

Course Profile

Integrated Technologies

Grade 9

Open

• *for teachers by teachers*

Course Profiles are professional development materials designed to help teachers implement the new Grade 9 secondary school curriculum. These materials were created by writing partnerships of school boards and subject associations. The development of these resources was funded by the Ontario Ministry of Education and Training. This document reflects the views of the developers and not necessarily those of the Ministry. Permission is given to reproduce these materials for any purpose except profit. Teachers are also encouraged to amend, revise, edit, cut, paste, and otherwise adapt this material for educational purposes.

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Acknowledgements

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Central Ontario Catholic Curriculum Cooperative

Institute for Catholic Education

Course Overview

Technological Education, Open, Grade 9

Identifying Information:

School:

District:

Course Title: Integrated Technologies

Grade: 9

Course Type: Open

Ministry Course Code: TTI 10

Secondary Policy Document:

Publication Date: 1999

Credit Value: 1

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Description/Rationale

This course enables students to understand the technological and computer concepts they need in order to design, develop, and build usable products and/or deliver services, and to pursue further technological education studies. Students will use the technological design process and a variety of tools and software to solve problems, complete projects, and strengthen their communication skills. Technological Education encompasses both broad-based technology and computer studies, each of which is unique in its approach to curriculum content and delivery.

How This Course Supports the Ontario Catholic School Graduate Expectations

The purpose of Technological Education in the Catholic faith community is to enable young adults to develop and develop their ability to find solutions and develop products that benefit others in a way that models gospel values. The focus of the curriculum is to enable students to become critical and innovative problem-solvers who question the use of resources and understand the implications of technological innovations. An emphasis on process as well as results ensures that students create products and provide services that recognize our God-given responsibility to respect the dignity and value of the individual and the protection of the environment.

Unit Titles (Time and Sequence) [Units must total to 110 contact hours]

Unit 1	A Construction/Manufacturing Theme	20 hours
Unit 2	A Computer Studies Theme	24 hours
Unit 3	A Transportation Theme	16 hours
Unit 4	A Communications Theme	20 hours
Unit 5	An Integrated Theme	20 hours
Unit 6	Impact and Consequences	10 hours

Unit Organization

Unit #1: A Construction/Manufacturing Theme

Time: 20 hours

Description

In this unit, students will develop and improve design and problem solving skills. They will increase their knowledge of the problem solving process, technical terminology, and procedures and standards of product testing. Students will demonstrate their learning through discussion, designing drawings and constructing their own manufactured product (in this case, a roller coaster).

Ontario Catholic School Graduate Expectations: CGE1i; 2e; 3d; 4a, c, f; 5a, b, g; 6c; 7c, d, i, j

Strands: Theory and Foundation, Skills and Processes, Impact and Consequences

Overall Expectations: TFV.01X, TFV.03X, SPV.01X, SPV.02X, SPV.03X, SPV.04X, ICV.01X, ICV.05X

Specific Expectations: TFS.01X, TFS.02X, SPS.01X, SPS.02X, SPS.03X, SPS.04X, SPS.07X, SPS.08X, ICS.01X, ICS.03X

Unit #2: A Computer Studies Theme

Time: 24 hours

Description

This unit will provide students the opportunity to learn computer concepts as a base for further studies. Students will learn and apply an information science problem solving method, use software tools to research and solve specific problems, and study the impact of computer technology at home and in the world of work. Students will explore the fundamental concepts needed to design a computer program, write and document simple computer programs and explain the roles of various computer components and products. This unit will help students use technology in their lives and provide students with an introduction to further studies and careers in the computer studies area.

Ontario Catholic School Graduate Expectations: CGE1i; 2a, b, c, d; 3b, c, f; 4b, f; 5a, e; 7c, j

Strands: Theory and Foundation, Skills and Processes, Impact and Consequences

Overall Expectations: TFV.01X, TFV.02X, TFV.04X, TFV.05X, SPV.02X, SPV.03X, SPV.05X, ICV.05X, ICV.01X

Specific Expectations: TFS.02X, TFS.07X, TFS.08X, SPS.03X, SPS.04X, SPS.05X, SPS.06X, ICS.02X, ICS.05X, ICS.07X

Unit #3: A Transportation Theme

Time: 16 hours

Description

In this unit, students will develop and demonstrate an understanding of concepts related to transportation technology. Students will use a design model to solve challenges related to the transportation of people and cargo. Students will design, build and evaluate models of real-world transportation systems and present the results of their findings.

