

2008

Credit Equivalency Resource Package

USE BOOKMARKS to SKIP to DESIRED SECTION

- **Introduction**
- **Alberta**
- **Atlantic Provinces**
- **British Columbia**
- **Quebec**

Introduction

- **Context**
- **What is the Package**
- **Suggestions for Use**



reach every student



Context/Background

Prior Learning Assessment and Recognition (PLAR) is the formal evaluation and credit granting process whereby students can obtain credits for prior learning. Under the direction of the principal, students can have their knowledge and skills evaluated against the expectations outlined in provincial curriculum policy documents in order to earn credits towards the Ontario Secondary School Diploma (OSSD).

The PLAR process involves two components: “challenge” and “equivalency.” The course comparison information is for use in the PLAR “equivalency” process; the process for assessing credentials from other jurisdictions.

PLAR Credit Equivalency for Regular Day School Students

Students, enrolled in Ontario secondary schools as regular day school students, who are eligible for equivalency credits are those who transfer to Ontario secondary schools from non-inspected private schools or schools outside Ontario. Equivalency credits are granted for placement only. The principal in the receiving school will, in the process of deciding where the student should be placed, determine as equitably as possible the total credit equivalency of the student’s previous learning, and the number of compulsory and optional credits still to be earned.

See Policy /Program Memorandum No .129, Prior Learning Assessment and Recognition (PLAR): Implementation in Ontario Secondary Schools, 2001

PLAR Credit Equivalency for Mature Students

For mature students enrolled in Ontario secondary schools, requirements concerning the application of the PLAR “equivalency” process differ from those for regular day school students because of the broader life experience of mature students. The “equivalency” process for mature students involves individual assessment for the purpose of granting Grade 9 or 10 credits, and/or assessment and credentials and other appropriate documentation from jurisdictions outside Ontario for the purpose of granting credit for a Grade 11 or 12 course developed from an Ontario curriculum policy document published in 2000 or later.

See Policy /Program Memorandum Mp.132, Prior Learning Assessment and Recognition (PLAR) for Mature Students: Implementation in Ontario Secondary Schools, 2003

What is this Credit Equivalency Resource Package?

This credit equivalency package provides a comparison of the alignment between senior-level Ontario secondary school credit courses and senior-level secondary school credit courses in other Canadian jurisdictions. The information is intended to help guidance counsellors/department heads/program coordinators in adult and continuing education programs, under the direction of a principal, to make decisions about granting credit equivalency for these credits.

The alignment comparison includes a separate chart for each out-of-province course compared to a corresponding Ontario course for:

- Grades 11 and 12 English, Mathematics, and Science from other provinces (Alberta, Atlantic Provinces, and British Columbia)
- Ontario International Languages Levels 1, 2, 3, 4 compared to corresponding international language courses in Chinese, Punjabi and Spanish Grades 9, 10, 11, and 12 from Alberta and British Columbia (provinces in which there are credit courses for these languages).

Basis for Comparison

The comparison of senior-level credit courses in other Canadian jurisdictions to Ontario courses is based on overall expectations/outcomes for the knowledge and skills presented in each course. Some courses from other Canadian jurisdictions correspond to more than one Ontario course.

In these instances, principals can take this into consideration when granting equivalency credits. As well, guidance counsellors may inform students that they are well prepared for each of the courses indicated. For example, the Atlantic Provinces Writing 110, Writing 2203 and WRT521A have a considerable relationship to Ontario's Writer's Craft, Grade 12, University Preparation (EWC4U) and Writer's Craft, Grade 12, College Preparation (EWC4C).

Students should consider post-secondary entrance requirements before deciding which one of the Ontario courses to select.

The following rubric could be useful in guiding decisions for granting credit equivalency:

Very Limited Relationship: many overall expectations are missing; student may be very challenged in subsequent courses that build from this course.

Considerable Relationship: several overall expectations are not met, but generally thorough coverage of expectations is evident in course or in its prerequisite courses.

Strong Relationship: all or almost all overall expectations are met, thorough coverage of expectations is evident in course or its prerequisite courses.

The course comparison charts provide curriculum information based on the knowledge and skills presented in each of the courses compared.

For easy access to the information and quick reference to the courses that were compared, the package includes:

- a list, by province, of senior-level English, Mathematic, and Science courses and the Grade 11 or 12 Ontario credit course most closely aligned to each of them
- a list, by province, of Chinese, Mandarin Chinese, Punjabi, and Spanish Grades 9, 10, 11, and 12 courses and the Ontario International Languages courses that are most closely aligned to each.

Information on Course Comparison Charts

The charted data for each course includes:

- course name and course code
- dates of implementation
- number of hours of instruction
- additional course information, e.g., prerequisites required, if any
- course description, e.g., key concepts and skills
- strands/major concepts
- approach to assessment and evaluation

How the Credit Equivalency Package Could be Used

This course comparison data can be used to:

- inform principals as they make decisions about granting Ontario credit equivalency for documented courses from other Canadian jurisdictions
- inform guidance teachers/program coordinators/department heads as they make decisions about placement in Ontario senior-level secondary school courses for which students should be well prepared to complete successfully
- support the PLAR “equivalency” process and the ability of mature students to earn credits for prior learning

Credit Equivalency Resource Package

Course Comparisons Alberta

**English
Math
Science**

Introduction

Organizing Framework

Each program of study (curriculum document) contains both general and specific outcomes. The competencies that a student must demonstrate to achieve success in a course are defined through the general outcomes. The specific outcomes provide a more detailed framework for instruction and define the knowledge, skills, and attitudes the student should acquire.

Grades 10, 11, and 12 are senior high school. Courses are numbered 10-19, 20-29 30-39 for Grades 10, 11, and 12. Grade 11 and 12 credits count towards graduation requirements. Numbering indicates the academic challenge of the course and/or the student's post-secondary goals.

Assessment and Evaluation

Evaluation and reporting is a local decision, and the grade is based on a student's knowledge, skills, and attitudes. Assessment is criterion-referenced and information is to be collected in a variety of ways and should have the following characteristics:

- be a part of instruction and clearly reveal what is expected of students
- be an ongoing process
- focus on a broad range of outcomes reflecting multiple dimensions of skill development
- be appropriate to developmental and cultural background
- should be constructive
- should involve students in their own assessment

Students are assessed in relation to the outcomes, and teachers are expected to communicate the grade levels at which they judge a student to be working.

The Department of Education administers provincial diploma examinations in Grade 12 courses. Final marks in the Grade 12 courses with diploma exams are based on teacher marks and on diploma examination marks. To obtain a credit, a student must write the appropriate diploma examination and attain a final blended mark of 50% or higher (the blended mark is the average of the school-awarded mark and the diploma examination mark).

One credit = 25 hours of instruction.

A – 80–100%

B – 65–70%

C – 50–64%

F – less than 50%

The explicit standards for the diploma examination programs are acceptable standard (50% or better) and standard of excellence (80% or better). These achievement standards provide a bar against which schools and districts can interpret their students' overall achievement from one year to the next. The achievement standards set for diploma examinations are that at least 85% of the students tested will achieve the acceptable standard or better, and 15% will achieve the standard of excellence.

Note: The following rubric may be useful in guiding decisions for granting a credit:

Very Limited Relationship – many overall expectations missing, student may be very challenged in subsequent courses that build from this course.

Considerable Relationship – several overall expectations are not met, but a generally thorough coverage of expectations is evident in course or in its prerequisite courses,...

Strong Relationship – all or almost all overall expectations are met, thorough coverage of expectations is evident in course or its prerequisite courses,...

Courses Compared

Alberta	Ontario
English	
English Language Arts 11 (ELA 20-1)	English, Grade 11, University Preparation ENG3U
Knowledge and Employability English Language Arts 12 (ELA 30-4)	English, Grade 12, Workplace Preparation ENG4E
English Language Arts 11 (ELA 20-2)	English, Grade 11, College Preparation ENG3C
Knowledge and Employability English Language Arts 11 (ELA 20-4)	English, Grade 11, Workplace Preparation ENG3E
English Language Arts 12 (ELA 30-2)	English, Grade 12, College Preparation ENG4C
English Language Arts 12 (ELA 30-1)	English, Grade 12, University Preparation ENG4U
Math	
Mathematics 20-4	Mathematics for Work and Everyday Life, Grade 11, Workplace Preparation MEL3E
Pure Mathematics 20 (MAT 2037)	Functions, Grade 11, University Preparation MCR3U
Pure Mathematics 20 (MAT 2037)	Functions and Applications, Grade 11, University/College Preparation MCF3M
Applied Mathematics 20 (MAT 2038)	Foundations of College Mathematics, Grade 11, College Preparation MBF3C
Mathematics 24 (MAT 2225)	Mathematics for Work and Everyday Life, Grade 12, Workplace Preparation MEL4E
Applied Mathematics 30 (MAT 3038)	Mathematics for College Technology, Grade 12, College Preparation MCT4C
Mathematics 31 (MAT 3211)	Calculus and Vectors, Grade 12, University Preparation MCV4U
Pure Mathematics 30 (MAT 3037)	Advanced Functions, Grade 12, University Preparation MHF4U
Science	
Biology 20 (SCN 2231)	Biology, Grade 11, College Preparation SBI3C
Biology 20 (SCN 2231)	Biology, Grade 11, University Preparation SBI3U
Biology 30 (SCN 3230)	Biology, Grade 12, University Preparation SBI4U
Chemistry 20 (SCN 2242)	Chemistry, Grade 11, University Preparation SCH3U
Chemistry 20 (SCN 2242)	Chemistry, Grade 12, College Preparation SCH4C
Chemistry 30 (SCN 3240)	Chemistry, Grade 12, University Preparation SCH4U
Physics 20 (SCN 2261)	Physics, Grade 11, University Preparation SPH3U
Physics 30 (SCN 3260)	Physics, Grade 12, University Preparation SPH4U
Physics 20 (SCN 2261)	Physics, Grade 12, College Preparation SPH4C

	Alberta	Ontario
Course Name	English Language Arts 11 (ELA 20-1)	English, Grade 11, University Preparation ENG3U
Date of Curriculum	2003	2007 (draft)
Hours of Instruction	125	110
Additional Course Information	ELA 10-1 is the usual prerequisite for ELA 20-1; however, students can also enter the course with ELA 20-2.	ENG2D is a prerequisite for ENG3U.
Course Description	The course focuses on developing effective communication strategies and supporting students in enhancing their skills for text study and text creation. Students study a variety of extended texts (e.g., novel, non-fiction work or film, and a Shakespearean play) and short texts (e.g., poetry, short stories, multimedia texts, and essays). Students create a variety of responses, including personal and critical/analytical, with an emphasis on responses to literary texts, and use a variety of print and non-print forms, including narrative, informative, and persuasive forms, script, and oral, visual, and multimedia presentations.	This course emphasizes the development of literacy, critical thinking, and communication skills. Students will analyse challenging texts from various periods; conduct research and analyse the information gathered; write persuasive and literary essays; and analyse the relationship among media forms, audiences, and media industry practices. An important focus will be on understanding the development of the English language.
Strands/Major Concepts	<p>Explore thoughts, ideas, feelings and experiences</p> <ul style="list-style-type: none"> • Discover possibilities • Extend awareness <p>Comprehend literature and other texts in oral, print, visual and multimedia forms, and respond personally, critically and creatively</p> <ul style="list-style-type: none"> • Construct meaning from text and context • Understand and appreciate textual forms, elements and techniques • Respond to a variety of print and nonprint texts <p>Manage ideas and information</p> <ul style="list-style-type: none"> • Determine inquiry or research requirements • Follow a plan of inquiry <p>Create oral, print, visual and multimedia texts, and enhance the clarity and artistry of communication</p> <ul style="list-style-type: none"> • Develop and present a variety of print and nonprint texts • Improve thoughtfulness, effectiveness and correctness of communication <p>Respect, support and collaborate with others</p> <ul style="list-style-type: none"> • Respect others and strengthen community • Work within a group 	<p>Oral Communication</p> <ul style="list-style-type: none"> • Listening to Understand • Speaking to Communicate • Reflecting on Skills and Strategies <p>Reading</p> <ul style="list-style-type: none"> • Reading for Meaning • Understanding Form and Style • Reading with Fluency • Reflecting on Skills and Strategies <p>Writing</p> <ul style="list-style-type: none"> • Developing and Organizing Content • Using Knowledge of Form and Style • Applying Knowledge of Conventions • Reflecting on Skills and Strategies <p>Media Literacy</p> <ul style="list-style-type: none"> • Understanding Media Texts • Understanding Forms and Conventions • Creating Media Texts • Reflecting on Skills and Strategies
Overall Comparison	There is a strong relationship between the two courses. All the major concepts in ENG3U are addressed in ELA 20-1, including the analysis and creation of literary, non-literary and media texts, the study of elements and forms, the use of strategies, and the reflection of personal growth. Both courses emphasize personal and critical/analytical responses to texts, especially literary texts, and to the study of essays.	
Additional Comments	Students who are interested in the study, creation, and analysis of literary texts may prefer to take the ELA 10-1, 20-1, 30-1 course sequence.	

