

COURSE PROFILE

Introduction to Information Technology in Business (BTT)

Grade 9 or 10

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. 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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Course Overview

Introduction to Information Technology in Business, Grade 9 or 10, Open

Identifying Information

School/District:

Course Developer(s):

Department:

Course Title:

Grade:

Course Type: Open

Development Date:

Ministry Course Code: BTT

Course Revisor(s):

Credit Value:

Revision Date:

Description/Rationale

This course introduces students to the use of information technology in the business environment. Students will learn how to use information technology in a work environment, perform electronic research, communicate electronically, and use common business software. They will also explore possible future occupations in information technology. This course will prepare students for a world of business and communication that relies increasingly on electronic technology, an area also undergoing continuous change. Students will be able to transfer the skills and understanding acquired in this course to activities in other courses and outside of the classroom. They will establish a foundation for using information technology throughout secondary school, and will develop the ability to apply new technologies in their search for employment. A broad understanding of the effects of technology on business will also be developed. Through a variety of activities, students will have opportunities to develop interpersonal skills, to interact with people from the business community and organizations within the school, and to develop a personal portfolio of information technology skills and competencies.

Unit Titles (in sequence)

The units address multiple strands and expectations from across the course. This is to encourage students to transfer the skills to different situations, and to develop confidence in using the skills in an integrated manner outside the classroom. *Unit 1* provides a basic understanding of equipment and the environment which is an essential reference point upon which to build. *Unit 2* introduces the software that will be used throughout the course. Therefore, it is recommended that *Units 1* and *2* be introduced early in the course to ensure that students develop the required groundwork knowledge and software application skills. One of the first things a teacher may want to do is assess the students' skills and competencies in word processing, databases, and Internet search engines to determine how much of *Unit 2, Activity 1, Parts A, and C, and Activity 2* need to be focussed on early in the course. In order to complete *Unit 1*, students need to have only basic skills and competencies in word processing, databases, and Internet search engines.

Since the units have been designed so an integrated approach to the learning of information technology takes place, each unit will require the teaching of expectations from several strands within the course. For example, in *Unit 1*, students will begin to develop a *Reference Manual of Information Technology Terminology (IMV.01, IM1.01-.03, Unit 1, Activity 1, Part A)* using a database. Consequently, it is suggested that the teacher begin by assessing students' database skills. If, for example, the teacher finds that the majority of students do not have basic database competencies, the teacher will begin by teaching what a database is and how it works (*SAV.02-.03, SA2.01-.03, Unit 2, Activity 1, Part C*), and then have students apply these skills to create a database for their terminology manual. A second example of integration of expectations from one strand to another is the development of information technology skills and competencies. For each activity that students complete, they are required to reflect on the information technology skills and competencies (*COV.02, CO2.01-.05, Unit 5, Activity*

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3) they have developed, and keep a record of these for their portfolios. A third example involves the placement of legal/ethical issues (*ECV.03, EC3.04-.05, ERV.03, ER3.01, ER3.04*) and ergonomics (*IMV.03, IM3.01-.05*) in *Unit 1*. Although students will continue to investigate legal and ethical issues in *Units 3* and *4*, they will be using the Internet much sooner and must understand about copyright, etc. This integrated approach allows students the opportunity to practise and refine their information technology skills as they apply those skills to new and real situations. In addition, ongoing activities that apply to every activity have been designed to take place on a regular basis.

Units 3 and *4* may be taught at any point in the course as complete units or in parts. Students learn best when the work they are doing has real-life applications. Therefore, teachers may want to teach parts of these units where they best fit. **Note:** *Unit 3, Activities 3* and *4* should be taught consecutively.

Unit 5 has been placed last because students will be assessing and compiling their work from the whole course for their portfolios. However, *Unit 5, Activity 3* begins during the first week of the course and continues throughout because students need to assess their information technology skills and competencies on a regular basis. *Unit 5, Activity 1* should also begin early and be repeated on a continuous basis. It is designed in such a way that it can easily be used as a warm-up activity once a week for a 10-week period.

Unit	Unit Title	Activity Title	Approximate Time
1	Information Technology Groundwork	\$ Information Technology Reference Manual and Infrastructure \$ Exploring Legal and Ethical Issues in Technology \$ The Ergonomically Correct Workplace \$ Navigating Through the Desktop	8 hours 3 hours 2 hours 8 hours
2	The Power of Application Software in Business	\$ Determining Software Competencies Through Readiness Exercises \$ The Internet Information Hunt \$ Unlocking the Mysteries of Desktop Publishing \$ Using Information Technology to Plan an Upcoming Event	12 hours 3 hours 4 hours 8 hours
3	E-communication: Presenting with Purpose and Pizzazz	\$ Making the Most of an Electronic Presentation \$ Does E-mail Need A Stamp? \$ Investigating Electronic Communication \$ Dazzle Your Audience	8 hours 4 hours 4 hours 8 hours
4	Gathering and Assessing Information Using Electronic Media	\$ Techniques for Powerful Research Using Electronic Tools \$ <i>Caveat Lector</i> a.k.a. Let the Reader Beware \$ Internet Connections and Computer Viruses \$ Shrinking the World: Cultures and Customs on the WWW	6 hours 6 hours 2 hours 6 hours
5	Careers in Information Technology	\$ Information Technology Careers Scrapbook \$ A Pathway to Jobs on the Internet \$ My Personal Portfolio (ongoing) \$ Investigating Information Technology Programs in Your School	4 hours 3 hours 8 hours 3 hours

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Time: 110 hours

Unit Descriptions

Unit 1: Students will create an electronic information technology reference manual of terms, and explain the key infrastructures related to information technology. Through investigation, students will develop an understanding of key information technology infrastructures, explore legal and ethical issues related to technology, understand the importance of ergonomics, navigate through the desktop, and have their data entry skills assessed. Students=overall performance for this unit will be evaluated using the *Unit 1 Assessment Rubric*.

Unit 2: Students will enhance and/or develop their basic software application skills using specific application software, investigate web-page design software and Internet search engines, and assess their data entry skills on an ongoing basis. Each student will track his/her development using *Software Competencies Checklists*. Document production will focus on the creation of correctly-formatted business documents in a culminating project that will require students to plan, make decisions, and create documents integrating the software applications. Documents created will be stored in files and folders that are logical and useful. Students=overall performance for this unit will be evaluated using the *Unit 2 Assessment Rubric*.

Unit 3: Students will complete readiness and remedial exercises and use electronic tools to enhance and/or develop their communication skills, develop an understanding of what e-mail is and how it works, investigate a variety of topics related to electronic communication, and apply their new, electronic-communication skills to create an electronic presentation. Students=overall performance for this unit will be evaluated using the *Electronic Presentation Rubric (Unit 3, Appendix B)*.