Ontario Catholic School Graduate Expectations: 1d, g; 2e; 3b, c, d, e, f; 4a, b, e, f, g; 5a, b, c, d, f, h; 6c; 7b, d, 7i, j

Strands: Theory and Foundation, Skills and Processes, Impact and Consequences

Overall Expectations: TFV.01X, TFV.03X, SPV.01X, SPV.02X, SPV.03X, SPV.04X, ICV.01X, ICV.05X

Specific Expectations: TFS.05X, SPV.01X, SPS.01X, SPS.03X, SPS.04X, SPS.05X, SPS.07X, SPS.08X, ICS.01X, ICS.03X

Unit #4: A Communications Theme

Time: 20 hours

Description:

In this unit, students will develop and demonstrate an understanding of concepts related to communications technology. Students will use a design model to solve challenges related to communications systems. Students will design, build and evaluate models of real-world communications tools and processes and present the results of their findings.

Ontario Catholic School Graduate Expectations: CGE1d, g; 2c, d, e; 3b, c, d, e, 3f; 4a, b e, f, g; 5a, b, c, d, f, h; 6c, e; 7b, c, i, j

Strands: Theory and Foundation, Skills and Processes, Impact and Consequences

Overall Expectations: TFV.01X, TFV.02X, SPV.02X, SPV.03X, ICV.01X, ICV.05X

Specific Expectations: TFX.03X, SPS.01X, SPS.03X, SPS.04X, SPS.05X, SPS.07X, ICS.01X, ICS.03X

Unit #5: An Integrated Theme

Time: 20 hours

Description:

In this unit, students will be presented with a group challenge which will focus on the creation of a local Catholic Youth Centre. Students will work individually and in groups to acquire data on the needs of youth and use this information to develop a proposal for the Centre. The proposal will include a scale model and artist's conception using CAD as part of project design. In the hospitality services area, the students will plan and prepare nutritious meals/snacks with teen appeal and will create products to compliment the interior design of the centre.

Ontario Catholic School Graduate Expectations: CGE1d, f, i; 3b, c; 4e, g; 5c; 7i, j

Strands: Theory and Foundation, Skills and Processes, Impact and Consequences

Overall Expectations: TFV.01X, TFV.02X, TFV.03X, SPV.02X, SPV.03X, SPV.04X, ICV.01X, ICV.05X

Specific Expectations: TFS.03X, TFS.04X, SPS.01X, SPS.03X, SPS.04X, SPS.05X, SPS.07X, ICS.01X, ICS.03X

Unit #6: Impact and Consequences

Time: 10 hours

Description

Technology is a precious resource when placed at the service of God's people and is to be developed for the benefit of all. This unit, which will be ongoing throughout the course, will require the students to become aware of the social consequences of technology and identify the positive and negative impacts of technology on the environment. Students will also identify their God-given gifts and research personal career options in technology fields. During the unit, students will be required to give a presentation which demonstrates their learning, using a variety of available technologies.

Ontario Catholic School Graduate Expectations: CGE1d, 1g, 1i, 2e, 3b, 1f, 4g, 5c, 7i, 7j

Strands: Theory and Foundation; Skills and Processes; Impact and Consequences

Overall Expectations: TFV.01X, TFV.03X, SPV.02X, SPV.03X, ICV.01X, ICV.02X, ICV.03X, ICV.04X

Specific Expectations: TFS.03X, SPS.03X, SPS.04X, SPS.05X, SPS.07X, ICS.01X, ICS.03X, ICS.04X, ICS.05X, ICS.06X, ICS.07X