	Alberta	Ontario
Course Name	Knowledge and Employability English Language Arts 12 (ELA 30-4)	English, Grade 12, Workplace Preparation ENG4E
Date of Curriculum	2006	2007 (draft)
Hours of Instruction	125	110
Additional Course Information	ELA 20-4 is the prerequisite for this course. The Knowledge and Employability English Language Arts courses are intended for students who are completing a Certificate of High School Achievement.	ENG3E
Course Description	The core responsibility of Knowledge and Employability English language arts courses is to foster and strengthen the development of language. Learning the foundational skills of communication enhances confidence, builds personal identity, and enables individuals to create and sustain meaningful relationships. Becoming successful communicators at home, at school, at work and in the community enables students to experience personal satisfaction and become responsible, contributing citizens, and lifelong learners.	This course emphasizes consolidation of literacy, critical thinking, and communication skills. Students will study information texts and literature from various countries and cultures; write summaries, reports, résumés, and short essays; complete an independent research project; and explain the connections among media forms, audiences and media industry practices. An important focus will be on using specialized language related to the workplace accurately and coherently in appropriate contexts.
Strands/Major Concepts	<p>Explore thoughts, ideas, feelings and experiences</p> <ul style="list-style-type: none"> • Discover possibilities • Extend awareness <p>Comprehend literature and other texts in oral, print, visual and multimedia forms, and respond personally, critically and creatively</p> <ul style="list-style-type: none"> • Construct meaning from text and context • Understand and appreciate textual forms, elements and techniques • Respond to a variety of print and non-print texts <p>Manage ideas and information</p> <ul style="list-style-type: none"> • Determine inquiry or research requirements • Follow a plan of inquiry <p>Create oral, print, visual and multimedia texts, and enhance the clarity and artistry of communication</p> <ul style="list-style-type: none"> • Develop and present a variety of print and non-print texts • Improve thoughtfulness, effectiveness and correctness of communication <p>Respect, support and collaborate with others</p> <ul style="list-style-type: none"> • Respect others and strengthen community • Work within a group 	<p>Oral Communication</p> <ul style="list-style-type: none"> • Listening to Understand • Speaking to Communicate • Reflecting on Skills and Strategies <p>Reading</p> <ul style="list-style-type: none"> • Reading for Meaning • Understanding Form and Style • Reading with Fluency • Reflecting on Skills and Strategies <p>Writing</p> <ul style="list-style-type: none"> • Developing and Organizing Content • Using Knowledge of Form and Style • Applying Knowledge of Conventions • Reflecting on Skills and Strategies <p>Media Literacy</p> <ul style="list-style-type: none"> • Understanding Media Texts • Understanding Forms and Conventions • Creating Media Texts • Reflecting on Skills and Strategies
Assessment/Evaluation	ELA 30-4 can be counted as one of the required English language arts courses for the Certificate of High School Achievement.	ENG4E counts as one of the compulsory courses required for graduation.
Overall Comparison	There is a strong relationship between the two courses. All the major concepts in ENG4E are addressed in ELA 30-4, including the study of informational, media and literary texts (with an emphasis on informational texts), the development and use of a variety of strategies, and learning related to the skills and texts from home, community and workplace contexts.	
Additional Comments	ELA 30-4 is intended for students who are completing a Certificate of High School Achievement instead of a High School Diploma; however, students may use this course as a prerequisite for ELA 30-2 if they wish to change their program plan. ELA 30-4 is designed for students who have experienced difficulty with English language arts in the regular program and focuses on the need of the learner to experience success. Students are provided with opportunities to practise functional communication skills for lifelong application.	

	Alberta	Ontario
Course Name	English Language Arts 11 (ELA 20-2)	English, Grade 11, College Preparation ENG3C
Date of Curriculum	2003	2007 (draft)
Hours of Instruction	125	110
Additional Course Information	ELA 10-2 is the usual prerequisite for ELA 20-2; however, students can also enter the course with ELA 10-1 or ELA 20-4. Students who aspire to post-secondary education but not necessarily to careers related to the English language arts, may register in this course.	ENG2P is a prerequisite for ENG3C.
Course Description	Students use the interrelated and interdependent language arts skills: listening, speaking, reading, writing, viewing and representing. The course focuses on developing effective communication strategies and supporting students in enhancing their skills for text study and text creation. Students study a variety of extended texts (e.g., novel, will film, drama) and short texts (e.g., poetry, short stories, multimedia texts, popular nonfiction). Students create a variety of responses, including personal and critical/analytical, and use a variety of print and non-print forms, including narrative, informative, and persuasive forms, scripts, and oral, visual, and multimedia presentations.	This course emphasizes the development of literacy, critical thinking, and communication skills. Students will study the content, form, and style of informational texts and literary works from Canada and other countries; write reports, correspondence, and persuasive essays; and analyse media forms, audiences, and media industry practices. An important focus will be on establishing appropriate voice and using business and technical language with precision and clarity.
Strands/Major Concepts	<p>Explore thoughts, ideas, feelings and experiences</p> <ul style="list-style-type: none"> • Discover possibilities • Extend awareness <p>Comprehend literature and other texts in oral, print, visual and multimedia forms, and respond personally, critically and creatively</p> <ul style="list-style-type: none"> • Construct meaning from text and context • Understand and appreciate textual forms, elements and techniques • Respond to a variety of print and nonprint texts <p>Manage ideas and information</p> <ul style="list-style-type: none"> • Determine inquiry or research requirements • Follow a plan of inquiry <p>Create oral, print, visual and multimedia texts, and enhance the clarity and artistry of communication</p> <ul style="list-style-type: none"> • Develop and present a variety of print and nonprint texts • Improve thoughtfulness, effectiveness and correctness of communication <p>Respect, support and collaborate with others</p> <ul style="list-style-type: none"> • Respect others and strengthen community • Work within a group 	<p>Oral Communication</p> <ul style="list-style-type: none"> • Listening to Understand • Speaking to Communicate • Reflecting on Skills and Strategies <p>Reading</p> <ul style="list-style-type: none"> • Reading for Meaning • Understanding Form and Style • Reading with Fluency • Reflecting on Skills and Strategies <p>Writing</p> <ul style="list-style-type: none"> • Developing and Organizing Content • Using Knowledge of Form and Style • Applying Knowledge of Conventions • Reflecting on Skills and Strategies <p>Media Literacy</p> <ul style="list-style-type: none"> • Understanding Media Texts • Understanding Forms and Conventions • Creating Media Texts • Reflecting on Skills and Strategies
Overall Comparison	There is a strong relationship between the two courses. All the major concepts in ENG3C are addressed in ELA 20-2, including the analysis and creation of literary, non-literary and media texts, the study of elements and forms, the use of strategies, and the reflection of personal growth. Both courses also have specific applications to careers and learning situations beyond the high school classroom.	
Additional Comments	Students who are interested in the study of popular culture and in real-world contexts may prefer to take the ELA 10-2, 20-2, 30-2 course sequence. In terms of texts, ELA 20-2 places a greater emphasis on the study of popular nonfiction (e.g., news stories, feature articles, reviews) and feature films. In terms of responding to and creating texts, ELA 20-2 places a greater emphasis on personal responses to contexts, and critical/analytical responses to print and non-print informational and persuasive texts.	

	Alberta	Ontario
Course Name	Knowledge and Employability English Language Arts 11 (ELA 20-4)	English, Grade 11, Workplace Preparation ENG3E
Date of Curriculum	2006	2007 (draft)
Hours of Instruction	125	110
Additional Course Information	ELA 10-4 is the prerequisite for this course. The Knowledge and Employability English Language Arts courses are intended for students who are completing a Certificate of High School Achievement.	ENG2L or ENG2P are pre-requisites
Course Description	The core responsibility of Knowledge and Employability English language arts courses is to foster and strengthen the development of language. Learning the foundational skills of communication enhances confidence, builds personal identity, and enables individuals to create and sustain meaningful relationships. Becoming successful communicators at home, at school, at work and in the community enables students to experience personal satisfaction and become responsible, contributing citizens, and lifelong learners.	This course emphasizes the development of literacy, critical thinking, and communication skills. Students will study the content, form, and style of informational texts and literary works; write explanations, letters, and reports; and investigate the connections among media forms, audiences, and media industry practices. An important focus will be on using language clearly, accurately, and effectively in a variety of contexts.
Strands/Major Concepts	<p>Explore thoughts, ideas, feelings and experiences</p> <ul style="list-style-type: none"> • Discover possibilities • Extend awareness <p>Comprehend literature and other texts in oral, print, visual and multimedia forms, and respond personally, critically and creatively</p> <ul style="list-style-type: none"> • Construct meaning from text and context • Understand and appreciate textual forms, elements and techniques • Respond to a variety of print and non-print texts <p>Manage ideas and information</p> <ul style="list-style-type: none"> • Determine inquiry or research requirements • Follow a plan of inquiry <p>Create oral, print, visual and multimedia texts, and enhance the clarity and artistry of communication</p> <ul style="list-style-type: none"> • Develop and present a variety of print and non-print texts • Improve thoughtfulness, effectiveness and correctness of communication <p>Respect, support and collaborate with others</p> <ul style="list-style-type: none"> • Respect others and strengthen community • Work within a group 	<p>Oral Communication</p> <ul style="list-style-type: none"> • Listening to Understand • Speaking to Communicate • Reflecting on Skills and Strategies <p>Reading</p> <ul style="list-style-type: none"> • Reading for Meaning • Understanding Form and Style • Reading with Fluency • Reflecting on Skills and Strategies <p>Writing</p> <ul style="list-style-type: none"> • Developing and Organizing Content • Using Knowledge of Form and Style • Applying Knowledge of Conventions • Reflecting on Skills and Strategies <p>Media Literacy</p> <ul style="list-style-type: none"> • Understanding Media Texts • Understanding Forms and Conventions • Creating Media Texts • Reflecting on Skills and Strategies
Assessment/Evaluation	ELA 20-4 can be counted as one of the required English language arts courses for the Certificate of High School Achievement.	ENG3E counts as one of the compulsory courses required for graduation.
Overall Comparison	There is a strong relationship between the two courses. All the major concepts in ENG3E are addressed in ELA 20-4, including the study of informational, media and literary texts (with an emphasis on non-literary texts), the development and use of a variety of strategies, and learning related to the skills and texts from home, community and workplace contexts.	
Additional Comments	ELA 20-4 is intended for students who are completing a Certificate of High School Achievement instead of a High School Diploma; however, students may use this course as a prerequisite for ELA 20-2 if they wish to change their program plan. ELA 20-4 is designed for students who have experienced difficulty with English language arts in the regular program and focuses on the need of the learner to experience success. Students are provided with opportunities to practise functional communication skills for lifelong application.	

	Alberta	Ontario
Course Name	English Language Arts 12 (ELA 30-2)	English, Grade 12, College Preparation ENG4C
Date of Curriculum	2003	2007 (draft)
Hours of Instruction	125	110
Additional Course Information	ELA 20-2 is the usual prerequisite for ELA 30-2; however, students can also enter the course with ELA 20-1 or ELA 30-4. Students who aspire to post-secondary education but not necessarily to careers related to the English language arts, may register in this course. Not all post-secondary institutions accept ELA 30-2 for entry.	ENG3C is a prerequisite for ENG4C.
Course Description	The course focuses on developing effective communication strategies and supporting students in enhancing their skills for text study and text creation. Students study a variety of extended texts (e.g., novel or non-fiction work, film, drama) and short texts (e.g., poetry, short stories, multimedia texts, essay, popular nonfiction). Students create a variety of responses, including personal and critical/analytical, and use a variety of print and non-print forms, including narrative, informative, and persuasive forms, and oral, visual, and multimedia presentations.	This course emphasizes the development of literacy, critical thinking, and communication skills. Students will analyse information texts and literary works from various time periods, countries, and cultures; write research reports, summaries, and short analytical essays; complete an independent study project; and analyse interactions among media forms, audiences, and media industry practices. An important focus will be on establishing appropriate style and using business and technical language effectively.
Strands/Major Concepts	<p>Explore thoughts, ideas, feelings and experiences</p> <ul style="list-style-type: none"> • Discover possibilities • Extend awareness <p>Comprehend literature and other texts in oral, print, visual and multimedia forms, and respond personally, critically and creatively</p> <ul style="list-style-type: none"> • Construct meaning from text and context • Understand and appreciate textual forms, elements and techniques • Respond to a variety of print and non-print texts <p>Manage ideas and information</p> <ul style="list-style-type: none"> • Determine inquiry or research requirements • Follow a plan of inquiry <p>Create oral, print, visual and multimedia texts, and enhance the clarity and artistry of communication</p> <ul style="list-style-type: none"> • Develop and present a variety of print and non-print texts • Improve thoughtfulness, effectiveness and correctness of communication <p>Respect, support and collaborate with others</p> <ul style="list-style-type: none"> • Respect others and strengthen community • Work within a group 	<p>Oral Communication</p> <ul style="list-style-type: none"> • Listening to Understand • Speaking to Communicate • Reflecting on Skills and Strategies <p>Reading</p> <ul style="list-style-type: none"> • Reading for Meaning • Understanding Form and Style • Reading with Fluency • Reflecting on Skills and Strategies <p>Writing</p> <ul style="list-style-type: none"> • Developing and Organizing Content • Using Knowledge of Form and Style • Applying Knowledge of Conventions • Reflecting on Skills and Strategies <p>Media Literacy</p> <ul style="list-style-type: none"> • Understanding Media Texts • Understanding Forms and Conventions • Creating Media Texts • Reflecting on Skills and Strategies
Assessment/Evaluation	ELA 30-2 (or ELA 30-1) is required for a student to attain an Alberta High School Diploma. Students must write a provincial diploma examination for ELA 30-2 and must obtain a final mark of 50% or higher in the course. The final mark is the average of the school-awarded mark and the diploma examination mark.	ENG4C counts as one of the compulsory courses required for graduation.
Overall Comparison	There is a strong relationship between the two courses. All the major concepts in ENG4C are addressed in ELA 30-2, including the analysis and creation of non-literary, media, and literary texts, the study of elements and forms, the use of strategies, and the reflection of personal growth. Both courses also have specific applications to careers and learning situations beyond the high school classroom.	
Additional Comments	Students who are interested in the study of popular culture and in real-world contexts may prefer to take the ELA 10-2, 20-2, 30-2 course sequence. In terms of texts, ELA 30-2 places a greater emphasis on the study of popular nonfiction (e.g., news stories, feature articles, reviews) and feature films. In terms of responding to and creating texts, the course places a greater emphasis on personal responses to contexts, and critical/analytical responses to print and non-print texts other than literary text.	