Unit 4: Students will enhance and/or develop their ability to gather information from a variety of electronic sources; develop evaluation criteria to evaluate the electronic information gathered with respect to validity, bias, usefulness, confidentiality, and the degree to which it is up to date; develop an understanding of Internet connections; investigate dangers that are associated with transmission of information; apply research and critical thinking skills developed in researching the business and communication etiquette of a designated culture; and apply their research findings to a variety of formats to be shared with classmates. Students=overall performance of this unit will be evaluated using the *Unit 4 Assessment Rubric*.

Unit 5: Students will assemble a scrapbook consisting of different information technology job advertisements, use the Internet to access a variety of web sites related to locating job advertisements, use appropriate software to produce a desktop-published document that will provide Internet advice for the job hunter, explore the information technology options in their school, and revise their information technology growth plans based on this newly-acquired information. Using copies of the exemplary work and information technology *Skills and Competencies Checklists* that students have collected throughout the course, they will determine their level of achievement and organize their portfolios accordingly. Students=overall performance for this unit will be evaluated using the *Unit 5 Assessment Rubric*.

Course Notes

This course includes three ongoing activities (*Reference Manual of Information Technology Terminology*, *Information Technology Skills and Competencies*, and *Developing/Enhancing Data Entry Skills*) that are outlined in *Unit 1, Appendix A*. The course also serves as a cross-curricular platform that can support information technology objectives in all courses. The development of activities and projects can be linked to business, school, and community initiatives.

For students with physical disabilities, specific software and hardware are commercially available. The activities have been designed so they can be achieved even if a school has only basic equipment available,

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but complete delivery depends on access to both specific technology and the local school infrastructure. Where unique situations exist (e.g., access to special equipment such as satellites, digital cameras, video conferencing) appropriate modifications should be built into the activities.

Many expectations throughout the course afford students the opportunity to work with mentors or act as mentors for other students. The career unit will provide students with opportunities for job shadowing and is an ideal vehicle for *Take Our Kids To Work@day*. In addition, students may need to obtain information from guidance and co-operative education departments.

Health, safety, legal, and ethical issues that are relevant to information technology are addressed in this course. Students will also have opportunities to develop good team and interpersonal skills while dealing with conflict management through partner, small, and large group activities. Cultural differences and customs are also addressed in several activities.

Environmental awareness, as it relates to information technology, will be addressed in a practical and ongoing manner. Students will be encouraged to proofread all work prior to printing, and will practise fine paper recycling of copies to be discarded. The environmental concerns related to the disposing of printer toner, ink, and/or ribbons will also be addressed.

Students will be required to create a portfolio, or personal folder, in which they will add samples of their exemplary work as the course progresses. The portfolio, although evaluated throughout, will be examined for completeness at the end of the course. The materials from this portfolio will enhance any portfolio the student develops as part of his/her yearly educational plan.

Schedule for Computer Access

Although ongoing access to computer equipment is desirable, occasionally this may not be feasible. Below is a table that outlines the type of usage recommended for each of the activities. General suggestions for scheduling:

1. Create a schedule for addressing activities that will allow one class access to equipment while another class is completing non-computer work. Keep in mind that the sequencing of activities does not need to follow a particular order and any exceptions are noted in the *Course Profile*.
2. Create a schedule based on minimizing conflicts in using particular software titles. Install specific software in different labs so that classes can move from lab to lab as specific software is required.
3. Note that when groups are using equipment, generally only one machine is required per group.
4. If Internet access is limited, teachers are encouraged to utilize the *Treasure Chest* strategy outlined in the *Course Overview*. Another option is to have some of the work done outside class time.

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Unit	Activity	Time	Recommended Needs
1: Information Technology Groundwork	Information Technology Reference Manual and Infrastructure	8 hours	Part A B database Part B B none Part C B assorted hardware (optional), 1 Internet-connected computer Part D B Internet-connected computer (pairs) (optional) Part E B none
	Exploring Legal and Ethical Issues in Information Technology	3 hours	word processing and Internet (groups) (optional)
	The Ergonomically Correct Workplace	2 hours	Part A B word processing (groups) Part B B word processing (groups) (optional)
	Navigating Through The Desktop	8 hours	Part A B desktop/system (groups) Part B B desktop/system (4 machines)
2: The Power of Application Software in Business	Determining Software Competencies Through Readiness Exercises	12 hours	Part A B word processing Part B B spreadsheet Part C B database
	The Internet Information Hunt	3 hours	Internet (pairs or individual)
	Unlocking the Mysteries of Desktop Publishing	4 hours	desktop publisher
	Using Information Technology to Plan an Upcoming Event	8 hours	word processing, spreadsheet, desktop publisher, database optional
3: E-Communication: Presenting With Purpose and Pizzazz	Making the Most of an Electronic Presentation	8 hours	electronic presentation software
	Does E-mail Need a Stamp?	4 hours	Part A B none Part B B none Part C B word processor or e-mail software
	Investigating Electronic Communication	4 hours	Internet (groups) (optional) word processing, desktop publisher (groups)
	Dazzle Your Audience	8 hours	Part A B Internet (groups), CD-ROM (optional) Part B B Internet, electronic presentation software (groups)
4: Gathering and Assessing Information Using Electronic Media	Techniques for Powerful Research Using Internet Tools	6 hours	Part A B none Part B B Internet (groups)
	<i>Caveat Lector</i> a.k.a. Let the Reader Beware	6 hours	Part A B none Part B B Internet
	Internet Connections and Computer Viruses	2 hours	Internet (groups) word processing (optional)
	Shrinking the World: Cultures and Customs on the WWW	6 hours	Part A B none Part B B word processing, Internet (groups)
5: Investigating Information Technology and Your Future	Information Technology Careers Scrapbook	4 hours	Internet (optional), electronic presentation software (optional), word processing
	A Pathway to Jobs on the Internet	3 hours	Internet, desktop publisher
	My Personal Portfolio	8 hours	student-selected tool(s)
	Investigating Information Technology Programs in Your School	3 hours	word processing or desktop publisher (groups)

Teaching/Learning Strategies

\$ brainstorming, constructing/creating, co-operative learning, researching, assessing, sharing, consulting/conferencing, demonstrating, interviewing, presenting, reading, discussing, responding, writing, speaking, listening, viewing, exploring/investigating, analysing, thinking/inquiring

The following strategies have been included to assist teachers in lesson planning:

Co-operative Small Group Learning

Co-operative small group learning is one of the teaching strategies recommended throughout this course. Learning to work as a contributing member of a team is essential for success in the business world. This method relies on the applications of five fundamental principles for success and effectiveness.

Principle #1

Students work in positive interdependence where the classroom environment becomes one of support and cohesion and every student respects the opportunity to be part of other students= learning in addition to learning from other students.