Strategies and Resources

<p>Instructional Strategies Instructional strategies will include the following:</p> <p>Brainstorming — group generation of initial ideas expressed without criticism or analysis</p> <p>Collaborative/Cooperative Learning — small group learning providing high levels of student engagement and interdependence</p> <p>Conferencing — student-to-student discussion</p> <p>Design Process — a problem solving approach using a prescribed series of steps</p> <p>Independent Study — exploration and research of a topic interesting to students</p> <p>Inquiry — problem solving approach using a prescribed process involving a number of steps</p> <p>Jigsaw — specialized group learning followed by home group sharing</p> <p>Model Building — construction of a working model to demonstrate a specific function, feature, design concept or pattern</p> <p>Report/Presentation — oral and written presentation of researched topic to class</p> <p>Whole Group Instruction</p>	<p>Assessment Strategies The assessment plan will include the following:</p> <p>Personal Communication</p> <ul style="list-style-type: none"> • journals/conferencing logs • self assessment • student-teacher conferences <p>Paper and Pencil Tests</p> <ul style="list-style-type: none"> • unit tests <p>Observation</p> <ul style="list-style-type: none"> • formal/informal <p>Performance Assessment</p> <ul style="list-style-type: none"> • research project • model building <p>Conferencing</p> <ul style="list-style-type: none"> • student-teacher • roving conference <p>Reflection</p> <ul style="list-style-type: none"> • self-assessment • journal • learning logs • peer assessment <p>Assessment tools will include:</p> <ul style="list-style-type: none"> • checklists • marking schemes • rubrics • anecdotal comments with suggestions for improvement 	<p>Main Resources</p> <ul style="list-style-type: none"> • Ministry issued application software (OESS) • a programming language • Internet access <p>Print</p> <p><i>The “Don’t Panic” Guide to Programming</i>, Holt Software Associates</p> <p><i>Technology Ideas, Integrating Design Education Activities for Students</i>, Maxwell MacMillan Canada</p> <p><i>By Design, Technology Exploration and Integration</i> Trifolium Books</p> <p><i>Fundamentals of Technical Drawing</i> Gage Education Publishing</p> <p><i>Design and Technology</i>, McGraw-Hill Ryerson</p> <p><i>Experience Technology</i>, Glencoe/McGraw-Hill</p> <p><i>Technology: Science & Math in Action</i>, Glencoe/McGraw-Hill</p> <p><i>Technology Science Mathematics</i>, Glencoe/McGraw-Hill</p> <p><i>Technology: Today & Tomorrow</i>, Glencoe/McGraw-Hill</p> <p><i>The Sacred Congregation for Catholic Education: Lay Catholics in Schools: Witnesses to Faith</i>, Vatican Translation</p> <p><i>The Synodal Document on the Justice in the World</i>, November, 1971</p> <p><i>Encyclical Letter of His Holiness Pope Paul VI on the Development of Peoples, Populorum Progressio. Catechism of the Catholic Church</i>, CCCB</p> <p>Videotapes</p> <p><i>Contact: “Crash Test”</i>- Golf Class, Volkswagon, Canada</p> <p><i>Incredible Frontiers: Episode 2, “Crash Test”</i>, GRB Entertainment</p> <p>Community Resources job shadowing sites, volunteer mentors, guest speakers, etc.</p>
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Technological Education, Open, Grade 9 Evaluation of Student Achievement

Assessment is the process of gathering information from a variety of sources that accurately reflects how well a student is achieving the curriculum expectations. Learning skills, effort, punctuality and absences are not considered in the determination of the percentage grade. These are assessed and evaluated within each subject discipline but are reported on separately. Evaluation refers to the process of judging the quality of student work on the basis of established criteria, and then assigning a value to represent that quality. The value assigned will be in the form of a percentage grade. According to Ministry Assessment Policy, 30% of the student's course grade will be based on the final evaluation.

Knowledge/Skill Category Weighting	%	Course Grade Weighting	%
Application Exercises/Problem Solving			
• Knowledge/Understanding	20	Assignment/Presentation (Final Evaluation)	30
• Thinking/Inquiry/Problem Solving	40		
• Communication	10	Product Development	20
• Application/Making Connections	30		
Unit #6: Assignment & Presentation		Application Exercises/Problem Solving	30
• Knowledge/Understanding	20		
• Thinking/Inquiry/Problem Solving	20	Tests	20
• Communication	30		
• Application/Making Connections	30	Course Grade	100
Product Development			
• Knowledge/Understanding	20		
• Thinking/Inquiry/Problem Solving	40		
• Communication	10		
• Application/Making Connections	30		
Tests			
• Knowledge/Understanding	40		
• Thinking/Inquiry/Problem Solving	25		
• Communication	15		
• Application/Making Connections	20		