	Alberta	Ontario
Course Name	English Language Arts 12 (ELA 30-1)	English, Grade 12, University Preparation ENG4U
Date of Curriculum	2003	2007 (draft)
Hours of Instruction	125	110
Additional Course Information	ELA 20-1 is the usual prerequisite for ELA 30-1; however, students can also enter the course with ELA 30-2. ELA 30-1 is designed for students who aspire to post-secondary education, especially those programs and careers that require skills related to the English language arts.	ENG3U is a prerequisite for ENG4U.
Course Description	The course focuses on developing effective communication strategies and supporting students in enhancing their skills for text study and text creation. Students study a variety of extended texts (e.g., novel or non-fiction work, film or drama, and a Shakespearean play) and short texts (e.g., poetry, short stories, multimedia texts, popular nonfiction, and essays). Students create a variety of responses, including personal and critical/ analytical, with an emphasis on responses to literary texts, and use a variety of print and non-print forms, including narrative, informative, and persuasive forms, and oral, visual, and multimedia presentations.	This course emphasizes consolidation of literacy, critical thinking, and communication skills. Students will analyse a range of challenging texts from various time periods, countries, and cultures, write analytical and argumentative essays and a major paper for an independent literary research project, and apply key concepts to analyse media works. An important focus will be on understanding academic language and using it coherently and confidently in discussion and argument.
Strands/Major Concepts	<p>Explore thoughts, ideas, feelings and experiences</p> <ul style="list-style-type: none"> • Discover possibilities • Extend awareness <p>Comprehend literature and other texts in oral, print, visual and multimedia forms, and respond personally, critically and creatively</p> <ul style="list-style-type: none"> • Construct meaning from text and context • Understand and appreciate textual forms, elements and techniques • Respond to a variety of print and nonprint texts <p>Manage ideas and information</p> <ul style="list-style-type: none"> • Determine inquiry or research requirements • Follow a plan of inquiry <p>Create oral, print, visual and multimedia texts, and enhance the clarity and artistry of communication</p> <ul style="list-style-type: none"> • Develop and present a variety of print and nonprint texts • Improve thoughtfulness, effectiveness and correctness of communication <p>Respect, support and collaborate with others</p> <ul style="list-style-type: none"> • Respect others and strengthen community • Work within a group 	<p>Oral Communication</p> <ul style="list-style-type: none"> • Listening to Understand • Speaking to Communicate • Reflecting on Skills and Strategies <p>Reading</p> <ul style="list-style-type: none"> • Reading for Meaning • Understanding Form and Style • Reading with Fluency • Reflecting on Skills and Strategies <p>Writing</p> <ul style="list-style-type: none"> • Developing and Organizing Content • Using Knowledge of Form and Style • Applying Knowledge of Conventions • Reflecting on Skills and Strategies <p>Media Literacy</p> <ul style="list-style-type: none"> • Understanding Media Texts • Understanding Forms and Conventions • Creating Media Texts • Reflecting on Skills and Strategies
Assessment/ Evaluation	ELA 30-1 (or ELA 30-2) is required for a student to attain an Alberta High School Diploma. Students must write a provincial diploma examination for ELA 30-1 and must obtain a final mark of 50% or higher in the course. The final mark is the average of the school-awarded mark and the diploma examination mark.	ENG4U counts as one of the compulsory courses required for graduation.
Overall Comparison	There is a strong relationship between the two courses. All the major concepts in ENG4U are addressed in ELA 30-1, including the analysis and creation of literary, non-literary and media texts, the study of elements and forms, the use of strategies, and the reflection of personal growth. Both courses emphasize personal and critical/analytical responding to texts, especially literary texts, and to the study of essays.	
Additional Comments	Students who are interested in the study, creation, and analysis of literary texts may prefer to take the ELA 10-1, 20-1, 30-1 course sequence.	

	Alberta	Ontario
Course Name	Mathematics 20-4	Mathematics for Work and Everyday Life, Grade 11, Workplace Preparation MEL3E
Date of Curriculum	2006	2007
Hours of Instruction	125	110
Additional Course Information	Prerequisite: Mathematics 10-4 (Grade 10 course) Note: Students may also use Math 10-4 as a prerequisite to Math 14	Prerequisite: Principles of Mathematics, Grade 9, Academic, or Foundations of Mathematics, Grade 9, Applied, or a ministry-approved locally developed Grade 10 mathematics course
Course Description	<ul style="list-style-type: none"> • solve everyday home, community and workplace problems by applying arithmetic operations to whole numbers, decimals, common fractions, percents and integers • express and use patterns, variables and expressions, including those used in business and industry, with graphs to solve problems at home, in the community and in the workplace. • estimate, measure and compare using whole numbers, decimals, fractions and metric (SI) and Imperial units of measure to solve everyday problems. • communicate mathematically and investigate the application of shape and space in a variety of career and workplace situations, 	This course enables students to broaden their understanding of mathematics as it is applied in the workplace and daily life. Students will solve problems associated with earning money, paying taxes, and making purchases; apply calculations of simple and compound interest in saving, investing, and borrowing; and calculate the costs of transportation and travel in a variety of situations. Students will consolidate their mathematical skills as they solve problems and communicate their thinking.
Strands/Major Concepts	Number <ul style="list-style-type: none"> • solve consumer problems, calculating interest rates, determining budgets Patterns & Relations Variables & Equations Measurement Statistics and Probability	Earning and Purchasing Saving, Investing, and Borrowing Transportation and Travel
Overall Comparison	<p>There is a considerable relationship between the two courses. Both courses focus on earning, purchasing, saving, borrowing, and vehicle costs.</p> <p>Alberta's course requires students to work with variables and equations in applications that are not required in Workplace Preparation mathematics courses in Ontario.</p> <p>Overall Expectations in MEL3E NOT in the Alberta course:</p> <p>Transportation and Travel</p> <ul style="list-style-type: none"> • plan and justify a route for a trip by automobile, and solve problems involving the associated costs; • interpret information about different modes of transportation, and solve related problems. <p>Saving, Investing, and Borrowing</p> <ul style="list-style-type: none"> • demonstrate an understanding of simple and compound interest, and solve problems involving related applications <p>Note: Students from Math 20-4 may not have studied expectations within the Earning and Purchasing, and Saving, Investing, Borrowing strands of the Ontario curriculum to the same depth as students who have completed MEL3E.</p>	
Additional Comments	<p>In Alberta, there are two workplace math streams.</p> <p>Math 24 is comparable in expectations to MEL4E. Mathematics 24 is the final workplace destination math course available in Alberta. Students can take the Math 24 course in Grade 11. Math 14 is a prerequisite and can be taken in Grade 10.</p> <p>For students who may not be successful in Math 14 and Math 24, Alberta offers Math 10-4 and Math 20-4. Math 20-4 can be used as a prerequisite to Math 24.</p>	

	Alberta	Ontario
Course Name	Pure Mathematics 20 (MAT 2037)	Functions, Grade 11, University Preparation MCR3U
Date of Curriculum	2002	2007
Hours of Instruction	125	110
Additional Course Information	Prerequisite: Pure Math 10, Grade 10, or student takes a bridge course Pure Math 10b after completion of Applied Math 10.	Prerequisite: Principles of Mathematics, Grade 10, Academic
Course Description	<ul style="list-style-type: none"> • Represent and analyze situations that involve expressions, equations, and inequalities. • Apply the principles of mathematical reasoning to solve problems and to justify solutions. • Represent and analyze quadratic, polynomial, and rational functions, using technology as appropriate. • Solve coordinate geometry problems involving lines and line segments, and justify the solutions. • Develop and apply the geometric properties of circles and polygons to solve problems. • Solve consumer problems, using arithmetic operations. 	This course introduces the mathematical concept of the function by extending students' experiences with linear and quadratic relations. Students will investigate properties of discrete and continuous functions, including trigonometric and exponential functions; represent functions numerically, algebraically, and graphically; solve problems involving applications of functions; investigate inverse functions; and develop facility in determining equivalent algebraic expressions. Students will reason mathematically and communicate their thinking as they solve multi-step problems.
Strands/Major Concepts	Linear and Nonlinear Systems <ul style="list-style-type: none"> • Systems of equations Quadratic Functions & Equations Polynomial Equations & Functions Formal Reasoning <ul style="list-style-type: none"> • Inductive and deductive reasoning Circles & Coordinate Geometry <ul style="list-style-type: none"> • Coordinate geometry, deductive geometry Finance <ul style="list-style-type: none"> • Includes work with compound interest and data in exponential form 	Characteristics of Functions Exponential Functions Discrete Functions Trigonometric Functions
Overall Comparison	<p>There is a considerable relationship between the two courses. Selected topics in Trigonometric Functions and Exponential Functions identified in MCR3U are not taught until Grade 12 in Alberta. Geometric Sequences and Series are not taught until Grade 12 in Alberta.</p> <p>Alberta's course requires students to work with Formal Reasoning, and Circles and Coordinate Geometry that exceeds the expectations in MCR3U and its prerequisite courses.</p> <p>Overall Expectations in MCR3U NOT in the Alberta course:</p> <p>Discrete Functions</p> <ul style="list-style-type: none"> • demonstrate an understanding of the relationships involved in arithmetic and geometric sequences and series, and solve related problems; (Note: geometric sequences and series are not taught in Pure Math 20) • make connections between sequences, series, and financial applications, and solve problems involving compound interest and ordinary annuities. <p>Trigonometric Functions</p> <ul style="list-style-type: none"> • demonstrate an understanding of periodic relationships and sinusoidal functions, and make connections between the numeric, graphical, and algebraic representations of sinusoidal functions; • identify and represent sinusoidal functions, and solve problems involving sinusoidal functions, including those arising from real-world applications. 	
Additional Comments	<p>Note: The Alberta course Pure Mathematics 20 has a considerable relationship to Functions and Applications, MCF3M.</p> <p>In Alberta, there is a common Grade 9 program, and streamed courses begin in Grade 10. For example, in the Pure Math courses</p> <ul style="list-style-type: none"> • Pure Math 10 is a Grade 10 course; • Pure Math 20 is a Grade 11 course, and • Pure Math 30 and Pure Math 31 are Grade 12 courses. <p>In Alberta, there are bridge courses (or cross-over courses) that students can take to move from Applied Math to Pure Math or from Pure Math to Applied Math. These courses can be full credit or partial credit courses. Pure Math 10 b is a bridge course to Pure Math 20 (Grade 11 course) Pure Math 20 b is a bridge course to Pure Math 30 (Grade 12 course)</p>	

	Alberta	Ontario
Course Name	Pure Mathematics 20 (MAT 2037)	Functions and Applications, Grade 11, University/College Preparation MCF3M
Date of Curriculum	2002	2007
Hours of Instruction	125	110
Additional Course Information	Prerequisite: Pure Math 10, Grade 10, or takes a bridge course Pure Math 10b after completion of Applied Math 10.	Prerequisite: Principles of Mathematics, Grade 10, Academic or Foundations of Mathematics, Grade 10, Applied
Course Description	<ul style="list-style-type: none"> • Represent and analyze situations that involve expressions, equations, and inequalities. • Apply the principles of mathematical reasoning to solve problems and to justify solutions. • Represent and analyze quadratic, polynomial, and rational functions, using technology as appropriate. • Solve coordinate geometry problems involving lines and line segments, and justify the solutions. • Develop and apply the geometric properties of circles and polygons to solve problems. • Solve consumer problems, using arithmetic operations. 	This course introduces basic features of the function by extending students' experiences with quadratic relations. It focuses on quadratic, trigonometric, and exponential functions and their use in modelling real-world situations. Students will represent functions numerically, graphically, and algebraically; simplify expressions; solve equations; and solve problems relating to applications. Students will reason mathematically and communicate their thinking as they solve multi-step problems.
Strands/Major Concepts	Linear and Nonlinear Systems <ul style="list-style-type: none"> • Systems of equations Quadratic Functions & Equations Polynomial Equations & Functions Formal Reasoning <ul style="list-style-type: none"> • Inductive and deductive reasoning Circles & Coordinate Geometry <ul style="list-style-type: none"> • Coordinate geometry, deductive geometry Finance <ul style="list-style-type: none"> • Includes work with compound interest and data in exponential form 	Quadratic Functions Exponential Functions Trigonometric Functions
Overall Comparison	<p>There is a considerable relationship between the two courses. Selected topics in Trigonometric Functions and Exponential Functions identified in MCF3M are not taught until Grade 12 in Alberta.</p> <p>Alberta's course requires students to work with Formal Reasoning, and Circles and Coordinate Geometry that are not included in the expectations in MCF3M and its prerequisite courses.</p> <p>Overall Expectations in MCF3M NOT in the Alberta course:</p> <p>Exponential Functions</p> <ul style="list-style-type: none"> • identify and represent exponential functions, and solve problems involving exponential functions, including those arising from real-world applications; <p>Trigonometric Functions</p> <ul style="list-style-type: none"> • demonstrate an understanding of periodic relationships and the sine function, and make connections between the numeric, graphical, and algebraic representations of sine functions; • identify and represent sine functions, and solve problems involving sine functions, including those arising from real-world applications 	
Additional Comments	<p>Note: The Alberta course Pure Mathematics 20 has a considerable relationship to Functions MCR3U. In Alberta, there are bridge courses (or cross-over courses) that students can take to move from Applied Math to Pure Math or from Pure Math to Applied Math. These courses can be full credit or partial credit courses. Pure Math 10 b is a bridge course to Pure Math 20 (Grade 11 course) Pure Math 20 b is a bridge course to Pure Math 30 (Grade 12 course)</p>	

	Alberta	Ontario
Course Name	Applied Mathematics 20 (MAT 2038)	Foundations for College Mathematics, Grade 11, College Preparation MBF3C
Date of Curriculum	2002	2007
Hours of Instruction	125	110
Additional Course Information	Prerequisite: Applied Math 10, Grade 10, or student takes a bridge course Applied Math 10b after completion of Pure Math 10.	Prerequisite: Foundations of Mathematics, Grade 10, Applied
Course Description	<ul style="list-style-type: none"> • Analyze graphs or charts of given situations to derive specific information. • Represent and analyze quadratic, polynomial, and exponential functions, using technology as appropriate. • Represent and analyze situations that involve expressions, equations, and inequalities. • Use linear programming to solve optimization problems. • Develop and apply the geometric properties of circles and polygons to solve problems. • Use measuring devices to make estimates and to perform calculations in solving problems. 	This course enables students to broaden their understanding of mathematics as a problem solving tool in the real world. Students will extend their understanding of quadratic relations; investigate situations involving exponential growth; solve problems involving compound interest; solve financial problems connected with vehicle ownership; develop their ability to reason by collecting, analysing, and evaluating data involving one variable; connect probability and statistics; and solve problems in geometry and trigonometry. Students will consolidate their mathematical skills as they solve problems and communicate their thinking.
Strands/Major Concepts	Graphing & Design <ul style="list-style-type: none"> • (analyze statistical graphs and charts) Regression & Non-Linear Equations <ul style="list-style-type: none"> • (quadratic functions, exponential functions, curves of best fit) Linear Systems & Programming <ul style="list-style-type: none"> • (solve system of equations, linear programming) Finance <ul style="list-style-type: none"> • (personal finance, simple and compound interest) Circle Geometry & Design <ul style="list-style-type: none"> • (properties of circles and polygons, solve design problems) Measurement & Design <ul style="list-style-type: none"> • (scale factors, tolerance, percentage error) 	Mathematical Models Personal Finance Geometry and Trigonometry Data Management
Overall Comparison	<p>There is a considerable relationship between the two courses. Most overall expectations of MBF3C are taught in Applied Mathematics 20, or in the prerequisite courses for Applied Math 20 (e.g., the trigonometry required in MBF3C was taught in Applied Math 10 in Alberta). Vehicle costs are not taught until Applied Math 30 (Grade 12) in Alberta.</p> <p>Alberta's course requires students to work with Circle Geometry and Design, and with Measurement and Design concepts (e.g., tolerance, scale factors) that are not included in the expectations in MBF3C and its prerequisite courses.</p> <p>Overall Expectations in MBF3C NOT in the Alberta course: Personal Finance</p> <ul style="list-style-type: none"> • compare simple and compound interest, relate compound interest to exponential growth, and solve problems involving compound interest; (work with simple and compound interest is taught in Applied Math 20, but is not explicitly linked to exponential growth) • interpret information about owning and operating a vehicle, and solve problems involving the associated costs. 	
Additional Comments	In Alberta, there are bridge courses (or cross-over courses) that students can take to move from Pure Math to Applied Math or from Applied Math to Pure Math. These courses can be full credit or partial credit courses. Applied Math 10 b is a bridge course to Applied Math 20 (Grade 11 course) Applied Math 20 b is a bridge course to Applied Math 30 (Grade 12 course)	