Principle #2

Students work in small heterogeneous groups which lead to face-to-face participation, active involvement of all members, meaningful exchanges of ideas, knowledge, internal motivation, and peer support and approval.

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Principle #3

Students are accountable both as individuals and as a group. Each group task will be given clear criteria for success. In addition, students will be involved in the planning, designing, and carrying out of assessment activities (peer and group). Feedback within the group and from the teacher should be ongoing.

Principle #4

Students learn through ample opportunity for purposeful talk.

Talk is critical as it allows students to think through ideas, deepen understanding and create personal meaning, increase active learning, and develop metacognition (thinking about thinking).

Principle #5

Students learn and practise co-operative skills as they study and explore the subject matter together. Co-operative skills prepare students for the future workplace where teamwork is essential.

The following co-operative small group learning strategies have been included in this course profile:

Jigsaw/Expert Groups

Students form groups that are called home groups. Each member of the home group will become an expert on a different topic by moving to a specific expert group location. Once the members of the expert group reach consensus, students return to their home groups where they will share their expertise with other members of their home group.

Think /Pair/Share

Students are given individual *think* time to respond to a question, problem, or new information. After a minute or so of *think* time, students are asked to pair up and share the information. Once the pairs reach consensus, they are asked to share with the rest of the class.

Think/Pair/Square

This strategy is a variation of Think/Pair/Share. Students share their responses with another pair, instead of with the whole class.

Combined Groups

This is a further variation on Think/Pair/Square where two larger groups are joined to share their work.

Graffiti

Each group is given a piece of paper on which to respond to a statement, question, topic, or issue. Each member of the group writes down ideas using the same colour marker. The paper is passed to the next group who adds to the ideas in a different colour marker. Eventually, each paper passes through each group and the original group categorizes the information and draws conclusions to share with the class.

Chunking

Each student receives a post-it note or piece of paper on which to record his/her ideas, questions, etc. about a specific topic. Students form groups and categorize the post-it notes according to specific criteria. Any duplicates are removed. This information is then posted by category; other groups contribute to the categories and/or contribute additional categories. As a class, questions can be answered, ideas shared, etc.

Thinking Skills

Students will face many issues throughout their lives. To assist students in meeting the challenges, they need help in developing a wide range of thinking skills. Incorporated in this course profile are the following discrete thinking skills:

- \$ *Brainstorming*: Students express ideas with no evaluation, the more ideas the better.
- \$ *Reference Manual of Information Technology Terminology*: This strategy helps students reflect on the meanings of words and to use them appropriately. It also provides students with the opportunity to write personal notes that will help them remember the term and its meaning.
- \$ *Mind mapping*: Students use a visual road map to express ideas and connect them to each other.
- \$ *What if?:* This is a cognitive tool that helps students develop a balanced perspective of any issue. An issue is placed in the central circle. Students think about the positive and negative outcomes for the issue. The clusters then make up a balanced perspective on the issue. This is useful when students are asked to think about controversial issues.
- \$ *Treasure Chest*: This strategy uses concrete materials to assist students in approaching new learning. It can be used anytime you are introducing students to new materials. The *Treasure Chest* can be a box or any other suitable container where brochures, articles, pictures, formats, etc., can be stored. These materials can then be used by students to complete specific activities.

Guest Speakers

Guest speakers from the business community are readily available and are an excellent source of current information. All guest speakers should be provided with guidelines for their presentation along with any materials you will be using with the students. Inform guests of any special accommodations of which they should be aware. Prior to the arrival of the guest speaker, arrangements should be made for any audio visual equipment required, discussions about questions to be asked by students should have taken place, and note-making guides for the students should be provided.

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Response Journals

Response journals are an excellent strategy to assist students in clarifying their thinking and working toward personal growth. With encouragement and support from the teacher, students can move into the deeper stages of authentic response. Response journals may be in any form from a simple notebook to pre-designed handouts. The specific purpose is to capture the students' thoughts on an issue as opposed to repetition of the facts.

Newspaper, Magazine, and Samples of Exemplary Work Collections

Begin a collection of newspapers, magazines, and samples of exemplary work that can be kept in the class and accessed by all students.

Inclusion

Building inclusion and a sense of community are essential to a positive class climate where students trust each other, are willing to take risks, and develop new skills. To be successful, inclusion activities in the form of warm-ups, team building, or co-operative learning should be built into every lesson.

Oral Presentation Skills

Distribute the oral presentation rubric (*Appendix - Generic Forms*) at the beginning of the course. The teacher may wish to have the class brainstorm what constitutes a good oral presentation, and use this information to construct the rubric. Use the rubric to assess individual and group presentations. The rubric is designed as a summative assessment. Students may identify from the rubric a particular skill that requires improvement. If so, they should develop a plan to help them improve that skill and develop confidence in presenting.

Conflict Management Strategies

Students are required to work collaboratively throughout the course; therefore, addressing conflict management is important to student success. At the beginning of the course, the teacher should address this issue, emphasizing that not all conflicts can be resolved, but people can always choose how to handle them. The following steps in resolution should be displayed in the classroom in the form of a poster or bulletin board display. Teachers must ensure that students understand the steps, and that the steps be followed should a conflict arise. Self, peer, group, and teacher evaluation forms also help deflect conflict and solve problems.

8 STEPS TO CONFLICT RESOLUTION

Define the conflict.

State the problem.

Check your perceptions.

Generate and evaluate a list of possible decisions/alternatives.

Reach a mutually acceptable decision.

Implement and evaluate the decision.

If the decision is satisfactory, students continue their work.

If the decision is unsatisfactory, students should repeat the process.

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ESL Accommodations

- \$ teacher should set the tone for a positive attitude toward helping students with special needs
- \$ English-speaking students can help their ESL classmates by repeating, rephrasing, and writing words down
- \$ bilingual peer tutors, if available, can be helpful, or use classroom groups to facilitate clarification in native language (ESL students benefit from first language help and support)
- \$ provide peer tutors and give them specific responsibilities up front
- \$ give recognition to partners for undertaking responsibilities with students with special needs
- \$ avoid All ESL@groupings
- \$ encourage ESL students to use their own language to explain terms in their private notes if it helps them remember
- \$ have all concrete items labelled so that every time students sit at the work station they will be reminded of the terms
- \$ allow speaking in native languages for clarification and explanation
- \$ encourage students to review terms in their *Reference Manual of Information Technology Terminology* as daily homework in order to reinforce the terms, commit them to memory, and practise spelling and oral pronunciation
- \$ limit speaking time in front of the class to one or two minutes to ensure other classmates do not lose interest
- \$ teachers should help students decide on the skills and competencies that still need work
- \$ provide students with a summary sheet that can be used at the end of each class (with teacher assistance) to list the main terms or concepts that were the focus of the lesson
- \$ make overheads of handouts on which teacher highlights important terms, explains words, clarifies instructions, etc. while students do the same on their copy
- \$ provide students with articles to choose from if they are unable to do their own research
- \$ provide students with a list of terminology to be added to their *Reference Manual of Information Technology Terminology*
- \$ teachers have students brainstorm a list of the information technology skills and competencies covered in completing this activity
- \$ assign tutors for ESL students to assist with the reading section
- \$ provide a glossary of terms for the reading for students with special needs

Special Education Accommodations

Several general strategies should be utilized throughout the course to provide opportunities for students to experience success.

