Tasks	Ministry Expectations												
	A1	A2	А3	B1	B2	ВЗ	B4	B5	C1	C2	D1	D2	D3
History of the Computer									~	~			
Hardware Peripheral Presentations	~												
Computer Boot Up (POST)	~						~						
Computer Assembly/Disassembly Lab				~									
Ergonomics/Security/Careers Assignment											~	~	~
Computer Hardware Unit Test	~												
Computer Design Project (Desktop Renewal Project)				~			~						
Number Systems Unit Test			~										

Circuits/Resistor Test	~								
Parallel/Series Resistor Lab				~					
Arduino Mini Assignments			>	٧		>			
Breadboard Game Culminating Task			V	>		✓			
Network Mini Assignments		/			~				
Network Unit Test		~							

When assigning new work, the evaluation rubric is provided at that time. Google Classroom is used extensively to assign and track various assignments.