	Alberta	Ontario
Course Name	Mathematics 24 (MAT 2225)	Mathematics for Work and Everyday Life, Grade 12, Workplace Preparation MEL4E
Date of Curriculum	2003	2007
Hours of Instruction	125	110
Additional Course Information	Prerequisite: Mathematics 14 (Grade 10 course) Note: Students may use Math 20-4 as a prerequisite to Math 24	Prerequisite: Mathematics for Work and Everyday Life, Grade 11, Workplace Preparation
Course Description	<ul style="list-style-type: none"> • solve consumer problems, using arithmetic operations.(wages, taxes, accommodation costs, etc.) • use spatial problem solving in building, describing and analyzing geometric shapes. • use measuring devices to make estimates and to perform calculations in solving problems.. • collect, display and analyze data to make predictions. • use experimental or theoretical probability to represent and solve problems involving uncertainty. 	This course enables students to broaden their understanding of mathematics as it is applied in the workplace and daily life. Students will investigate questions involving the use of statistics; apply the concept of probability to solve problems involving familiar situations; investigate accommodation costs and create household budgets; use proportional reasoning; estimate and measure; and apply geometric concepts to create designs. Students will consolidate their mathematical skills as they solve problems and communicate their thinking.
Strands/Major Concepts	Number <ul style="list-style-type: none"> • Personal finance, converting money, wages, taxes, accommodation costs, credit, vehicle costs Measurement (Shape and Space) <ul style="list-style-type: none"> • Area, volume, mass, create and interpret drawings, using measurement devices, circles and polygons Data Analysis <ul style="list-style-type: none"> • Read and interpret data, make predictions Chance <ul style="list-style-type: none"> • Experimental and theoretical probability 	Reasoning with Data Personal Finance Applications of Measurement
Overall Comparison	There is a considerable relationship between the two courses. Overall outcomes of MEL4E are met by Mathematics 24 or were taught in Mathematics 14. Note: Alberta has workplace math courses in Grades 10 and 11 (Math 14 and Math 24), but does not have a Grade 12 workplace course. Students who have completed Mathematics 24 may not have studied Personal Finance applications to the depth taught in Ontario courses.	
Additional Comments	Mathematics 24 is the final math course available in Alberta for students who intend to go directly to the workplace. Students can take the Math 24 course in Grade 11.	

	Alberta	Ontario
Course Name	Applied Mathematics 30 (MAT 3038)	Mathematics for College Technology, Grade 12, College Preparation MCT4C
Date of Curriculum	2002	2007
Hours of Instruction	125	110
Additional Course Information	Prerequisite: Applied Math 20, Grade 11, or student takes a bridge course Applied Math 20b after completion of Pure Math 20.	Prerequisite: Functions and Applications, Grade 11, University/College Preparation or Functions, Grade 11, University Preparation
Course Description	<ul style="list-style-type: none"> • Describe and apply operations on matrices to solve problems. • Use normal and binomial probability distributions to solve problems involving uncertainty. • Design or use a spreadsheet to make and justify financial decisions. • Generate and analyze cyclic, recursive and fractal patterns. • Solve problems involving polygons and vectors, including both 3-D and 2-D applications. • Analyze objects, shapes, and processes to solve cost and design problems. 	This course enables students to extend their knowledge of functions. Students will investigate and apply properties of polynomial, exponential, and trigonometric functions; continue to represent functions numerically, graphically, and algebraically; develop facility in simplifying expressions and solving equations; and solve problems that address applications of algebra, trigonometry, vectors, and geometry. Students will reason mathematically and communicate their thinking as they solve multi-step problems. This course prepares students for a variety of college technology programs.
Strands/Major Concepts	Matrices and Pathways <ul style="list-style-type: none"> • Matrices, network problems Statistics <ul style="list-style-type: none"> • Normal and binomial distributions Finance <ul style="list-style-type: none"> • Complex measurement and design problems Cyclic (Trig) and Recursive Patterns <ul style="list-style-type: none"> • Trig functions, generate and graph sequences Vectors <ul style="list-style-type: none"> • Solve problems using vectors Design <ul style="list-style-type: none"> • Use math models to estimate solutions to complex measurement problems 	Exponential Functions Polynomial Functions Trigonometric Functions Applications of Geometry
Assessment/Evaluation	To obtain credit, a student must write the provincial diploma examination for Applied Math 30 and obtain a final mark of 50% or higher in the course. The final mark is the average of the school-awarded mark and the diploma examination mark.	
Overall Comparison	<p>There is a considerable relationship between the two courses. Several overall expectations from MCT4C are taught in the prerequisite courses (Applied Math 10 and Applied Math 20). Students completing Applied Math 30 have worked with exponential equations and functions, but not to the level of complexity as required in the Ontario courses.</p> <p>Work with polynomials is limited to quadratics (degree 2), and not with polynomials of higher degree as required in the Ontario program.</p> <p>Students from the Alberta course <i>Applied Mathematics 30</i> have done additional work with matrices, network problems, and binomial and normal distributions that is not in the Ontario program.</p> <p>Overall Expectations MCT4C NOT in the Alberta course:</p> <p>Polynomial Functions</p> <ul style="list-style-type: none"> • solve polynomial equations by factoring, make connections between polynomial equations and formulae, and solve problems involving polynomial expressions arising from a variety of applications. <p>Exponential Functions</p> <ul style="list-style-type: none"> • solve problems involving exponential equations algebraically using common bases and logarithms, including problems arising from real-world applications. 	
Additional Comments	<p>In Alberta, there are bridge courses (or cross-over courses) that students can take to move from Pure Math to Applied Math or from Applied Math to Pure Math. These courses can be full credit or partial credit courses. Applied Math 20b is a bridge course to Applied Math 30 (Grade 12 course).</p> <p>Note on Foundations for College Mathematics, Grade 12 MAP4C</p> <p>Most of the overall expectations of Ontario's other college preparation course, Foundations for College Mathematics, Grade 12 MAP4C, are also met by the Alberta course Applied Math 30. However, Mathematics for College Technology MCT4C is more closely aligned with Applied Math 30.</p> <p>Overall Expectations MAP4C NOT found in the Alberta course:</p> <p>Strand: Personal Finance</p> <ul style="list-style-type: none"> • demonstrate an understanding of annuities and mortgages, and solve related problems, using technology; 	

	Alberta	Ontario
Course Name	Mathematics 31 (MAT 3211)	Calculus and Vectors, Grade 12, University Preparation MCV4U
Date of Curriculum	1995	2007
Hours of Instruction	125	110
Additional Course Information	Prerequisite: It is recommended that students complete Pure Math 30, Grade 12, before taking Pure Math 31. Students may take Pure Math 30 and 31 concurrently.	Prerequisite: MHF4U must be taken prior to or concurrently with Calculus and Vectors (MCV4U)
Course Description	The Mathematics 31 course is designed to introduce students to the mathematical methods of calculus. The course acts as a link between the outcomes of the Pure Mathematics 10–20–30 program and the requirements of the mathematics encountered in post-secondary programs. The course builds on existing skills in working with functions and expands this knowledge to include a study of limits in preparation for a study of differential and integral calculus. The methods of calculus are applied to problems encountered in the areas of science, engineering, business and other fields of endeavour. The focus of the course is to examine functions that describe changing situations as opposed to the more static situations encountered in previous mathematics courses. Emphasis is placed on using graphical methods to illustrate the way in which changing functions behave.	This course builds on students' previous experience with functions and their developing understanding of rates of change. Students will solve problems involving geometric and algebraic representations of vectors, and representations of lines and planes in three-dimensional space; broaden their understanding of rates of change to include the derivatives of polynomial, rational, exponential, and sinusoidal functions; and apply these concepts and skills to the modelling of real-world relationships. Students will also refine their use of the mathematical processes necessary for success in senior mathematics. This course is intended for students who choose to pursue careers in fields such as science, engineering, economics, and some areas of business, including those students who will be required to take a university-level calculus, linear algebra, or physics course.
Strands/Major Concepts	Precalculus and Limits Derivative and Derivative Theorems Applications of Derivative Integrals, Integral Theorems, Integral Applications (In addition there are designated elective topics that may be studied including, Calculus of Exponentials and Logs, Numerical Methods, Applications to Business, etc.)	Rate of Change Derivatives and their Applications Geometry and Algebra of Vectors
Overall Comparison	<p>There is a considerable relationship between the two courses. The strand Geometry and Algebra of Vectors, taught in Calculus and Vectors, is not taught in Math 31 or its prerequisite courses.</p> <p>Students in Pure Math 31 study Integrals and Integral Applications which are not taught in MCV4U.</p> <p>Overall Expectations MCV4U NOT in the Alberta course: Geometry and Algebra of Vectors</p> <ul style="list-style-type: none"> • demonstrate an understanding of vectors in two-space and three-space by representing them algebraically and geometrically and by recognizing their applications; • perform operations on vectors in two-space and three-space, and use the properties of these operations to solve problems, including those arising from real-world applications; • distinguish between the geometric representations of a single linear equation or a system of two linear equations in two-space and three-space, and determine different geometric configurations of lines and planes in three-space; • represent lines and planes using scalar, vector, and parametric equations, and solve problems involving distances and intersections. 	

	Alberta	Ontario
Course Name	Pure Mathematics 30 (MAT 3037)	Advanced Functions, Grade 12, University Preparation MHF4U
Date of Curriculum	2002	2007
Hours of Instruction	125	110
Additional Course Information	Prerequisite: Pure Mathematics 20	Prerequisite: Functions, Grade 11, University Preparation, or Mathematics for College Technology, Grade 12, College Preparation
Course Description	<ul style="list-style-type: none"> Perform, analyze, and create transformations of functions and relations that are described by equations or graphs. Represent and analyze exponential and logarithmic functions, and solve exponential, and log equations and identities. Represent and analyze trig functions, and solve trig equations and identities. Classify conic sections. Solve problems based on the counting of sets, using techniques such as permutations and combinations. Use normal and binomial probability distributions to solve problems involving uncertainty. 	This course extends students' experience with functions. Students will investigate the properties of polynomial, rational, logarithmic, and trigonometric functions; develop techniques for combining functions; broaden their understanding of rates of change; and develop facility in applying these concepts and skills. Students will also refine their use of the mathematical processes necessary for success in senior mathematics. This course is intended both for students taking the Calculus and Vectors course as a prerequisite for a university program and for those wishing to consolidate their understanding of mathematics before proceeding to any one of a variety of university programs.
Strands/Major Concepts	Transformations, Functions <ul style="list-style-type: none"> combined transformations Exponents, Logs, Geometric Series <ul style="list-style-type: none"> exponential, logarithmic functions and equations Trigonometry <ul style="list-style-type: none"> exponential, logarithmic and trig equations Conic Sections <ul style="list-style-type: none"> expressed in standard form Permutations, Combinations <ul style="list-style-type: none"> permutations, combinations, conditional probability Statistics <ul style="list-style-type: none"> normal and binomial distributions 	Exponential and Logarithmic Functions Trigonometric Functions Polynomial and Rational Functions Characteristics of Functions
Assessment/Evaluation	To obtain credit, a student must write the provincial diploma examination for Pure Math 30 and obtain a final mark of 50% or higher in the course. The final mark is the average of the school-awarded mark and the diploma examination mark.	
Overall Comparison	<p>There is a considerable relationship between the two courses. The strand Characteristics of Functions, taught in Advanced Functions in Ontario, is not taught in Pure Mathematics 30 or its prerequisites. These concepts are part of Pure Math 31. Students in Pure Math 30 study Permutations, Combinations, and Probability Distributions which are taught in greater depth in <i>Mathematics for Data Management Grade 12</i>, MDM4U, in Ontario.</p> <p>Overall Expectations MHF4U NOT in the Alberta course: Characteristics of Functions</p> <ul style="list-style-type: none"> demonstrate an understanding and instantaneous rate of change, and determine, numerically and graphically, and interpret the average rate of change of a function over a given interval and the instantaneous rate of change for a given function at a given point; determine functions that results from the addition, subtraction, multiplication and division of two functions and from the composition of two functions, describe some properties of the resulting functions, and solve related problems 	
Additional Comments	<p>In Alberta, there is a common Grade 9 program, and streamed courses begin in Grade 10. For example, in the Pure Math courses.</p> <ul style="list-style-type: none"> Pure Math 10 is a Grade 10 course; Pure Math 20 is a Grade 11 course, and Pure Math 30 and Pure Math 31 are Grade 12 courses. <p>In Alberta, there are bridge courses (or cross-over courses) that students can take to move from Applied Math to Pure Math or from Pure Math to Applied Math. These courses can be full credit or partial credit courses. Pure Math 20 b is a bridge course to Pure Math 30 (Grade 12 course).</p> <p>Pure Mathematics 30 contains the concepts found in the Probability strand of MHF4U. However, the concepts found in the other 3 strands of MHF4U are only partially evident.</p>	