- \$ modify time lines
- \$ modify quantity of content for document production
- \$ use large text with adequate spacing
- \$ provide worksheets for responses to questions (blank space should indicate the length of the response)
- \$ pair students
- \$ set up a Buddy@system
- \$ develop strategies with parental input and support
- \$ provide a glossary of terms for reading assignments
- \$ allow opportunities to redo all or a part of an item

- \$ provide labelled diagrams
- \$ provide lists of terms in advance
- \$ repeat and/or provide written instructions
- \$ create assessment/evaluation that meets a variety of learning styles
- \$ develop strategies with learning resource input and support (use student IEP)

When actual modifications of expectations are required (based on an IEP), it is expected that a set of different activities and assessment/evaluation techniques will be designed to ensure the individual is able to achieve the expectations described in the IEP.

Assessment and Evaluation Techniques

Student assessment and evaluation methods for this course reflect authentic practices found in the working world. Opportunities for assessment and evaluation are frequent, and they are designed to guide the student toward success and to value achievement. Reflective instruments are provided to help students control and plan their learning. Formal and informal observation techniques and conferencing help clarify student thinking and provide evidence of student progress. Tests help students to confidently build an inventory of knowledge and skills that subsequently are drawn upon to create a product or deliver a presentation. The completed products and presentations will be evaluated by the teacher.

- \$ formative, summative, diagnostic, self, peer, small group, whole class, teacher, reflection, observation/demonstration, checklists, process/progress, exemplars, pen and pencil, formats, rubrics,

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readiness/remediation, anecdotal comments, reference manual of terms, portfolio preparation, rubric for final assessment of each unit

Final Course Evaluation

When planning courses and assessment, teachers should review the required curriculum expectations and link them to the categories to which they relate. Teachers should ensure that all the expectations are accounted for in instruction, and that the achievement of the expectations is assessed within the appropriate categories (The Ontario Curriculum, Grades 9 and 10: Business Studies, 1999, p. 23). The suggested weighting system below advocates a weighting for each category identified on the *Achievement Chart - Grades 9-10, Business Studies*, pp. 24-25. Teachers must ensure that a student's most consistent performance level is reflected in his/her final mark. Teachers must also provide a variety of opportunities for students to demonstrate their achievement of the expectations.

Marking schemes and rubrics used for evaluation should be organized to include the four achievement categories or for as many as are applicable. One student-generated product, process, etc. may be evaluated under multiple categories. For example, a multimedia presentation may be considered a *Presentation* item that would have an evaluation component addressing *Knowledge and Skills*, *Thinking/Inquiry*, *Communication*, and *Application* categories. The teacher's record keeping would require that four separate marks be recorded for that assignment, one for each of the four categories it addresses. The overall mark for the multimedia presentation would be the sum of the four category marks. Students must be made aware of their evaluation in each category and be provided with suggested strategies for improvement.

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A. Ongoing Assessment and Evaluation 70%

Knowledge and Understanding 15%

Items include:

- \$ tests
- \$ quizzes
- \$ presentations
- \$ lab work

Thinking/Inquiry 15%

Items include:

- \$ presentations
- \$ lab work
- \$ projects
- \$ assignments

Communication 20 %

Items include:

- \$ presentations
- \$ lab work
- \$ projects
- \$ assignments

Application 20%

Items include:

- \$ presentations
- \$ lab work
- \$ projects
- \$ assignments

B. Final Evaluation 30%

- Formal examination (written and application) 15%
- Final Project - Portfolio 10%
- Final Project - Reference Manual of Information Technology
- Terminology 5%

Resources

Note: Units 3, 4, and 5 contain additional resources not included in the *Course Overview*.

Glossary Of Terms: To locate the meaning of terminology used in this course, access www.webopedia.com.

Internet Web Sites

It is important that teachers check web sites prior to giving them to students to make sure the site is still in operation.

Newspapers/Magazines

<http://www.schoolnet.com>

E Business Magazine

<http://www.hp.com/Ebusiness/>

Canadian Business Magazine

<http://www.canbus.ca>

Canoe - Canadian Newsstand and Information

<http://www.canoe.com>

Maclean's Canada's Weekly News Magazine

<http://www.macleans.ca>

Report on Business

<http://www.robmagazine.com>

The Globe and Mail

<http://www.globeandmail.com>

The Toronto Star

<http://www.thestar.com>

The National Post

<http://www.nationalpost.com>

The Toronto Sun

<http://www.canoe.ca/TorontoSun/home.html>

Sympatico News Express (Canada's news service)

<http://www.sympatico.ca/news/>

Information Technology News

www.bcm.tmc.edu/crc/index.html

PC Novice Magazine Search Site

www.pcnovice.com/penglus.html

Teacher Information

Microsoft Web site

www.microsoft.com/education/curric/office97

MainFunction: a Computer Science Resource

<http://www.mainfunction.com>

Premier Tracks (offers a collection of K-12 web-based lessons)

<http://www.4teachers.org/premier>

Real Networks (allows download of mostly free plug-ins)

<http://www.realaudio.com>

Education World - Where educators go to learn

http://www.education-world.com/US_Site

Fourteen Great Activities for the First Days of School

<http://www.education-world.com>

Innovative Teaching Web site

<http://www.intersef.net/mcken/teacher.htm>

The Global Schoolhouse (links kids and teachers around the world)

<http://www.gsn.org>

Canada's SchoolNet (links students/teachers, great projects)

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SyllabusWeb (top 40 education sites)

<http://www.syllabus.com/top40.htm>

Teacher Talk (teacher discussion area dealing with technology)

<http://www.mightymedia.com/talk/working.htm>

Educational Computing Organization of Ontario Magazine

<http://www.enoreo.on.ca/ecoo>

Ontario Business Educators= Association

www.obea.on.ca

Canadian Association of Business Education Teachers

www.cabet.org

Toronto Catholic District School Board

<http://www.tcdsb.on.ca/external/departments/html>

Conference Board of Canada

www.2conferenceboard.ca

The Canadian Womens Business Network

<http://www.cdnbizwomen.com>

Junior Achievement

<http://jacan.org>

General Reference Material

Dictionary

www.webopedia.com

Online Computing Dictionary

<http://www.itools.com>

General Terms/Quick finder:

<http://whatis.com>

The Computer Information Centre:

www.compinfo.co.uk/index.htm

Glossary/Concepts

<http://tdi.uregina.ca/~flash/cs100/index.html>

General Information

<http://itrc.uwaterloo.ca/~eng1210e/BookShelf/>

Encyclopedia

www.techweb.com/encyclopedia

www.wcsu.ctstateu.edu/~BURRITT001/desktop.htm

My Virtual Reference Desk

<http://www.refdesk.com>

Pitsco's Ask an Expert (research-oriented)

<http://www.askanexpert.com/askanexpert>

PC Magazine Information Technology Encyclopedia

www.webopedia.com

Beechmont Press

www.beechmontpress.com

Jones Telecommunications and M Multimedia Encyclopedia

www.digitalcentury.com/encyclo/update/desktop.html

Electric Library Canada (online research centre)

<http://www.elibrary.ca>

Writing Centres

Rensselaer Polytechnic Institute

www.rpi.edu/dept/lc/writecenter/web/text/

Purdue University Online Writing Lab

www.owl.english.purdue.edu/Files/99.html

Canberra Institute of Technology

www.student.cit.act.edu.au/support2.htm

RMIT University

www.tafe.lib.rmit.edu.au/bizman/courses/traineeship3/courses

ASU Writing Center

www.asu.edu/duas/wcenter/business.html

Colorado State University Writing Center

www.colostate.edu/Depts/WritingCenter/

Centre for Technical Communication (excerpt)

www.smartbiz.com/sbs/arts/bly48.htm

Specific Resources

The Computer Information Centre

www.compinfo.co.uk/index.htm

Technology Guides

www.techguide.com/home.shtml

Infrastructures/Peripheral

www.whatis.com/tourinf.htm

Operating Systems

www.pwc.k12.nf.ca/~wadev/intranet/mcsys1

www.zdnet.com/pcmag/pctech/content/15/09/tu1509.001.html

Extranet

www.picom.on.ca/extranet/what.php3

Internet-CenterSpan

www.centerspan.org/tutorial/net.htm

Intranet -CIO WebBusiness

www.cio.com/forums/intranet

<http://home.intranet.ca/newsletter3.html>

www.intramark.com/resources/pages/sem_1a.html

Hardware, WWW, and Terms

Newsgroups

www.hobsonsquare.com/ngintro.htm

Brainstorming

www.cmu.edu/fms/critl/brainstorm.html

www.mindtools.com/brainstm.html

Data Security

www.cowan.edu.au/ITDivision/security/password.htm

Internet Acceptable Use Agreements

falcon.jmu.edu/~ramsevil/netpolicy.htm

Web-page design

<http://www.incli.dist.maricopa.edu/tut/index.html>

Ergonomics

www.whscc.nf.ca/ergonomics.htm

www.physics.utoronto.ca/~pcs/OEClst.html

www.hfac-ace.ca

www.themutualgroup.com/tmg/english/group/dsdesk.htm

www.combo.com/ergo/index.html

HRDC Occupational Health and Safety in the Workplace

www.hroe.org/categories.cfm?prov_code=ON&lang=EN

Canadian and International Ergonomic Organizations

www.nomos.se/links/assoc.htm

Cornell University

www.ergo.human.cornell.edu/ergoguide.html

Defence Supply Center Columbus

www.dsccl.dla.mil/programs/safety_health/ergonomics

University of Virginia Ergonomics Quiz

www.virginia.edu/enhealthy/ERGONOMICS/quiz.html

University of Texas Guidelines

www.lib.utexas.edu/Pubs/etf/guidelines.html

Legal and Ethical Issues

Australian Institute of Computer Ethics

<http://www.aice.swin.edu.au/>

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Computer Ethics as a Discipline

<http://www.ccsr.cms.dmu.ac.uk/resources/general/discipline>

The Ethics Connection, Santa Clara University

<http://www.scu.edu/Ethics>

Government of Canada, The Privacy Act

<http://www.privcom.gc.ca/privacyact1/htm>

Brochure: Need Help Using the Privacy Act?

<http://magi.com/~privcan/pubs/needhelp.html>

Employers, Employees, E-Mail, and the Internet

<http://cla.org/RuhBook/chp6.htm>

Oyen Wiggs Green & Mutala (lawyers), Copyright FAQ

http://www.patentable.com/copyright_info.html

Government of Canada information about intellectual property

<http://strategis.ic.gc.ca/SSG/it00854e.html>

Spreadsheets

www.vu.umkc.edu/cs100/public/whatisaspreadsheet.html

Encryption

www.teleeducation.nb.ca/it/

http://educ.queensu.ca/~compsci/resources/grade10/web_sites.html

Symantec Security Introduction to Encryption

www.symantec.com/avcenter/security/encryption/encryption.html

Computer Learning Site

www.computerlearning.org

Basic Screen Layout (Icons, Windows, Toolbars)

www.til.org/basics6.html

Yahoo Kids

www.yahooligans.com

PedagoNet Learning Material and Resource Centre

www.pedagonet.com

Links for Multiple Search Engines

Beaucoup!..the exceptional way to search

www.beaucoup.com/engbig.html

University of Toronto – search

www.oise.utoronto.ca/search.html

Other Related Search Engine Sites

teleeducation.nb.ca/it/

www.actden.com

www.builder.com/Authoring/Newbies/?st.bl.fd.au2.feat.1561

www.corel.com

www.cyberbee.com/schoolpage/school.html

www.geocities.com/Baja/4361

www.microsoft.com

www.sausage.com

www.schoolnet.ca

www.treasure.canarie.ca/frames/startabout.html

Search Engines

Canada 411

www.canada411.com

AltaVista

www.altavista.ca

www.altavista.com

Brint Research

www.brint.com

Canada One

<http://www.canadaone.com/directory>

Canada Search!

<http://whatsnew.canadasearch.com>

(The) Canadian, Eh? Net Directory

www.canadianeh.com

CanLinks Directory

www.canlinks.net/index.html

Cyberspace Reserches World Wide Web Server

www.csr.ists.ca

Excite

www.excite.com

HotBot

www.hotbot.com

InfoSeek

www.infoseek.com

Keyword

www.keyword.com

Lycos

www.lycos.com

Maple Square

www.maplesquare.com

MetaCrawler

www.go2net.com/search.html

Mother of All Search Engines

www.mamma.com

Magellan Internet Guide

www.mckinley.com

Profusion

www.profusion.com

Savvysearch (metasearch engine)

