Technological Education: Part B – Computer Studies

Computer and information science is more than running application programs and programming. Rather, it relates to the ways in which computers represent conceptual objects and how computer systems allow those objects to interact. Computer and information science is the study of ways of representing objects and processes. It involves defining problems, analyzing and designing solutions, and developing, testing, and maintaining programs. Computer and information science education is relevant for all students because it incorporates a broad range of transferable problem-solving skills and techniques. It combines logical thinking, creative design, synthesis, and evaluation, and also teaches generically useful skills in such areas as communication, time management, organization, and teamwork. Computer and information science will prepare students for an increasingly technological world. A foundation in this discipline will introduce students to the excitement and opportunities afforded by this dynamic field and will begin to prepare them for careers in information technology.

TIK2O1

Computer and Information Science, Grade 10, Open

This course introduces students to computer science concepts. Students will learn about the stages in software design; the fundamental programming constructs of sequence, selection, and repetition; the functions of internal and external computer components; the relationship among networks, operating systems, and application software and their uses; and how programming languages evolve. Students will also develop an awareness of computer-related careers.

Technological Education: Part B – Computer Studies

TIK2OL
Études informatiques, Grade 10, Open

This course if the Extended or French Immersion. For the English description please see TIK2O1, computer and Information Science, Grade 10, Open

ICS3M1
Computer and Information Science, Grade 11, University/College Preparation

This course examines computer science concepts. Students will outline stages in software development, define standard control and data structures, identify on and off-line resources, explain the functions of basic computer components, and develop programming and problem-solving skills by using operating systems and implementing defined practices. As well as identifying careers in computer science, students will develop an understanding of the ethical use of computers and the impact of emergent technologies on society.

Recommended Preparation Computer and Information Science or Computer Engineering Technology, Grade 10, Open.

ICS4M1
Computer and Information Science, Grade 12, University/College Preparation

This course helps students use programming and software engineering principles to design and develop algorithms and programs. Students will use software development and diagnostic tools, implement data structures and algorithms, and use file management techniques in project settings. They will also develop an understanding of the ethics of computer use and the impact of information technology on the community, and will explore post-secondary education and career paths in computer science.

Prerequisite: Computer and Information Science, Grade 11, University/College Preparation. Computer Engineering Recommended Preparation

TEE2O1
Computer Engineering Technology, Grade 10, Open

This course examines computer hardware and the control of external components from an engineering perspective. Students will learn how to solve problems, and will study the functions of key computer components and peripherals, logic gates, fundamental programming concepts, internal numbering and character representation systems, and operating systems and networks. Students will also develop an awareness of potential careers in the field of computer engineering.

ICE3M1
Computer Engineering, Grade 11, University/College Preparation

This course helps students understand how computer hardware and software are used to solve computer-related problems from an engineering perspective. Students will explore ways of connecting computers,interfaces, and peripherals using their knowledge of logic gates, computer components, peripherals, programming, networks, and operating systems. Students will also construct systems that use computer programs to interact with hardware, install and configure key computer hardware and software components, develop an understanding of the ethical use of computers, and explore careers in computer engineering.

Recommended Preparation: Computer Engineering Technology, Grade 10, Open

ICE3E1
Computer Engineering, Grade 11, Workplace Preparation

This courses helps students develop a practical understanding of hardware and software operations, computer networks, and operating systems. Students will learn to use utility and application software and to install, maintain, and troubleshoot computer systems and networks following proper maintenance and repair procedures. In addition to developing an understanding of the ethical use of computers, students will identify related career opportunities and the skill sets required for the workplace, including good customer service practices.

Recommended Preparation: Computer Engineering Technology, Grade 10, Open

ICE4M1
Computer Engineering, Grade 12, University/College Preparation

These courses help students understand and apply computer engineering concepts. Students will analyze and design computer components such as logic circuits and interfaces; develop and construct systems and write the associated computer programs to drive real-world devices such as traffic lights, models, and robots; and explore networking hardware, protocols, and configurations. As well as developing project management skills, students will examine the ethics of computer use and explore related educational requirements and careers.

Prerequisite: Computer Engineering or Computer and Information Science, Grade 11, University/College Preparation

ICE4E1
Computer Engineering, Grade 12, Workplace Preparation

This course helps students understand network topologies (how computers are connected in networks) and associated hardware, and gain practical knowledge of hardware and software operations and trends. Students will install and maintain computer systems and networks, and diagnose and solve problems in them; develop maintenance and repair protocols; and customize utility and application software to meet user needs. As well as developing skills to communicate with customers, students will examine computer ethics and identify skill requirements for computer support positions.

Prerequisite: Computer Engineering, Grade 11, Workplace Preparation

ICN351
Computer Networking, Grade 11, Workplace Preparation

This course helps students develop, understand and apply current and emerging networking technologies that will empower them to enter employment or further education and training in the computer networking field. Students will learn to use networking design standards (OSI model, LANs, WANs), network terminology, and network protocols. In addition students will gain practical knowledge, skills and experience with the handling of cabling, cabling tools, routers, switches, and other network electronics as well as the proper care, maintenance, and use of networking software, tools, and equipment. Students will learn to use decision-making and problem-solving techniques in applying these concepts to solve networking problems. Students will be able to identify network related safety practices, related career opportunities, the skills required for life long learning in the area of computer networking and the social/economic impacts of communications technology.

Note: This is a Ministry approved locally developed optional credit course.
Recommended Preparation: Computer Engineering Technology, Grade 10, Open