	Alberta	Ontario
Course Name	Biology 20 (SCN 2231)	Biology, Grade 11, College Preparation SBI3C
Date of Curriculum	1998. A new course is scheduled for implementation in September 2007.	2000
Hours of Instruction	125	110
Additional Course Information	Prerequisite: Science 10 Biology 20 is the prerequisite for further study of biology, Biology 30 Biology 20 is one of the courses available for students to satisfy the Alberta High School Graduation Requirement for a Science - 20 level course.	Prerequisite: Science, Grade 10, Academic and Applied.
Course Description	The major science themes developed in this course are diversity, energy, equilibrium, matter, and systems. Energy and matter exist in the biosphere in dynamic equilibria that are regulated by systems. Energy from the environment moves through photosynthetic and cellular respiratory systems with the associated cycling of matter in the form of carbon. The diversity in characteristics of some of the ecosystems that make up the biosphere is examined, along with the interactions of the organisms mediating the flow of energy and matter through those ecosystems. How organisms evolve to fill available niches in ecosystems is explored. The particular case of the human organism system and its energy and matter exchanges with the environment is examined along with its biotic interactions with pathogenic organisms and the maintenance of equilibrium with its environment.	This course focuses on the processes involved in biological systems. Students will learn concepts and theories as they conduct investigations in the areas of cellular biology, microbiology, animal anatomy and physiology, plant structure and physiology, and environmental science. Emphasis will be placed on the practical application of concepts, and on the skills needed for further study in various branches of the life sciences and related fields.
Strands/Major Concepts	The Biosphere Energy Flows and Cellular Matter Energy and Matter Exchange in Ecosystems Energy and Matter Exchange by the Human Organism	Cellular Biology Microbiology Animal Anatomy and Physiology Plant Structure and Physiology Environmental Science
Overall Comparison	There is a considerable relationship between the two courses. Major topics in the Ontario course of Microbiology and Plant Structure and Physiology are not taught in Alberta Biology 20. Overall Expectations in Biology, Grade 11 (SBI3C) NOT found in the Alberta course: Cellular Biology <ul style="list-style-type: none"> demonstrate an understanding of the basic processes of cellular biology, including membrane transport, Microbiology <ul style="list-style-type: none"> demonstrate an understanding of the characteristics of various micro-organisms, of their role in the environment, and of their influences on other organisms, including humans; analyse the development and physical characteristics of micro-organisms, using appropriate laboratory equipment and techniques; explain the role of micro-organisms with respect to human health and in technological applications in medicine, industry, and the environment. Plant Structure and Physiology <ul style="list-style-type: none"> demonstrate an understanding of the diversity of plants, and of their internal transport systems, reproduction, and growth; analyse the factors influencing the growth and maintenance of plants, using appropriate laboratory equipment and techniques; evaluate the roles of plants in the urban community, in various technologies and industries, and in natural ecosystems. 	

	Alberta	Ontario
Course Name	Biology 20 (SCN 2231)	Biology, Grade 11, University Preparation SBI3U
Date of Curriculum	1998. A new course is scheduled for implementation in September 2007.	2000
Hours of Instruction	125	110
Additional Course Information	<i>Prerequisite:</i> Science 10 Biology 20 is the prerequisite for further study of biology, Biology 30 Biology 20 is one of the courses available for students to satisfy the Alberta High School Graduation Requirement for a Science - 20 level course.	<i>Prerequisite:</i> Science, Grade 10, Academic Achievement of SBI3U leads to SBI4U.
Course Description	The major science themes developed in this course are diversity, energy, equilibrium, matter, and systems. Energy and matter exist in the biosphere in dynamic equilibria that are regulated by systems. Energy from the environment moves through photosynthetic and cellular respiratory systems with the associated cycling of matter in the form of carbon. The diversity in characteristics of some of the ecosystems that make up the biosphere is examined, along with the interactions of the organisms mediating the flow of energy and matter through those ecosystems. How organisms evolve to fill available niches in ecosystems is explored. The particular case of the human organism system and its energy and matter exchanges with the environment is examined along with its biotic interactions with pathogenic organisms and the maintenance of equilibrium with its environment.	Course focuses on the processes involved in biological systems. Students will learn concepts and theories as they conduct investigations in the areas of cellular biology, microbiology, animal anatomy and physiology, plant structure and physiology, and environmental science. Emphasis on practical application of concepts, and on skills needed for further study in various branches of life sciences and related fields.
Strands/Major Concepts	The Biosphere Energy Flows and Cellular Matter Energy and Matter Exchange in Ecosystems Energy and Matter Exchange by the Human Organism	Cellular Functions Genetic Continuity Internal Systems and Regulation Diversity of Living Things Plants: Anatomy and Growth
Overall Comparison	There is a very limited relationship between the two courses. Major topics in Ontario of Diversity of Living Things and Cellular Functions, Plant Anatomy and Growth are not taught in Alberta in Grade 11 or 12 biology. A major topic in Ontario of Genetic Continuity is not taught until Grade 12 in Alberta.	

	Alberta	Ontario
Course Name	Biology 30 (SCN 3230)	Biology, Grade 12, University Preparation SBI4U
Date of Curriculum	1998	2000
Hours of Instruction	125	110
Additional Course Information	Prerequisite: Biology 20 To obtain credit in Biology 30, students must write a provincial diploma examination and obtain a minimum mark of 50%. Final mark is average of school awarded mark and diploma examination mark.	Prerequisite: Biology, Grade 11, University Preparation SBI3U
Course Description	The major science themes developed in this course are change, diversity, equilibrium, and systems. Chemical and electrical systems regulate body processes to maintain equilibrium, and the processes of reproduction and development. Systems for bringing about change are examined. The human organism is used as a model system for regulation and change. The themes of change and diversity are examined as the mechanisms for passing on genetic information and causing variation, are explored for a range of organizational levels. Change is illustrated by the genetics of populations, at equilibrium in populations, and at the community systems in which populations exist.	This course provides students with the opportunity for in-depth study of the concepts and processes associated with biological systems. Students will study theory and conduct investigations in the area of metabolic processes, molecular genetics, homeostasis, and evolution and population dynamics. Emphasis will be placed on achievement of the detailed knowledge and refined skills needed for further study in various branches of the life sciences and related fields.
Strands/Major Concepts	Systems Regulating Change in Human Organisms Reproduction and Development Cells, Chromosomes, and DNA Change in Populations and Communities	Metabolic Processes Molecular Genetics Homeostasis Evolution Population Dynamics
Overall Comparison	<p>There is a considerable relationship between the two courses. A major topic in Ontario Metabolic Processes has been taught, in part, in Biology 20.</p> <p>Overall Expectations in Biology, Grade 12 (SBI4U) NOT found in the Alberta course (and not taught in Biology 20):</p> <p>Metabolic Processes</p> <ul style="list-style-type: none"> • describe ...the role of enzymes in maintaining normal metabolic functions; • conduct laboratory investigations ..., and into the chemical and physical properties of biological molecules; • explain ways in which knowledge of the metabolic processes of living systems can contribute to technological development and ... <p>Evolution</p> <ul style="list-style-type: none"> • evaluate the scientific evidence that supports the theory of evolution; <p>Population Dynamics</p> <ul style="list-style-type: none"> • evaluate the carrying capacity of the Earth, and relate the carrying capacity to the growth of populations, their consumption of natural resources, and advances in technology. 	

	Alberta	Ontario
Course Name	Chemistry 20 (SCN 2242)	Chemistry, Grade 11, University Preparation, SCH3U
Date of Curriculum	1998. A new course is scheduled for implementation in September 2007.	2000
Hours of Instruction	125	110
Additional Course Information	Prerequisite: Science 10 (Academic Specialty Science) Chemistry 20 is one of the courses available for students to satisfy the Alberta High School Graduation Requirement for a Science - 20 level course.	Prerequisite: Science, Grade 10, Academic. Achievement of SCH3U leads to SCH4U
Course Description	Chemical change and matter are common themes. An understanding of the nature of matter and an analysis of its changes is essential for understanding what is happening and for predicting what will happen; control of change is essential for the design of technological systems. The principles of conservation of mass and energy help to predict and explain the changes that occur in a closed system. Observations that provide evidence to support theories are stressed through experimentation and linking empirical and theoretical knowledge. Each unit in Chemistry 20 uses a different context to investigate the nature of matter; to identify common patterns and the processes by which matter and systems are modified. Unit 1 focuses on the nature of matter, specifically solutions and gases, by examining their properties, identifying patterns, and analyzing changes in these systems. In Unit 2, the quantitative relationships in chemical reaction systems are explored in predicting masses of substances reacted or produced as a result of chemical change. In Unit 3, models of the atom are extended to models of bonding as the properties of matter and theoretical explanations about its behaviour are linked. In Unit 4, examples of the diverse forms of organic compounds are investigated and compared with inorganic matter. Change as it relates to chemical reactions of organic compounds in living and nonliving systems is also examined.	This course focuses on the concepts and theories that form the basis of modern chemistry. Students will study the behaviours of solids, liquids, gases, and solutions; investigate changes and relationships in chemical systems; and explore how chemistry is used in developing new products and processes that affect our lives and our environment. Emphasis will also be placed on the importance of chemistry in other branches of science.
Strands/Major Concepts	Matter as Solutions, Acids, Bases and Gases Quantitative Relationships in Chemical Changes Chemical Bonding in Matter The Diversity of Matter: An Introduction to Organic Chemistry	Matter and Chemical Bonding Quantities in Chemical Reactions Solutions and Solubility Gases and Atmospheric Chemistry Hydrocarbons and Energy
Overall Comparison	There is a strong relationship between the two courses. Overall Expectations in Chemistry, Grade 11 (SCH3U) NOT found in the Alberta course: Matter and Chemical Bonding <ul style="list-style-type: none"> analyse chemical reactions in terms of type of reaction and the reactivity of starting materials... Hydrocarbons and Energy <ul style="list-style-type: none"> and apply calorimetric techniques to the calculation of energy changes; 	

	Alberta	Ontario
Course Name	Chemistry 20 (SCN 2242)	Chemistry, Grade 12, College Preparation SCH4C
Date of Curriculum	1998. A new course is scheduled for implementation in September 2007.	2000
Hours of Instruction	125	110
Additional Course Information	Prerequisite: Science 10 Chemistry 20 is the prerequisite for further study of chemistry, Chemistry 30 Chemistry 20 is one of the courses available for students to satisfy the Alberta High School Graduation Requirement for a Science - 20 level course.	Prerequisite: Science, Grade 10, Academic and Applied.
Course Description	Chemical change and matter are common themes. An understanding of the nature of matter and an analysis of its changes is essential for understanding what is happening and for predicting what will happen; control of change is essential for the design of technological systems. The principles of conservation of mass and energy help to predict and explain the changes that occur in a closed system. Observations that provide evidence to support theories are stressed through experimentation and linking empirical and theoretical knowledge. Each unit in Chemistry 20 uses a different context to investigate the nature of matter; to identify common patterns and the processes by which matter and systems are modified. Unit 1 focuses on the nature of matter, specifically solutions and gases, by examining their properties, identifying patterns, and analyzing changes in these systems. In Unit 2, the quantitative relationships in chemical reaction systems are explored in predicting masses of substances reacted or produced as a result of chemical change. In Unit 3, models of the atom are extended to models of bonding as the properties of matter and theoretical explanations about its behaviour are linked. In Unit 4, examples of the diverse forms of organic compounds are investigated and compared with inorganic matter. Change as it relates to chemical reactions of organic compounds in living and nonliving systems is also examined.	This course introduces students to the concepts that form the basis of modern chemistry. Students will study qualitative analysis, quantitative relationships in chemical reactions, organic chemistry and electrochemistry, and chemistry as it relates to the quality of the environment. Students will employ a variety of laboratory techniques, develop skills in data collection and scientific analysis, and communicate scientific information using appropriate terminology. Emphasis will be placed on the role of chemistry in daily life and in the development of new technologies and products.
Strands/Major Concepts	Matter as Solutions, Acids, Bases and Gases Quantitative Relationships in Chemical Changes Chemical Bonding in Matter The Diversity of Matter: An Introduction to Organic Chemistry	Matter and Qualitative Analysis Organic Chemistry Electrochemistry Chemical Calculations Chemistry in the Environment
Overall Comparison	There is a considerable relationship between the two courses. A major topic in Ontario of Electrochemistry is not taught in Alberta Chemistry 20. The Overall Expectations for Electrochemistry are taught in Chemistry 30.	