Ontario Catholic School Graduate Expectations

The graduate is expected to be:

A Discerning Believer Formed in the Catholic Faith Community who

- CGE1a** -illustrates a basic understanding of the **saving story** of our Christian faith;
- CGE1b** -participates in the **sacramental life** of the church and demonstrates an understanding of the centrality of the Eucharist to our Catholic story;
- CGE1c** -actively reflects on **God's Word** as communicated through the Hebrew and Christian scriptures;
- CGE1d** -develops attitudes and values founded on Catholic **social teaching** and acts to promote social responsibility, human solidarity and the common good;
- CGE1e** -speaks the **language of life**... "recognizing that life is an unearned gift and that a person entrusted with life does not own it but that one is called to protect and cherish it."
(Witnesses to Faith)
- CGE1f** -seeks intimacy with God and celebrates **communion** with God, others and creation through prayer and worship;
- CGE1g** -understands that one's purpose or **call in life** comes from God and strives to discern and live out this call throughout life's journey;
- CGE1h** -respects the **faith traditions**, world religions and the life-journeys of **all people of good will**;
- CGE1i** -integrates faith with life;
- CGE1j** -recognizes that "sin, human weakness, conflict and forgiveness are part of the human journey" and that the cross, the ultimate sign of forgiveness is at the heart of **redemption**. (Witnesses to Faith)

An Effective Communicator who

- CGE2a** -listens actively and critically to understand and learn in light of gospel values;
- CGE2b** -reads, understands and uses written materials effectively;
- CGE2c** -presents information and ideas clearly and honestly and with sensitivity to others;
- CGE2d** -writes and speaks fluently one or both of Canada's official languages;
- CGE2e** -uses and integrates the Catholic faith tradition, in the critical analysis of the arts, media, technology and information systems to enhance the quality of life.

A Reflective and Creative Thinker who

- CGE3a** -recognizes there is more grace in our world than sin and that hope is essential in facing all challenges;
- CGE3b** -creates, adapts, evaluates new ideas in light of the common good;
- CGE3c** -thinks reflectively and creatively to evaluate situations and solve problems;
- CGE3d** -makes decisions in light of gospel values with an informed moral conscience;
- CGE3e** -adopts a holistic approach to life by integrating learning from various subject areas and experience;
- CGE3f** -examines, evaluates and applies knowledge of interdependent systems (physical, political, ethical, socio-economic and ecological) for the development of a just and compassionate society.

A Self-Directed, Responsible, Life Long Learner who

- CGE4a** -demonstrates a confident and positive sense of self and respect for the dignity and welfare of others;
- CGE4b** -demonstrates flexibility and adaptability;
- CGE4c** -takes initiative and demonstrates Christian leadership;
- CGE4d** -responds to, manages and constructively influences change in a discerning manner;
- CGE4e** -sets appropriate goals and priorities in school, work and personal life;
- CGE4f** -applies effective communication, decision-making, problem-solving, time and resource management skills;
- CGE4g** -examines and reflects on one's personal values, abilities and aspirations influencing life's choices and opportunities;
- CGE4h** -participates in leisure and fitness activities for a balanced and healthy lifestyle.

A Collaborative Contributor who

- CGE5a** -works effectively as an interdependent team member;
- CGE5b** -thinks critically about the meaning and purpose of work;
- CGE5c** -develops one's God-given potential and makes a meaningful contribution to society;
- CGE5d** -finds meaning, dignity, fulfillment and vocation in work which contributes to the common good;
- CGE5e** -respects the rights, responsibilities and contributions of self and others;

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- CGE5f** -exercises Christian leadership in the achievement of individual and group goals;
 - CGE5g** -achieves excellence, originality, and integrity in one's own work and supports these qualities in the work of others;
 - CGE5h** -applies skills for employability, self-employment and entrepreneurship relative to Christian vocation.

A Caring Family Member who

- CGE6a** -relates to family members in a loving, compassionate and respectful manner;
- CGE6b** -recognizes human intimacy and sexuality as God given gifts, to be used as the creator intended;
- CGE6c** -values and honours the important role of the family in society;
- CGE6d** -values and nurtures opportunities for family prayer;
- CGE6e** -ministers to the family, school, parish, and wider community through service.