www.savvysearch.com

WebCanada

www.webcanada.net

Web City Canada

www.webcity.ca

WebCrawler

www.webcrawler.com

Yahoo

www.yahoo.ca

www.yahoo.com

Other Resources

- \$ Carroll, Jim and Rick Broadhead. *Canadian Internet Handbook*. Toronto: Prentice Hall Canada Inc., 1998.
- \$ DeCew, Judith Wagner. *In Pursuit of Privacy: Law, Ethics, and the Rise of Technology*. Ithaca NY: Cornell, 1997.
- \$ Nef, Jorge and Jokelee Vanderkop and Henry Wiseman. *Ethics and Technology*. Toronto: Wall & Thompson, 1989.
- \$ Recent issues of *Fast Company*, *PC Computing*, *PC Magazine*, *PC World* Magazines
- \$ Manufacturers videos and films such as *Microsoft's Windows98 Operating System* and *The Journey Inside* from Intel (www.intel.com/edu/education/journey/forinformation) (teacher's manual available)
- \$ Assessment Video Series, TVO: *Assessing Student Performance*; *Collecting Assessment Information*; *Evaluating and Reporting*; *Accommodating Special Needs of Students*; *Planning Assessment*; *Instruction*
- \$ Cisco System, Cisco Network, Academics Promotional Clips, 23 min, Toronto, 416-216-8126, fax: 416-216-8099
- \$ Magazines, periodicals, newsletters (see web sites above); software and software manuals
- \$ Keyboarding textbooks for formatting instructions
- \$ Pyne, Sandra and Allene Tuck (Eds). *Oxford Dictionary of Computing for Learners of English*. London: Oxford University Press, 1996.

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Introduction to Information Technology in Business, Grade 9 or 10, Open

- \$ Microsoft Corp. *The Connected Learning Community, Technology Roadmap, A Comprehensive Guide to Planning and Implementing Computer Technology in K-12 Schools* (1998).
- \$ Heide, Ann and Linda Stilborne, *The Teacher's Guide to the Internet*. Trifolium Books Inc., 1996.
(<http://www.pubcouncil.ca/trifolium>)
- \$ Freedman, Alan. *The Computer Desktop Encyclopaedia*. New York: Amacom, 1996.
- \$ The Waterloo County Board of Education. *Cooperative Learning: A Resource to Small Group Learning, K-OAC*, Waterloo, 1992.
- \$ human resources (in-school; e.g., teacher-librarian, learning resource teacher, guidance counsellor; community; e.g., guest speakers, field trips, job shadowing)

OSS Policy Applications

Students will be assessing their information technology skills and competencies on an ongoing basis throughout the course. In doing so, they will be identifying material to be added to their portfolio. Although a portfolio can be developed for this course, it is hoped that students will use the one developed in conjunction with their educational plan.

This course provides many opportunities where students and teachers may link with other subject disciplines. For example, letter and report writing might be linked with English, spreadsheets with mathematics, legal and ethical issues with law, electronic research with teacher-librarians and the school resource centre, exploring career opportunities with guidance and co-operative education, accommodations for students with special needs with special education and ESL departments, and software (word processing, spreadsheet, database, desktop publishing) and Internet search competencies are important information technology skills that can be applied in all courses in the curriculum.

Course Overview

Introduction to Information Technology in Business, Grade 9 or 10, Open

Course Evaluation

A teacher may choose to use one or all of the following to obtain feedback on the success of his/her program.

- \$ use a class evaluation sheet--distributed to the students for feedback at the end of each activity and the whole course
- \$ use a course planner--teacher records each time overall and specific expectations are addressed (*Course Overview, Course Planner*).
- \$ use the *Readiness Exercises* to address students=entry and exit skill levels
- \$ assess the number of students who achieve *Level 3* on the *Assessment Rubric* at the end of each unit
- \$ students master all skills and knowledge listed in the *Skills and Competencies Checklists*
- \$ perform pre- and post-tests at the unit level to ensure that students=skill levels have increased
- \$ create a teacher pedagogy checklist (sample below) that includes reflection on an ongoing basis to show that the teacher uses a mixture of auditory, visual, kinaesthetic delivery modes, and accommodates students with special needs

Teacher Instruction

Copy the following checklist for each unit or activity being delivered. Use it to assess your delivery modes.

Pedagogy Checklist		
Educational Requirement	Specific Requirements	Teacher Actions/ Incorporation of Requirements
Learning Styles	Use of: \$ Auditory Teaching/Learning \$ Visual Teaching/Learning \$ Kinaesthetic Teaching/Learning	
Multiple Intelligences	Student work geared toward: \$ Verbal/Linguistic Intelligence \$ Logical/Mathematical Intelligence \$ Visual/Spatial Intelligence \$ Body/Kinaesthetic Intelligence \$ Musical/Rhythmic Intelligence \$ Interpersonal Intelligence \$ Intrapersonal Intelligence \$ Naturalist/Classification Intelligence \$ Existential/Strategic Intelligence	
Accommodations For Students with Special Needs	\$ Describe the specific special needs of individuals in this particular class \$ Explain the strategies used to accommodate them	

Course Planner

The *Course Planner* is a tool that may be used by a teacher when planning and implementing a program that addresses the specific expectations in a variety of ways. Teachers are encouraged to write each activity name and/or number on the grid, opposite the expectations addressed through the activity. In this way, teachers can see at a glance that there have been multiple opportunities for students to achieve expectations, and that there is a balanced number of opportunities across all expectations. The assessment and evaluation page will assist in planning the types and variety of assessment and evaluation tools. The following *Course Planner* has been completed based upon the units and activities in the *Course Profile*.

Course Overview

Introduction to Information Technology in Business, Grade 9 or 10, Open

<i>Program Planning Sheet</i>

Identifying Information

School/District: _____

Department: _____

Course Title: Introduction to Information Technology

Grade 9 or 10

School Course Code: _____

Secondary Policy Document Policy/Publication Date: *The Ontario Curriculum, Grades 9 and 10: Business Studies, 1999*

Ministry Course Code/Credit Value: BTT1O, BTT2O, 1 credit

Description/Rationale

This course introduces students to the use of information technology in a business environment. Students will learn how to use information technology in a work environment, perform electronic research, communicate electronically, and use common business software. They will also explore possible future occupations in information technology.

Assessment and Evaluation

Assessment and evaluation will be based on the provincial curriculum expectations and the achievement levels outlined in the secondary curriculum policy documents.

In order to ensure that assessment and evaluation are valid and reliable, and that they lead to the improvement of student learning, teachers must use assessment and evaluation strategies that:

- \$ address both what students learn and how well they learn;
- \$ are based on both the categories of knowledge and skills and the achievement level descriptions in the achievement chart for each discipline, as given in the *Ontario Secondary School* policy document;
- \$ are varied in nature, administered over a period of time, and designed to provide opportunities for students to demonstrate the full range of their learning;
- \$ are appropriate for the learning activities used, the purposes of instruction, and the needs and experiences of the students;
- \$ are fair to all students;
- \$ accommodate the needs of exceptional students, consistent with the strategies outlined in their *Individual Education Plans* (see sections 5.4: *Program Planning for Exceptional Students* and 7.12: *Special Education*, and appendix 6: *Meeting the Needs of Exceptional Students*);
- \$ accommodate the needs of students who are learning the language of instruction;
- \$ ensure that each student is given clear directions for improvement;
- \$ promote students' ability to assess their own learning and to set specific goals;
- \$ include the use of samples of students' work that provide evidence of their achievement;
- \$ are communicated clearly to students and parents at the beginning of each course and at other appropriate points throughout the course.