	Alberta	Ontario
Course Name	Chemistry 30 (SCN 3240)	Chemistry, Grade 12, University Preparation SCH4U
Date of Curriculum	1998	2000
Hours of Instruction	125	110
Additional Course Information	Prerequisite: Chemistry 20 To obtain credit in Chemistry 30, students must write a provincial diploma examination and obtain a minimum mark of 50%. Final mark is average of school awarded mark and diploma examination mark.	Prerequisite: Chemistry, Grade 11, University Preparation SCH3U
Course Description	The themes of change, energy, and systems are central. Equilibrium and matter are subordinate themes that are also addressed. The components of a system, which may be a collection of substances or processes, influence each other by the transfer of energy and matter. Changes to one part result in changes to other parts of the system. In a system at equilibrium, opposing reactions are balanced. Different contexts are used to investigate the nature of chemical change. The themes are addressed using examples from inorganic and organic chemistry to emphasize the unity of science. Energy, as it relates to chemical change, is most commonly absorbed or released as heat in chemical reactions. Thermochemistry is the study of these heat changes. Changes in physical and nuclear systems are briefly explored for comparison. Changes in electrochemical systems are examined, oxidation–reduction reactions are analyzed, and the energy and matter involved are quantified. Chemical systems at equilibrium are explored. Few chemical reactions proceed in only one direction; most are somewhat reversible. Chemical systems involving acids and bases are studied as examples of chemical changes at equilibrium.	This course enables students to deepen their understanding of chemistry through the study of organic chemistry, energy changes, and rates of reaction, chemical systems and equilibrium, electrochemistry, and atomic and molecular structure. Students will further develop problem-solving and laboratory skills as they investigate chemical processes, at the same time refining their ability to communicate scientific information. Emphasis will be placed on the importance of chemistry in daily life, and on evaluating the impact of chemical technology on the environment.
Strands/Major Concepts	Thermochemical Changes Electrochemical Changes Equilibrium, Acids, and Bases in Chemical Changes	Organic Chemistry Energy Changes and Rates of Reaction Chemical Systems and Equilibrium Electrochemistry Structure and Properties
Overall Comparison	There is a strong relationship between the two courses. Overall Expectations in Chemistry, Grade 12 (SCH4U) NOT found in the Alberta course (and not taught in Chemistry 20): Structure and Properties <ul style="list-style-type: none"> demonstrate an understanding of quantum mechanical theory 	

	Alberta	Ontario
Course Name	Physics 20 (SCN 2261)	Physics, Grade 11, University Preparation SPH3U
Date of Curriculum	1998. A new course is scheduled for implementation in September 2007.	2000
Hours of Instruction	125	110
Additional Course Information	Prerequisite: Science 10 Physics 20 is the prerequisite for further study of physics, Physics 30 Physics 20 is one of the courses available for students to satisfy the Alberta High School Graduation Requirement for a Science - 20 level course.	Prerequisite: Grade 10 Science, Academic
Course Description	Energy is the science theme common to all units in Physics 20, with change, diversity, equilibrium, matter, and systems also playing a role. Energy in its many forms causes change and determines the kind of change matter and systems undergo. The science theme of change is emphasized through an examination of motion, the causes of motion and their relationship to energy changes in systems. The principles of change in and conservation of energy motion are extended to circular motion, and lead into an investigation of gravitation and equilibrium in planetary systems. The transfer of energy through matter by means of mechanical waves is considered, and the characteristics of waves are studied in the context of sound. The nature of light, as a visible form of energy and one of the diverse forms of electromagnetic radiation is examined.	This course develops students' understanding of the basic concepts of physics. Students study the laws of dynamics and explore different kinds of forces, the quantification and forms of energy (mechanical, sound, light, thermal, and electrical), and the way energy is transformed and transmitted. They develop scientific-inquiry skills as they verify accepted laws and solve both assigned problems and those emerging from their investigations. Students analyse the interrelationships between physics and technology, and consider the impact of technological applications of physics on society and the environment.
Strands/Major Concepts	Kinematics and Dynamics Circular Motion and Gravitation Mechanical Waves Light	Forces and Motion Energy, Work and Power Waves and Sound Light and Geometric Optics Electricity and Magnetism
Overall Comparison	There is a considerable relationship between the two courses. A major topic in Ontario of Electricity and Magnetism is not taught in Alberta until Grade 12. Overall Expectations in Physics, Grade 11 (SPH3U) NOT found in the Alberta course: Forces and Motion <ul style="list-style-type: none"> Describe the contributions of Galileo... to the understanding of dynamics; Energy, Work, and Power <ul style="list-style-type: none"> Analyse the costs and benefits of various energy sources and energy- transformation technologies that are used around the world,... 	

	Alberta	Ontario
Course Name	Physics 30 (SCN 3260)	Physics, Grade 12, University Preparation SPH4U
Date of Curriculum	1998	2000
Hours of Instruction	125	110
Additional Course Information	Prerequisite: Physics 20 (Academic Specialty Science) to obtain credit in Physics 30, requires the writing of a provincial diploma examination and obtaining a minimum mark of 50%. Final mark is average of school awarded mark and diploma examination mark.	Prerequisite: Physics, Grade 11, University Preparation SPH3U
Course Description	<p>The diversity of energy and matter are the predominant themes of the Physics 30 course. The major concepts allow connections to be drawn among the four units of the course.</p> <p>Students:</p> <ul style="list-style-type: none"> emphasize the science theme of equilibrium, as exemplified by the fundamental phenomenon of conservation of energy and momentum in isolated systems in the physical universe examine the electrical nature of matter in its diverse forms investigate the diversity and magnetic nature of matter, and electromagnetic interactions and technological applications investigate the quantum concept of energy and matter via the study of the electric nature of the atom, the photoelectric effect and the wave-particle duality of radiation; as well as studying, the applications of nuclear energy and the radioactive nature of the atom. 	<p>This course enables students to deepen their understanding of the concepts and theories of physics. Students explore further the laws of dynamics and energy transformations, and investigate electrical, gravitational, and magnetic fields; electromagnetic radiation; and the interface between energy and matter. They further develop inquiry skills, learning, for example, how the interpretation of experimental data can provide indirect evidence to support the development of a scientific model. Students also consider the impact on society and the environment of technological applications of physics.</p>
Strands/Major Concepts	Conservation Laws Electric Forces and Fields Magnetic Forces and Fields Nature of Matter	Forces and Motion: Dynamics Energy and Momentum Electric, Gravitational and Magnetic Fields The Wave Nature of Light Matter Energy Interface
Overall Comparison	<p>There is a strong relationship between the two courses. A major topic in Ontario of Forces and Motion: Dynamics is taught in Grade 11 in Alberta. The topic of Gravitational Fields, part of the major topic in Ontario of Electric, Gravitational, and Magnetic Fields is taught in Grade 11 in Alberta.</p> <p>Overall Expectations in Physics, Grade 12 (SPH4U) NOT found in the Alberta course:</p> <p>The Wave Nature of Light</p> <ul style="list-style-type: none"> analyse phenomena involving colour, explain them in terms of the wave model of light... <p>Matter-Energy Interface</p> <ul style="list-style-type: none"> demonstrate an understanding of the basic concepts of Einstein's special theory of relativity... 	

	Alberta	Ontario
Course Name	Physics 20 (SCN 2261)	Physics, Grade 12, College Preparation SPH4C
Date of Curriculum	1998. A new course is scheduled for implementation in September 2007.	2000
Hours of Instruction	125	110
Additional Course Information	Prerequisite: Science 10 Physics 20 is the prerequisite for further study of physics, Physics 30 Physics 20 is one of the courses available for students to satisfy the Alberta High School Graduation Requirement for a Science - 20 level course.	Prerequisite: Science, Grade 10, Academic or Applied
Course Description	Energy is the science theme common to all units in Physics 20, with change, diversity, equilibrium, matter, and systems also playing a role. Energy in its many forms causes change and determines the kind of change matter and systems undergo. The science theme of change is emphasized through an examination of motion, the causes of motion and their relationship to energy changes in systems. The principles of change in and conservation of energy motion are extended to circular motion, and lead into an investigation of gravitation and equilibrium in planetary systems. The transfer of energy through matter by means of mechanical waves is considered, and the characteristics of waves are studied in the context of sound. The nature of light, as a visible form of energy and one of the diverse forms of electromagnetic radiation is examined.	This course develops students' understanding of the basic concepts of physics. Students will explore these concepts as they relate to mechanical, electrical, fluid (hydraulic and pneumatic), and communications systems, as well as to the operation of commonly used tools and equipment. They will develop scientific-inquiry skills as they verify accepted laws of physics and solve both assigned problems and those emerging from their investigations. Students will also consider the impact of technological applications of physics on society and the environment.
Strands/Major Concepts	Kinematics and Dynamics Circular Motion and Gravitation Mechanical Waves Light	Mechanical Systems Electricity and Electronics Hydraulic and Pneumatic Systems Communications Technology
Overall Comparison	There is a considerable relationship between the two courses. The Overall Expectations for Electricity and Electronics in SPH4C are not taught in Physics 20. These expectations are addressed in Physics 30. Major topics of Hydraulic and Pneumatic Systems and Energy Transformations are not taught in Alberta Physics 20 or 30.	

Credit Equivalency Resource Package

Course Comparisons Atlantic Provinces

**English
Math
Science**



reach every student



Introduction

Organizing Framework

The curriculum in the Atlantic Provinces is based on an outcomes framework that includes statements of essential graduation learnings, general curriculum outcomes, key-stage curriculum outcomes, and specific curriculum outcomes.

Learning experiences contribute toward students' achievement of broad, cross-curricular expectations called essential graduation learnings in the areas of Aesthetic Expression, Citizenship, Communication, Personal Development, Problem Solving, and Technological Competence

General curriculum outcomes form the basis of the outcomes framework and identify what students are expected to know and be able to do upon completion of study. These outcomes remain the same across all grade levels and are organized into strands.

Key-stage curriculum outcomes reflecting a continuum of learning are identified for the end of Grades 3, 6, 9, and 12. Specific curriculum outcome statements, organized by grade, describe what students are expected to know and be able to do at each grade level. Specific curriculum outcomes represent a framework assisting students to achieve the key-stage, general and essential graduate learning outcomes.

The Atlantic Provinces base their curriculum on this framework but present their courses to meet regional needs and interests.

Assessment and Evaluation

Assessment is based on the five components of the *Principles for Fair Student Assessment Practices for Education in Canada*.

Assessment is to be an integral and ongoing part of the learning process. Teachers use a broad range of strategies in an appropriate balance to give students multiple opportunities to demonstrate their knowledge, skills, and attitudes. Teachers choose assessment tools such as observation, anecdotal records, conferences, and checklists to compare student performance to the indicators described on a developmental continuum provided in the provincial curriculum. Students are encouraged to reflect on their own progress, strengths, weaknesses, and goals.

Each province sets its own graduation requirements:

Prince Edward Island

Intermediate is Grades 7-9 (no credits). Senior high school is 10-12. Pass mark is 50%. Compulsory courses include four language arts, two mathematics, two science and two social sciences. Each credit or course is 110 hours. There are no provincial examinations. Students must successfully complete 20 credits to obtain a high school certificate

New Brunswick

High school is Grades 9-12. Grades 11 and 12 lead to a High School diploma. A credit is 90 hours and students must earn 7 compulsory credits. A minimum of 60% is required.

Newfoundland and Labrador

Intermediate is Grades 7-9. Senior high school is Grades 10-12 (called levels I, II, and III). There are general and academic courses available. A passing grade is 50%. 110 hours = 2 credits. Some courses require provincial examinations. The examination mark is averaged with the mark submitted by the school. Students graduate with Honours Status, Academic Status, or General Status depending on the courses selected and the marks earned.

Nova Scotia

36 credits are required for high school certification (graduation certificate) 25 of these credits are core requirements. There are Grade 12 examinations in chemistry, physics, mathematics, and language arts that are written in January and June.

Note: The following rubric may be useful in guiding decisions for granting a credit:

Very Limited Relationship – many overall expectations missing, student may be very challenged in subsequent courses that build from this course.

Considerable Relationship – several overall expectations are not met, but a generally thorough coverage of expectations is evident in course or in its prerequisite courses,...

Strong Relationship – all or almost all overall expectations are met, thorough coverage of expectations is evident in course or its prerequisite courses,...

Courses Compared

Atlantic Provinces	Ontario
English	
English Language Arts English 112 New Brunswick English 2201 Newfoundland and Labrador English 11 (004162) Nova Scotia English 531A Prince Edward Island	English, Grade 11, College Preparation ENG3C
English Communications 11 (ECS 11) English 2202 Newfoundland and Labrador English 113 New Brunswick English/Communications 11 (004163) Nova Scotia English/Communications 11 (551A) Prince Edward Island	English, Grade 11, Workplace Preparation ENG3E
English Language Arts English 112 New Brunswick English 2201 Newfoundland and Labrador English 11 (004162) Nova Scotia English 521A Prince Edward Island	English, Grade 11, University Preparation ENG3U
English Language Arts 12 English 122 New Brunswick English 3201 Newfoundland and Labrador English 12 (004165) Nova Scotia English 631A Prince Edward Island	English, Grade 12, College Preparation ENG4C
English Communications 12 (ECS 12) English 3202 Newfoundland and Labrador English 123 New Brunswick English/Communications 12 (004164) Nova Scotia English/Communications 12 (651A) Prince Edward Island	English, Grade 12, Workplace Preparation ENG4E
English Language Arts 12 English 122 New Brunswick English 3201 Newfoundland and Labrador English 12 (004165) Nova Scotia English 621A Prince Edward Island	English, Grade 12, University Preparation ENG4U
Canadian Literature 12 Canadian Literature 120 New Brunswick Canadian Literature 2204 Newfoundland and Labrador Canadian Literature 12 (004166) Nova Scotia	Studies in Literature, Grade 12, University Preparation ETS4U
Writing Writing 110 New Brunswick Writing 2203 Newfoundland and Labrador WRT521A Prince Edward Island	Writer's Craft, Grade 12, University Preparation EWC4U
Math	
New Brunswick	
Trigonometry and 3-Space 121 (1030541), Enriched Trigonometry and 3-Space 122 (1030542), Regular	Advanced Functions, Grade 12, University Preparation MHF4U
Advanced Mathematics with an Introduction to Calculus 120 (1030640)	Calculus and Vectors, Grade 12, University Preparation MCV4U
Patterns and Relations 113 (1030433) Level 3 Credit	Foundations for College Mathematics, Grade 12, College Preparation MAP4C
Patterns and Relations 113 (1030433) Level 3 Credit	Mathematics for College Technology, Grade 12, College Preparation MCT4C
Applications in Mathematics 113 (1030233) Level 3 Credit	Foundations of College Mathematics, Grade 11, College Preparation MBF3C
Functions and Relations 111, Enriched, (1030331) Functions and Relations 112, Regular (1030332)	Functions and Applications, Grade 11, University/College Preparation MCF3M