A Responsible Citizen who

- CGE7a** -acts morally and legally as a person formed in Catholic traditions;
- CGE7b** -accepts accountability for one's own actions;
- CGE7c** -seeks and grants forgiveness;
- CGE7d** -promotes the sacredness of life;
- CGE7e** -witnesses Catholic social teaching by promoting equality, democracy, and solidarity for a just, peaceful and compassionate society;
- CGE7f** -respects and affirms the diversity and interdependence of the world's peoples and cultures;
- CGE7g** -respects and understands the history, cultural heritage and pluralism of today's contemporary society;
- CGE7h** -exercises the rights and responsibilities of Canadian citizenship;
- CGE7i** -respects the environment and uses resources wisely;
- CGE7j** -contributes to the common good.

Coded Expectations: Integrated Technologies, Open Grade 9

Theory and Foundation

Overall Expectations

- TFV.01X** - demonstrate understanding of how to develop physical products or provide services to meet identified needs;
- TFV.02X** - identify ways to communicate design and research ideas and solutions through a variety of media; the use of hand illustration, reports, computer graphics and presentation techniques
- TFV.03X** - demonstrate understanding of how to evaluate project work against identified specifications, using quality control specifications;
- TFV.04X** - describe the scope of activities supported by computer, and information technology;
- TFV.05X** - explain the fundamental concepts underlying the creation of a computer program

Specific Expectations

- TFS.01X** - identify solutions to given design problems that involve existing situations or new ideas;
- TFS.02X** - describe a problem solving model that can be applied to different kinds of technological problems;
- TFS.03X** - describe project ideas and solutions;
- TFS.04X** - demonstrate understanding of how to evaluate projects and an ability to suggest improvements;
- TFS.05X** - demonstrate knowledge of quality control procedures, such as ISO 9002, to determine that projects meet original design specifications;
- TFS.06X** - describe the fundamental building blocks of a computer program (i.e. constants and variables, selection and repetition structures, input and output)
- TFS.07X** - explain the different roles that computers, networks, and operating systems have and describe the tasks for which each is used;
- TFS.08X** - explain how a local business

Skills and Processes

Overall Expectations

- SPV.01X** - fabricate products or deliver services using a design process and a variety of tools and equipment;
- SPV.02X** - share information locally and globally using communication tools such as e-mail;
- SPV.03X** - use a variety of computer software applications for research, to solve problems, and to document the design process;
- SPV.04X** - identify production techniques and materials to meet design specifications;

SPV.05X - use correctly a problem solving model, such as the scientific method or a decision-making model, completing all the required steps.

Specific Expectations

SPS.01X - use the design process correctly in the completion of projects;

SPS.02X - demonstrate an understanding of the roles played by various team members in a group project;

SPS.03X - share information using media tools and a variety of technologies;

SPS.04X - use a variety of software applications, such as word processing, to document a project from conception to completion

SPS.05X- use a variety of software applications, such as databases and spreadsheets, to do research and solve specific problems;

SPS.06X- determine and compare the costs of computer system components;

SPS.07X- select appropriate resources and materials when designing projects, and use them correctly;

SPS.08X- fabricate products or perform services using hand tools, power tools and equipment safely;

SPS.09X- write simple computer programs to manipulate text and graphics.

Impact and Consequences

Overall Expectations

ICV.01X- apply safety standards when using materials, tools, and equipment;

ICV.02X- describe the environmental effects of materials, processes and resources;

ICV.03X- demonstrate understanding of how developments in technology influence people's lives;

ICV.04X- identify technology-based careers and their educational requirements;

ICV.05X- apply acceptable use guidelines/policies for software, equipment, and materials.

Specific Expectations

ICS.01X- identify the safety features of tools, materials, and processes;

ICS.02X- handle computer hardware and electrical components safely;

ICS.03X- use appropriate strategies to prevent potential health and safety problems

ICS.04X- describe environmental, ecological and social considerations related to the use of technologies, processes and natural resources;

ICS.05X- identify the impact of technology on home life, work and school, and in recreational pursuits;

ICS.06X- identify computer and technology-related careers and demonstrate understanding of how technology affects selected careers;

ICS.07X-identify acceptable-use policies for computing.