Strands and Overall Expectations

Information Management

- IMV.01 demonstrate an understanding of the information technology terms used in business;
- IMV.02 explain key infrastructures relevant to information technology;
- IMV.03 manage an information technology work environment;
- IMV.04 electronically manage personal data and computer files.

Software Applications

- SAV.01 demonstrate the skills required to enter data by using appropriate keyboarding techniques;
- SAV.02 demonstrate the use of basic functions and features of common business software;
- SAV.03 produce documents that meet basic business standards and formats.

Electronic Communication

- ECV.01 demonstrate an ability to use electronic software to create presentations;
- ECV.02 use electronic tools to communicate effectively with others;
- ECV.03 demonstrate an understanding of the legal issues relating to electronic communication.

Electronic Research and Ethical Issues

- ERV.01 use a variety of electronic media to find relevant information;
- ERV.02 analyse the various uses of the Internet in a business environment;
- ERV.03 analyse the ethical issues concerning the use of electronic information.

Career Opportunities

- COV.01 describe career opportunities related to information technology;
- COV.02 assess their information technology skills and competencies;
- COV.03 demonstrate an understanding of information technology programs designed for use in secondary schools.

Strands and Specific Expectations

<p>Information Technology Tools/Software Notes:</p>	<p style="text-align: right;">Information Management</p> <p>Terminology: IM1.01 define key information technology terms IM1.02 explain the concept of information technology IM1.03 use current information technology terminology appropriately</p> <p>Infrastructures: IM2.01 explain the functions of the hardware components of a computer workstation IM2.02 explain how a variety of operating systems work IM2.03 explain the use of a variety of peripheral devices IM2.04 differentiate between stand-alone and networked environments IM2.05 describe the environments to which stand-alone systems and networks are best suited</p> <p>Work Environment: IM3.01 demonstrate understanding of the importance of managing an ergonomically correct work environment IM3.02 explain information technology health and safety issues IM3.03 explain the importance of keeping information secure and confidential IM3.04 describe the importance of security systems IM3.05 demonstrate appropriate interpersonal skills when interacting with colleagues and peers in an information technology work environment</p> <p>File Management: IM4.01 describe the desktop elements and functions of a computer environment IM4.02 demonstrate an ability to arrange personal folders and files in a logical and useful manner that is easily understood by others IM4.03 create (e.g., design, edit, manage) an electronic address book IM4.04 analyse the potential impact of computer viruses on computer systems and files IM4.05 explain how anti-virus software applications in a business environment enhance system security</p>
<p>WP - Corel8 SS - MS Works DB - MS Works DTP - MS Publisher</p>	<p style="text-align: right;">Software Applications</p> <p>Data Entry Skills: SA1.01 demonstrate the ability to input data effectively SA1.02 demonstrate an understanding of the importance of accuracy when entering data SA1.03 use correct keyboarding techniques</p> <p>Application Software: SA2.01 explain the use of common business software SA2.02 use the common business software basic functions SA2.03 follow written and oral instructions regarding the use of software applications</p> <p>Business Documents: SA3.01 demonstrate the ability to select the most appropriate software applications for creating a particular business document SA3.02 produce correctly formatted business documents SA3.03 use electronic references effectively</p>
	<p style="text-align: right;">Electronic Communication</p> <p>Electronic Presentation: EC1.01 describe basic functions of the presentation software commonly used in business EC1.02 explain the purposes of presentation tools EC1.03 select the presentation tools that are most appropriate for an assigned purpose and target audience EC1.04 create an electronic presentation</p> <p>Electronic Communication Tools: EC2.01 describe the tools used to communicate electronically in business EC2.02 compare a variety of electronic communication tools in terms of their uses and benefits to business EC2.03 explain how e-mail is transmitted through the Internet and Intranet EC2.04 demonstrate an ability to use electronic communication tools effectively, using acceptable syntax and terminology</p> <p>Legal Issues: EC3.01 describe ways in which recent changes in information technology have had a positive and/or negative impact on business, working conditions, and other aspects of peoples lives EC3.02 communicate with people in other cultures, and demonstrate an understanding of their communication customs EC3.03 apply acceptable communication protocol in internal and external electronic communication EC3.04 investigate and describe legal issues related to electronic communication EC3.05 describe major issues related to security on the Internet, Intranet, and Extranet, and in e-mail</p>
	<p style="text-align: right;">Electronic Research and Ethical Issues</p> <p>Electronic Research: ER1.01 identify the forms and applications of electronic media that can be used to gather information ER1.02 describe the function of search engines ER1.03 use a variety of search engines to locate web sites ER1.04 access a variety of electronic media to gather information for specific purposes ER1.05 demonstrate an understanding of the criteria required to evaluate electronic media for usefulness, validity, bias, and confidentiality</p> <p>The Internet in Business: ER2.01 explain how a stand-alone computer is connected to the Internet ER2.02 compare the services provided to businesses by a variety of Internet Service Providers ER2.03 explain the ways in which organizations can use the Internet and Intranet ER2.04 compare the ways the Internet and Intranet are used in a variety of organizations</p> <p>Ethical Issues: ER3.01 explain purpose and content of an Internet Acceptable Use Agreement ER3.02 determine criteria to evaluate web sites in terms of validity, bias, and usefulness ER3.03 analyse the ethical implications of posting, accessing, and transmitting information in various digital formats ER3.04 apply copyright rules, regulations, and conventions to reference material obtained from electronic sources</p>
	<p style="text-align: right;">Career Opportunities</p> <p>Career Opportunities: CO1.01 identify occupations that require an understanding of information technology CO1.02 explain skills and competencies needed to work in an information technology environment CO1.03 identify local employers that may require employees who have a knowledge of information technology CO1.04 summarize current job advertisements that require information technology skills and education</p> <p>Skills and Competencies Assessment: CO2.01 determine their own information technology skills CO2.02 analyse their information technology strengths and weaknesses CO2.03 summarize, electronically, their information technology skills and competencies CO2.04 demonstrate their information technology skills in samples of their work CO2.05 demonstrate understanding of the importance of doing exemplary work and keeping samples of it for inclusion in resumes and portfolios that can be used in a future job search</p> <p>Information Technology Programs in Secondary School: CO3.01 identify the information technology programs available at their school CO3.02 determine the prerequisites for specific information technology courses CO3.03 design a personal plan to help them achieve information technology skills and competencies</p>

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Introduction to Information Technology in Business, Grade 9 or 10, Open