Atlantic Provinces	Ontario
Newfoundland & Labrador	
Mathematics 3204, Academic (MAT3204) Mathematics 3205, Advanced (MAT3205)	Advanced Functions, Grade 12, University Preparation MHF4U
Mathematics 3207 (MAT3207) Advanced Credit	Calculus and Vectors, Grade 12, University Preparation MCV4U
Mathematics 3206 (MAT3206) Practical Credit	Foundations for College Mathematics, Grade 12, College Preparation MAP4C
Mathematics 3206 (MAT3206) Practical Credit	Mathematics for College Technology, Grade 12, College Preparation MCT4C
Mathematics 2206, (MAT2206) Practical Credit	Foundations of College Mathematics, Grade 11, College Preparation MBF3C
Mathematics 2204, Academic, (MAT2204) Mathematics 2205, Advanced, (008145)	Functions and Applications, Grade 11, University/College Preparation MCF3M
Nova Scotia	
Mathematics 12, Academic (008073) Advanced Mathematics 12, Advanced (008015)	Advanced Functions, Grade 12, University Preparation MHF4U
Pre-Calculus Mathematics 12 (008073) Advanced Credit	Calculus and Vectors, Grade 12, University Preparation MCV4U
Mathematics Foundations 12 (008013) Graduation Credit	Foundations for College Mathematics, Grade 12, College Preparation MAP4C
Mathematics Foundations 12 (008013) Graduation Credit	Mathematics for College Technology, Grade 12, College Preparation MCT4C
Mathematics Foundations 11, (008011) Graduation Credit	Foundations of College Mathematics, Grade 11, College Preparation MBF3C
Mathematics 11, Academic, (008067) Advanced Mathematics 11, Advanced, (008145)	Functions and Applications, Grade 11, University/College Preparation MCF3M
Prince Edward Island	
Mathematics 621A (MAT621A) Academic	Advanced Functions, Grade 12, University Preparation MHF4U
Mathematics 621B (MAT621B) Academic	Advanced Functions, Grade 12, University Preparation MHF4U
Mathematics 611B (MAT611B) Advanced Credit	Calculus and Vectors, Grade 12, University Preparation MCV4U
Mathematics 631A (MAT631A) General	Foundations for College Mathematics, Grade 12, College Preparation MAP4C
Mathematics 651A (MAT551A) Practical	Mathematics for Work and Everyday Life, Grade 12, Workplace Preparation MEL4E
Mathematics 531A (MAT531A) General	Foundations of College Mathematics, Grade 11, College Preparation MBF3C
Mathematics 521A (MAT521A) Academic	Functions and Applications, Grade 11, University/College Preparation MCF3M
Mathematics 521B (MAT521B) Academic	Functions, Grade 11, University Preparation MCR3U
Mathematics 551A (MAT551A) Practical	Mathematics for Work and Everyday Life, Grade 11, Workplace Preparation MEL3E

Science – General

New Brunswick	
Physical Geography 110	Earth and Space Science, Grade 12, University Preparation SES4U
Environmental Science 122 or 123	Science, Grade 11, Workplace Preparation SNC3E
Newfoundland & Labrador	
Earth Systems 3209 (643209)	Earth and Space Science, Grade 12, University Preparation SES4U
Nova Scotia	
Geology 12 (0112112)	Earth and Space Science, Grade 12, University Preparation SES4U
Oceans 11 (011214)	Science, Grade 11, Workplace Preparation SNC3E

Atlantic Provinces	Ontario
Agriculture/Agrifood 11 (011224) Food Science 12 (11026)	Science, Grade 11, University/College Preparation SNC3M
Prince Edward Island	
Animal Science (AGR621A) Animal Science (AGR801A)	Science, Grade 11, University/College Preparation SNC3M
Oceanography OCN621A	Science, Grade 11, Workplace Preparation SNC3E
Agriscience AGS801A	Science, Grade 12, Workplace Preparation SNC4E
Science – Physics	
New Brunswick	
Physics 112	Physics, Grade 11, University Preparation SPH3U
Physics 122	Physics, Grade 12, University Preparation SPH4U
Newfoundland & Labrador	
Physics 2204	Physics, Grade 11, University Preparation SPH3U
Physics 3204	Physics, Grade 12, University Preparation SPH4U
Nova Scotia	
Physics 11, Academic (011150)	Physics, Grade 11, University Preparation SPH3U
Physics 12, Academic (011152)	Physics, Grade 12, University Preparation SPH4U
Prince Edward Island	
Physics 521A	Physics, Grade 11, University Preparation SPH3U
Physics 621A	Physics, Grade 12, University Preparation SPH4U
Science – Chemistry	
New Brunswick	
Chemistry 112	Chemistry, Grade 11, University Preparation, SCH3U
Chemistry 122	Chemistry, Grade 12, University Preparation SCH4U
Newfoundland & Labrador	
Chemistry 2202	Chemistry, Grade 11, University Preparation, SCH3U
Chemistry 3202	Chemistry, Grade 12, University Preparation SCH4U
Nova Scotia	
Chemistry 11, Academic	Chemistry, Grade 11, University Preparation, SCH3U
Chemistry 12, Academic	Chemistry, Grade 12, University Preparation SCH4U
Prince Edward Island	
Chemistry (CHM621A)	Chemistry, Grade 12, University Preparation SCH4U
Science – Biology	
New Brunswick	
Biology 112 (1025132)	Biology, Grade 11, University Preparation SBI3U
Biology 120 (1025140)	Biology, Grade 12, University Preparation SBI4U
Newfoundland & Labrador	
Biology 2201	Biology, Grade 11, University Preparation SBI3U
Biology 3201	Biology, Grade 12, University Preparation SBI4U
Nova Scotia	
Biology 11, Academic	Biology, Grade 11, University Preparation SBI3U
Biology 12, Academic	Biology, Grade 12, University Preparation SBI4U
Prince Edward Island	
Biology 521A	Biology, Grade 11, University Preparation SBI3U
Biology 621A	Biology, Grade 12, University Preparation SBI4U

	Atlantic Provinces	Ontario
Course Name	English Language Arts English 112 New Brunswick English 2201 Newfoundland and Labrador English 11 (004162) Nova Scotia English 531A Prince Edward Island	English, Grade 11, College Preparation ENG3C
Date of Curriculum	1997	2007 (draft)
Hours of Instruction	110 (except New Brunswick which is 90)	110
Additional Course Information	The Grade 10 academic English Language Arts course is the prerequisite for this course. This course is intended for students whose goals include post-secondary academic study.	ENG2P is a prerequisite for ENG3C.
Course Description	This course emphasizes literary texts and is intended to enable students to be analytical and critical readers and viewers and to give detailed accounts of complex and sophisticated texts. Students are required to examine and evaluate ideas and style in materials studied and in their own work. Students will also be expected to express themselves precisely and to use technology and multimedia applications to solve problems and conduct inquiries. Emphasis will be placed on exposure to and use of a wide variety of styles found in texts from various places and periods, including poetry, novels, short prose, plays, and myths from different times, cultures, and places; research papers; film, video, radio, television and live drama; multimedia texts, data bases, CD-ROM reference sources, and newsgroups.	This course emphasizes the development of literacy, critical thinking, and communication skills. Students will study the content, form, and style of informational texts and literary works from Canada and other countries; write reports, correspondence, and persuasive essays; and analyse media forms, audiences, and media industry practices. An important focus will be on establishing appropriate voice and using business and technical language with precision and clarity.
Strands/Major Concepts	<p>Speaking and Listening</p> <ul style="list-style-type: none"> - speak and listen to explore, extend, clarify, and reflect on their thoughts, ideas, feelings and experiences - communicate information and ideas effectively and clearly, and to respond personally and critically - interact with sensitivity and respect, considering the situation, audience, and purpose <p>Reading and Viewing</p> <ul style="list-style-type: none"> - select, read, and view with understanding a range of literature, information, media and visual texts - interpret, select, and combine information using a variety of strategies, resources, and technologies - respond personally to a range of texts - respond critically to a range of texts, applying their understanding of language, form, and genre <p>Writing and Representing</p> <ul style="list-style-type: none"> - use writing and other forms of representation to explore, clarify, and reflect on their thoughts, feelings, experiences, and learning; and to use their imaginations - create texts collaboratively and independently, using a variety of forms for a range of audiences and purposes - use a range of strategies to develop effective writing and other ways of representing and to enhance their clarity, precision, and effectiveness 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening to Understand - Speaking to Communicate - Reflecting on Skills and Strategies <p>Reading</p> <ul style="list-style-type: none"> - Reading for Meaning - Understanding Form and Style - Reading with Fluency - Reflecting on Skills and Strategies <p>Writing</p> <ul style="list-style-type: none"> - Developing and Organizing Content - Using Knowledge of Form and Style - Applying Knowledge of Conventions - Reflecting on Skills and Strategies <p>Media Literacy</p> <ul style="list-style-type: none"> - Understanding Media Texts - Understanding Forms and Conventions - Creating Media Texts - Reflecting on Skills and Strategies
Overall Comparison	There is a strong relationship between the courses offered in the Atlantic provinces and the course in Ontario. The English curricula of Ontario and the Atlantic provinces address the same major concepts and skills.	

	Atlantic Provinces	Ontario
Course Name	English Communications 11, ECS 11 English 2202 Newfoundland and Labrador English 113 New Brunswick English/Communications 11 (004163) Nova Scotia English/Communications 11 (551A) Prince Edward Island	English, Grade 11, Workplace Preparation ENG3E
Date of Curriculum	1997	2007 (draft)
Hours of Instruction	110 (except for New Brunswick which is 90)	110
Additional Course Information	A Grade 10 English language arts course is normally a prerequisite for ECS11. This course is intended for students whose goals include school success and entry-level employment in the private and public sectors	ENG2L or ENG2P are pre-requisites
Course Description	This course engages students in practical and interesting learning experiences closely related to their lives and to the work they will experience as adults. These experiences are, as far as possible, based on the interests and abilities of the students, thereby providing support to meet their individual and diverse learning needs. The course includes opportunities to use and adapt language for different purposes and audiences; develop a sound basic knowledge of English and its conventions; study and produce various forms of writing and representing; and practice oral communications related to the world of work.	This course emphasizes the development of literacy, critical thinking, and communication skills. Students will study the content, form, and style of informational texts and literary works; write explanations, letters, and reports; and investigate the connections among media forms, audiences, and media industry practices. An important focus will be on using language clearly, accurately, and effectively in a variety of contexts.
Strands/Major Concepts	<p>Speaking and Listening</p> <ul style="list-style-type: none"> - speak and listen to explore, extend, clarify, and reflect on their thoughts, ideas, feelings and experiences - communicate information and ideas effectively and clearly, and to respond personally and critically - interact with sensitivity and respect, considering the situation, audience, and purpose <p>Reading and Viewing</p> <ul style="list-style-type: none"> - select, read, and view with understanding a range of literature, information, media and visual texts - interpret, select, and combine information using a variety of strategies, resources, and technologies - respond personally to a range of texts - respond critically to a range of texts, applying their understanding of language, form, and genre <p>Writing and Representing</p> <ul style="list-style-type: none"> - use writing and other forms of representation to explore, clarify, and reflect on their thoughts, feelings, experiences, and learning; and to use their imaginations - create texts collaboratively and independently, using a variety of forms for a range of audiences and purposes - use a range of strategies to develop effective writing and other ways of representing and to enhance their clarity, precision, and effectiveness 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening to Understand - Speaking to Communicate - Reflecting on Skills and Strategies <p>Reading</p> <ul style="list-style-type: none"> - Reading for Meaning - Understanding Form and Style - Reading with Fluency - Reflecting on Skills and Strategies <p>Writing</p> <ul style="list-style-type: none"> - Developing and Organizing Content - Using Knowledge of Form and Style - Applying Knowledge of Conventions - Reflecting on Skills and Strategies <p>Media Literacy</p> <ul style="list-style-type: none"> - Understanding Media Texts - Understanding Forms and Conventions - Creating Media Texts - Reflecting on Skills and Strategies
Overall Comparison	There is a strong relationship between the courses offered in the Atlantic provinces and the course in Ontario. Both courses explicitly address oral communication, reading of print and non-print texts, including media, and writing. Both courses also include the analysis and use of communications related to the world of work. The Ontario course includes the creation of media texts; this is not explicitly addressed in the courses of the Atlantic provinces.	

	Atlantic Provinces	Ontario
Course Name	English Language Arts English 112 New Brunswick English 2201 Newfoundland and Labrador English 11 (004162) Nova Scotia English 521A Prince Edward Island	English, Grade 11, University Preparation ENG3U
Date of Curriculum	1997	2007 (draft)
Hours of Instruction	110 (except for New Brunswick which is 90)	110
Additional Course Information	The Grade 10 academic English Language Arts course is the prerequisite for this course. This course is intended for students whose goals include post-secondary academic study.	ENG2D is a prerequisite for ENG3U.
Course Description	This course emphasizes literary texts and is intended to enable students to be analytical and critical readers and viewers and to give detailed accounts of complex and sophisticated texts. Students are required to examine and evaluate ideas and style in materials studied and in their own work. Students will also be expected to express themselves precisely and to use technology and multimedia applications to solve problems and conduct inquiries. Emphasis will be placed on exposure to and use of a wide variety of styles found in texts from various places and periods, including poetry, novels, short prose, plays, and myths from different times, cultures, and places; research papers; film, video, radio, television and live drama; multimedia texts, data bases, CD-ROM reference sources, and newsgroups.	This course emphasizes the development of literacy, critical thinking, and communication skills. Students will analyse challenging texts from various periods; conduct research and analyse the information gathered; write persuasive and literary essays; and analyse the relationship among media forms, audiences, and media industry practices. An important focus will be on understanding the development of the English language.
Strands/Major Concepts	<p>Speaking and Listening</p> <ul style="list-style-type: none"> - speak and listen to explore, extend, clarify, and reflect on their thoughts, ideas, feelings and experiences - communicate information and ideas effectively and clearly, and to respond personally and critically - interact with sensitivity and respect, considering the situation, audience, and purpose <p>Reading and Viewing</p> <ul style="list-style-type: none"> - select, read, and view with understanding a range of literature, information, media and visual texts - interpret, select, and combine information using a variety of strategies, resources, and technologies - respond personally to a range of texts - respond critically to a range of texts, applying their understanding of language, form, and genre <p>Writing and Representing</p> <ul style="list-style-type: none"> - use writing and other forms of representation to explore, clarify, and reflect on their thoughts, feelings, experiences, and learning; and to use their imaginations - create texts collaboratively and independently, using a variety of forms for a range of audiences and purposes - use a range of strategies to develop effective writing and other ways of representing and to enhance their clarity, precision, and effectiveness 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening to Understand - Speaking to Communicate - Reflecting on Skills and Strategies <p>Reading</p> <ul style="list-style-type: none"> - Reading for Meaning - Understanding Form and Style - Reading with Fluency - Reflecting on Skills and Strategies <p>Writing</p> <ul style="list-style-type: none"> - Developing and Organizing Content - Using Knowledge of Form and Style - Applying Knowledge of Conventions - Reflecting on Skills and Strategies <p>Media Literacy</p> <ul style="list-style-type: none"> - Understanding Media Texts - Understanding Forms and Conventions - Creating Media Texts - Reflecting on Skills and Strategies
Overall Comparison	There is a strong relationship between the courses offered in the Atlantic provinces and the course in Ontario. The English curriculum of Ontario and the Atlantic provinces address the same major concepts and skills.	
Additional Comments	New Brunswick and Nova Scotia offer advanced or enriched versions of this course. In Nova Scotia the course code for the English 11 Advanced is 004251 with the designation Advanced Credit. In New Brunswick the course code for the enriched English 11 is English 111.	

