

Canada World Education Centre

Course Outline

Course: Computer Engineering					
Grade: 11	Type: University/College	Credit Value: 1	Course Code: TEJ3M		
Teacher: J.F. Michaud		Development Date: 04/15/2019			
Course Reviser: Vizarat Shaikh		Prerequisite: None			
Date:					
Ministry Curr. Doc: The Ontario Curriculum Grades 9 to 12, Course Descriptions and Prerequisites, 2018					
Course Description <p>This course examines computer systems and control of external devices. Students will assemble computers and small networks by installing and configuring appropriate hardware and software. Students will develop knowledge and skills in electronics, robotics, programming, and networks, and will build systems that use computer programs and interfaces to control and/or respond to external devices. Students will develop an awareness of related environmental and societal issues, and will learn about college and university programs leading to careers in computer technology.</p>					
Overall Expectations for Student Learning					
Strand 1: Computer Technology Fundamentals <ul style="list-style-type: none">● describe how computer components function, and discuss trends in the development of computer hardware;● describe the functions of BIOS and operating systems, and how they interact with each other and with computer hardware;● describe the function of electronic components and the use of these components in control systems and other circuits, and calculate values for circuit components;● describe network concepts, services, and security;● demonstrate an understanding of the use of binary numbers, hexadecimal numbers, and Boolean algebra in computer logic and data processing.					
Strand 2: Computer Technology Skills <ul style="list-style-type: none">● build, configure, and maintain a computer system, and connect peripheral devices;● set up, optimize, and backup a computer system;					

- design, construct, create diagrams for, and troubleshoot electronic circuits and interfaces for control systems;
- design, install, configure, test, and troubleshoot networks;
- demonstrate an understanding of fundamental programming concepts, and develop a program that interacts with an external device.

Strand 3: Technology, the Environment, and Society

- describe environmental issues related to the widespread use of computers and associated technologies;
- describe societal issues related to the widespread use of computers and associated technologies.

Strand 4: Professional Practice and Career Opportunities

- demonstrate an understanding of relevant safety practices, standards, and legislation;
- describe ethical and security issues related to the use of computers;
- describe various careers related to computer technology and electronics, and the entry requirements for these careers.

Outline of Course Content	Hours:
Unit:	
Unit 1. Computer Hardware	10
Unit 2. Electronics, Robotics, and Computer Interfacing	15
Unit 3. Networking	5
Unit 4. Data Representation and Digital Logic	5
Unit 5. Software	20
Unit 6. Computer Programming	20
Unit 7. Technology and the Environment	10
Unit 8. Technology and Society	10
Unit 9. Health and Safety Management	5
Unit 10. Ethics and Security	5
Unit 11. Career Opportunities	5

Teaching and Learning Strategies

Teachers use a variety of teaching strategies to maximize student learning. The following teaching strategies will be used in this course:

Helping students become self-directed.

In order to address the unique learning styles of students in this course, a variety of activities and learning experiences should be offered, including, but not restricted to: questioning, demonstrations, role-plays, simulations, co-operative group learning, brainstorming, discussion, peer coaching, interviewing, reflective writing, reflective

thinking exercises, concept mapping, reading, tutoring, direct instruction, one-on-one teaching, and experimental learning.

Teachers will find ways throughout the course for students to make authentic learning connections with their other courses, the school, local community and the world at large.

Assessment & Evaluation of Student Performance

Assessment & Evaluation

The primary purpose of assessment and evaluation is to improve student learning and to help students assume responsibility for their learning.

Mid-semester and final marks are determined through evaluations or Assessments of Learning, which typically occur towards the end of a unit and end of semester. During the learning process, information about a student's learning is gathered and used by the teacher and student to inform decisions that affect goal setting and teaching in the classroom. The data gathered as Assessment as Learning and Assessment for Learning do not carry a mark weight, but do play a crucial role in student success as they help inform the teacher about each student's progress. All types of assessments allow teachers to provide descriptive feedback that is clear, specific, meaningful, and timely to support improved learning and achievement.

Learning Skills and Work Habits (responsibility, organization, independent work, collaboration, initiative, self-regulation) will be reported by a letter (E = Excellent, G = Good, S = Satisfactory, N = Needs Improvement). These skills and habits support a high level of success in meeting the course expectations in addition to contributing to the development of positive life and work skills for the future.

Considerations for Program Planning

Program Planning Considerations •Individual Education Plan: Accommodations to meet the needs of exceptional students as set out in their Individual Education Plan will be implemented within the classroom program. Additional assistance is available through the Special Education program. • The Role of Technology in the Curriculum. Using information technology will assist students in the achievement of many of the expectations in the curriculum regarding research, written work, analysis of information, and visual presentations.

- English As a Second Language (ESL): Appropriate accommodations in teaching, learning, and evaluation strategies will be made to help ESL students gain proficiency in English, since students taking ESL at the secondary level have limited time in which to develop this proficiency.

Resources

Technological Devices:

CWEC supports the use of technology to enhance learning, but the use of such electronic technology in the classroom is at the discretion of the teacher. Working together we can ensure the appropriate use of technology by all members of our school community