Activities																
IM1.01	Un1Ac1	Un1Ac2	Un1Ac3	Un2Ac1	Un2Ac2	Un2Ac3	Un2Ac4	Un3Ac2	Un3Ac3	Un3Ac4	Un4Ac1	Un4Ac2	Un4Ac3	Un4Ac4	Un5Ac1	Un5Ac2
IM1.02	Un1Ac1	Un3Ac4														
IM1.03	Un1Ac1	Un1Ac2	Un2Ac1	Un2Ac4	Un3Ac4	Un4Ac1	Un4Ac2	Un5Ac1								
IM2.01	Un1Ac1	Un1Ac3														
IM2.02	Un1Ac1															
IM2.03	Un1Ac1															
IM2.04	Un1Ac1															
IM2.05	Un1Ac1															
IM3.01	Un1Ac1	Un1Ac3														
IM3.02	Un1Ac1	Un1Ac3														
IM3.03	Un1Ac1	Un1Ac2	Un4Ac3													
IM3.04	Un1Ac1	Un1Ac2	Un4Ac3													
IM3.05	Un1Ac1	Un1Ac2	Un2Ac1	Un2Ac4												
IM4.01	Un1Ac4	Un3Ac4														
IM4.02	Un1Ac4	Un2Ac1	Un2Ac3	Un2Ac4	Un3Ac1	Un3Ac3	Un3Ac4	Un5Ac2								
IM4.03	Un1Ac4	Un2Ac1	Un2Ac4													
IM4.04	Un4Ac3															
IM4.05	Un4Ac3															
SA1.01	Un2Ac1	Un2Ac2	Un2Ac3	Un2Ac4	Un3Ac1	Un3Ac3	Un3Ac4	Un5Ac2								
SA1.02	Un2Ac1	Un2Ac2	Un2Ac3	Un2Ac4	Un3Ac1	Un3Ac3	Un3Ac4	Un4Ac1	Un5Ac2							
SA1.03	Un2Ac1	Un2Ac2	Un2Ac3	Un2Ac4	Un3Ac1	Un3Ac3	Un3Ac4	Un5Ac2								
SA2.01	Un1Ac1	Un2Ac1	Un2Ac2	Un2Ac3	Un2Ac4	Un3Ac4										
SA2.02	Un1Ac1	Un2Ac1	Un2Ac3	Un2Ac4	Un3Ac3	Un3Ac4										
SA2.03	Un2Ac1	Un2Ac2	Un2Ac3	Un2Ac4	Un3Ac3	Un3Ac4	Un5Ac2									
SA3.01	Un2Ac1	Un2Ac4	Un3Ac4	Un4Ac4	Un5Ac2	Un5Ac4										
SA3.02	Un2Ac1	Un2Ac4	Un3Ac4	Un4Ac4	Un5Ac2	Un5Ac4										
SA3.03	Un2Ac1	Un2Ac4	Un3Ac4	Un4Ac1	Un4Ac4	Un5Ac2										
EC1.01	Un3Ac1	Un3Ac4														
EC1.02	Un3Ac1	Un3Ac4														
EC1.03	Un3Ac1	Un3Ac4														
EC1.04	Un3Ac1															
EC2.01	Un1Ac1	Un3Ac3	Un3Ac4													
EC2.02	Un3Ac3	Un4Ac1														
EC2.03	Un1Ac2	Un3Ac2														
EC2.04	Un3Ac2	Un3Ac4	Un4Ac1													
EC3.01	Un1Ac2	Un1Ac3	Un4Ac3													
EC3.02	Un4Ac4															
EC3.03	Un3Ac4															
EC3.04	Un3Ac4															
EC3.05	Un3Ac4															
ER1.01	Un3Ac1	Un4Ac1	Un4Ac2	Un5Ac2												
ER1.02	Un2Ac1	Un2Ac2	Un3Ac1	Un4Ac1												
ER1.03	Un1Ac1	Un2Ac1	Un2Ac2	Un2Ac3	Un3Ac1	Un3Ac3	Un3Ac4	Un4Ac1	Un4Ac2	Un5Ac2						
ER1.04	Un1Ac2	Un2Ac1	Un2Ac2	Un2Ac3	Un2Ac4	Un3Ac1	Un3Ac3	Un3Ac4	Un4Ac1	Un4Ac2	Un4Ac3	Un4Ac4	Un5Ac2			
ER1.05	Un4Ac1	Un4Ac2	Un4Ac4	Un5Ac2												
ER2.01	Un4Ac3															
ER2.02	Un4Ac1															
ER2.03	Un4Ac1															
ER2.04	Un4Ac1															
ER3.01	Un1Ac2															
ER3.02	Un1Ac2	Un4Ac2														
ER3.03	Un1Ac2	Un3Ac4	Un4Ac2													
ER3.04	Un1Ac2	Un2Ac1	Un2Ac2	Un3Ac4	Un4Ac1	Un4Ac2	Un4Ac4									
CO1.01	Un5Ac1															
CO1.02	Un5Ac1															
CO1.03	Un5Ac1	Un5Ac2														
CO1.04	Un5Ac1															
CO2.01	Un1Ac1	Un2Ac1	Un2Ac2	Un2Ac3	Un2Ac4	Un3Ac1	Un3Ac2	Un3Ac3	Un3Ac4	Un4Ac1	Un4Ac2	Un4Ac3	Un4Ac4	Un5Ac1	Un5Ac3	Un5Ac4
CO2.02	Un1Ac1	Un2Ac1	Un2Ac3	Un2Ac4	Un3Ac1	Un3Ac2	Un3Ac3	Un3Ac4	Un4Ac1	Un4Ac2	Un4Ac3	Un4Ac4	Un5Ac1	Un5Ac3	Un5Ac4	
CO2.03	Un1Ac1	Un2Ac1	Un2Ac2	Un2Ac3	Un2Ac4	Un3Ac1	Un3Ac2	Un3Ac3	Un3Ac4	Un4Ac1	Un4Ac2	Un4Ac3	Un4Ac4	Un5Ac1	Un5Ac3	Un5Ac4
CO2.04	Un1Ac1	Un2Ac1	Un2Ac3	Un2Ac4	Un3Ac1	Un3Ac2	Un3Ac3	Un3Ac4	Un4Ac1	Un4Ac2	Un4Ac3	Un4Ac4	Un5Ac1	Un5Ac3	Un5Ac4	
CO2.05	Un1Ac1	Un2Ac1	Un2Ac3	Un2Ac4	Un3Ac1	Un3Ac2	Un3Ac3	Un3Ac4	Un4Ac1	Un4Ac2	Un4Ac3	Un4Ac4	Un5Ac1	Un5Ac3	Un5Ac4	
CO3.01	Un5Ac4															
CO3.02	Un5Ac4															
CO3.03	Un5Ac4															