	Atlantic Provinces	Ontario
Course Name	English Language Arts 12 English 122 New Brunswick English 3201 Newfoundland and Labrador English 12 (004165) Nova Scotia English 631A Prince Edward Island	English, Grade 12, College Preparation ENG4C
Date of Curriculum	1997	2007 (draft)
Hours of Instruction	110 (except for New Brunswick which is 90)	110
Additional Course Information	The Grade 11 English Language Arts is the prerequisite for this course. This course is intended for students whose goals include post-secondary academic study.	ENG3C is a prerequisite for ENG4C.
Course Description	This course emphasizes literary texts and is intended to enable students to be analytical and critical readers and viewers and to give detailed accounts of complex and sophisticated texts. Students are required to examine and evaluate ideas and style in materials studied and in their own work. Students will also be expected to express themselves precisely and to use technology and multimedia applications to solve problems and conduct inquiries. Emphasis will be placed on exposure to and use of a wide variety of styles found in texts from various places and periods, including poetry, novels, short prose, plays, and myths from different times, cultures, and places; research papers; film, video, radio, television and live drama; multimedia texts, data bases, CD-ROM reference sources, and newsgroups.	This course emphasizes the development of literacy, critical thinking, and communication skills. Students will analyse information texts and literary works from various time periods, countries, and cultures: write research reports, summaries, and short analytical essays; complete an independent study project; and analyse interactions among media forms, audiences, and media industry practices. An important focus will be on establishing appropriate style and using business and technical language effectively.
Strands/Major Concepts	<p>Speaking and Listening</p> <ul style="list-style-type: none"> - speak and listen to explore, extend, clarify, and reflect on their thoughts, ideas, feelings and experiences - communicate information and ideas effectively and clearly, and to respond personally and critically - interact with sensitivity and respect, considering the situation, audience, and purpose <p>Reading and Viewing</p> <ul style="list-style-type: none"> - select, read, and view with understanding a range of literature, information, media and visual texts - interpret, select, and combine information using a variety of strategies, resources, and technologies - respond personally to a range of texts - respond critically to a range of texts, applying their understanding of language, form, and genre <p>Writing and Representing</p> <ul style="list-style-type: none"> - use writing and other forms of representation to explore, clarify, and reflect on their thoughts, feelings, experiences, and learning; and to use their imaginations - create texts collaboratively and independently, using a variety of forms for a range of audiences and purposes - use a range of strategies to develop effective writing and other ways of representing and to enhance their clarity, precision, and effectiveness 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening to Understand - Speaking to Communicate - Reflecting on Skills and Strategies <p>Reading</p> <ul style="list-style-type: none"> - Reading for Meaning - Understanding Form and Style - Reading with Fluency - Reflecting on Skills and Strategies <p>Writing</p> <ul style="list-style-type: none"> - Developing and Organizing Content - Using Knowledge of Form and Style - Applying Knowledge of Conventions - Reflecting on Skills and Strategies <p>Media Literacy</p> <ul style="list-style-type: none"> - Understanding Media Texts - Understanding Forms and Conventions - Creating Media Texts - Reflecting on Skills and Strategies
Overall Comparison	There is a strong relationship between the courses offered in the Atlantic provinces and the course in Ontario. The English curricula of Ontario and the Atlantic provinces address the same major concepts and skills.	

	Atlantic Provinces	Ontario
Course Name	English Communications 12 (ECS 12) English 3202 Newfoundland and Labrador English 123 New Brunswick English/Communications 12 (004164) Nova Scotia English/Communications 12 (651A) Prince Edward Island	English, Grade 12, Workplace Preparation ENG4E
Date of Curriculum	1997	2007 (draft)
Hours of Instruction	110 (except for New Brunswick which is 90)	110
Additional Course Information	English Communications 11 is a prerequisite for ECS12. This course is intended for students whose goals include school success and entry-level employment in the private and public sectors	<i>Prerequisite:</i> ENG3E
Course Description	This course engages students in practical and interesting learning experiences closely related to their lives and to the work they will experience as adults. These experiences are, as far as possible, based on the interests and abilities of the students, thereby providing support to meet their individual and diverse learning needs. The course includes opportunities to use and adapt language for different purposes and audiences; develop a sound basic knowledge of English and its conventions; study and produce various forms of writing and representing; and practice oral communications related to the world of work.	This course emphasizes consolidation of literacy, critical thinking, and communication skills. Students will study information texts and literature from various countries and cultures; write summaries, reports, résumés, and short essays; complete an independent research project; and explain the connections among media forms, audiences and media industry practices. An important focus will be on using specialized language related to the workplace accurately and coherently in appropriate contexts.
Strands/Major Concepts	<p>Speaking and Listening</p> <ul style="list-style-type: none"> - speak and listen to explore, extend, clarify, and reflect on their thoughts, ideas, feelings and experiences - communicate information and ideas effectively and clearly, and to respond personally and critically - interact with sensitivity and respect, considering the situation, audience, and purpose <p>Reading and Viewing</p> <ul style="list-style-type: none"> - select, read, and view with understanding a range of literature, information, media and visual texts - interpret, select, and combine information using a variety of strategies, resources, and technologies - respond personally to a range of texts - respond critically to a range of texts, applying their understanding of language, form, and genre <p>Writing and Representing</p> <ul style="list-style-type: none"> - use writing and other forms of representation to explore, clarify, and reflect on their thoughts, feelings, experiences, and learning; and to use their imaginations - create texts collaboratively and independently, using a variety of forms for a range of audiences and purposes - use a range of strategies to develop effective writing and other ways of representing and to enhance their clarity, precision, and effectiveness 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening to Understand - Speaking to Communicate - Reflecting on Skills and Strategies <p>Reading</p> <ul style="list-style-type: none"> - Reading for Meaning - Understanding Form and Style - Reading with Fluency - Reflecting on Skills and Strategies <p>Writing</p> <ul style="list-style-type: none"> - Developing and Organizing Content - Using Knowledge of Form and Style - Applying Knowledge of Conventions - Reflecting on Skills and Strategies <p>Media Literacy</p> <ul style="list-style-type: none"> - Understanding Media Texts - Understanding Forms and Conventions - Creating Media Texts - Reflecting on Skills and Strategies
Overall Comparison	There is a strong relationship between the courses offered in the Atlantic provinces and the course in Ontario. The courses explicitly address oral communication, reading of print and non-print texts, including media, and writing. The courses also include the analysis and use of communications related to the world of work. The Ontario course includes the creation of media texts; this is not explicitly addressed in the courses of the Atlantic provinces.	

	Atlantic Provinces	Ontario
Course Name	English Language Arts 12 English 122 New Brunswick English 3201 Newfoundland and Labrador English 12 (004165) Nova Scotia English 621A Prince Edward Island	English, Grade 12, University Preparation ENG4U
Date of Curriculum	1997	2007 (draft)
Hours of Instruction	110 (except for New Brunswick which is 90)	110
Additional Course Information	The Grade 11 English Language Arts is the prerequisite for this course. This course is intended for students whose goals include post-secondary academic study.	ENG3U is a prerequisite for ENG4U.
Course Description	This course emphasizes literary texts and is intended to enable students to be analytical and critical readers and viewers and to respond to complex and sophisticated texts orally and through writing and other ways of representing. The course places greater emphasis on exposure to and use of a wide variety of forms, including poetry, prose, drama, essays, reports, research papers, editorials and multimedia and other electronic texts. Students are required to respond critically and analytically to a wide variety of forms and to demonstrate a knowledge and understanding of language and literary forms with clarity, accuracy, and with conviction. Students will also broaden their understanding of how texts and language reflect a variety of global and cultural contexts.	This course emphasizes consolidation of literacy, critical thinking, and communication skills. Students will analyse a range of challenging texts from various time periods, countries, and cultures, write analytical and argumentative essays and a major paper for an independent literary research project, and apply key concepts to analyse media works. An important focus will be on understanding academic language and using it coherently and confidently in discussion and argument.
Strands/Major Concepts	<p>Speaking and Listening</p> <ul style="list-style-type: none"> - speak and listen to explore, extend, clarify, and reflect on their thoughts, ideas, feelings and experiences - communicate information and ideas effectively and clearly, and to respond personally and critically - interact with sensitivity and respect, considering the situation, audience, and purpose <p>Reading and Viewing</p> <ul style="list-style-type: none"> - select, read, and view with understanding a range of literature, information, media and visual texts - interpret, select, and combine information using a variety of strategies, resources, and technologies - respond personally to a range of texts - respond critically to a range of texts, applying their understanding of language, form, and genre <p>Writing and Representing</p> <ul style="list-style-type: none"> - use writing and other forms of representation to explore, clarify, and reflect on their thoughts, feelings, experiences, and learning; and to use their imaginations - create texts collaboratively and independently, using a variety of forms for a range of audiences and purposes - use a range of strategies to develop effective writing and other ways of representing and to enhance their clarity, precision, and effectiveness 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening to Understand - Speaking to Communicate - Reflecting on Skills and Strategies <p>Reading</p> <ul style="list-style-type: none"> - Reading for Meaning - Understanding Form and Style - Reading with Fluency - Reflecting on Skills and Strategies <p>Writing</p> <ul style="list-style-type: none"> - Developing and Organizing Content - Using Knowledge of Form and Style - Applying Knowledge of Conventions - Reflecting on Skills and Strategies <p>Media Literacy</p> <ul style="list-style-type: none"> - Understanding Media Texts - Understanding Forms and Conventions - Creating Media Texts - Reflecting on Skills and Strategies
Overall Comparison	There is a strong relationship between the courses offered in the Atlantic provinces and the course in Ontario. The courses in the Atlantic provinces explicitly address major concepts and skills in a similar fashion to Ontario. There is also a focus on the use and analysis of sophisticated and complex texts, and the broadening of global and cultural contexts and perspectives related to language and texts.	
Additional Comments	New Brunswick and Nova Scotia offer advanced or enriched versions of this course. In Nova Scotia the course code for the English 12 Advanced is 004252 with the designation Advanced Credit. In New Brunswick the course code for the enriched English 12 is English 121.	

	Atlantic Provinces	Ontario
Course Name	Canadian Literature 12 Canadian Literature 120 New Brunswick Canadian Literature 2204 Newfoundland and Labrador Canadian Literature 12 (004166) Nova Scotia	Studies in Literature, Grade 12, University Preparation ETS4U
Date of Curriculum	1998	2007 (draft)
Hours of Instruction	110	110
Additional Course Information	In Newfoundland and Labrador, students can use this course to satisfy the Optional Language Arts graduation requirements.	ENG3U is a prerequisite for ETS4U.
Course Description	This course provides opportunities for students to become acquainted with a broad range of Canadian literature, to appreciate the country's rich literary heritage, and to reflect upon their understanding of Canadian identity, the diversity of voices within communities and regions, and cultures. Students will read, analyse and interpret texts from a variety of critical perspectives. They will respond personally and critically to texts, and reflect on themselves as individuals and as members of communities that contribute to the Canadian voice.	This course is for students with a special interest in literature and literary criticism. The course may focus on themes, genres, time periods, or countries. Students will analyse a range of forms and stylistic elements of literary texts and respond personally, critically, and creatively to them. They will also assess critical interpretations, write analytical essays, and complete an independent study project.
Strands/Major Concepts	Students will be expected to <ul style="list-style-type: none"> - select and read, with understanding, a range of Canadian literature - respond personally and critically to a range of Canadian literature, applying their understanding of language, form, and genre - demonstrate an understanding of identity, diversity, and voice as portrayed in Canadian literature, including their own writing 	Reading and Analysing Literature <ul style="list-style-type: none"> - Understanding Text - Reading Strategies Reading Social and Cultural Contexts <ul style="list-style-type: none"> - Analysing Text - Critical Literacy Exploring Literary Interpretations <ul style="list-style-type: none"> - Elements of Literary Style - Critical Interpretations - Function and Significance
Overall Comparison	There is a strong relationship between the Ontario course and the Grade 12 Canadian literature courses offered in the Atlantic provinces. In Ontario and the Atlantic provinces, students are required to read a range of literature, read and respond to literature from a variety of critical perspectives, and to develop an understanding of social and cultural contexts. The Ontario course is intended for the study of any (Canadian or world) literature; the Atlantic courses are focused specifically on Canadian literature.	
Additional Comments	The Canadian Literature course in the Atlantic provinces also has a considerable relationship to the Ontario, Canadian Literature, Grade 11, University/College Preparation (ETC3M).	

	Atlantic Provinces	Ontario
Course Name	Writing Writing 110 New Brunswick Writing 2203 Newfoundland and Labrador WRT521A Prince Edward Island	Writer's Craft, Grade 12, University Preparation EWC4U
Date of Curriculum	2007	2007 (draft)
Hours of Instruction	110 (except for New Brunswick which is 90)	110
Additional Course Information	In Newfoundland and Labrador, students can use this course to satisfy the Optional Language Arts graduation requirements.	ENG3U is a prerequisite for EWC4U. EWC4U is an optional English course; it does not count as one of the four compulsory English course required for graduation. EWC4U may count as one of the Group 1 compulsory courses required for graduation. EWC4U is intended for students whose destination is university.
Course Description	This course offers students an opportunity to explore writing as a means of personal expression as well as a method of communication. The course provides opportunities for students to develop a portfolio of written products of transactional, poetic and expressive writing. The course provides opportunities for students to explore their creative expression, practice and refine their writing, including expository writing, and enhance their precision with written expression. Students will use a workshop approach and the essential elements of the writing process. They will develop personal approaches for choosing topics, selecting forms, and for making decisions regarding revising and editing.	This course emphasizes knowledge and skills related to the craft of writing. Students will analyse models of effective writing; use a workshop approach to produce a range of works; identify and use techniques required for specialized forms of writing; and identify effective ways to improve the quality of their writing. They will also complete a major paper as part of a creative or analytical independent study project and investigate opportunities for publication and for writing careers.
Strands/Major Concepts	Students will be expected to <ul style="list-style-type: none"> - use writing and other ways of representing to explore, clarify, and reflect on their thoughts, feelings, experiences, and learnings; and to use their imagination - create texts collaboratively and independently, using a variety of forms for a range of audiences and purposes - use a range of strategies to develop effective writing, and to enhance clarity, precision, and effectiveness 	Investigating Writing <ul style="list-style-type: none"> - Exploring writers and their writing - Understanding key elements Creating and Practicing Writing <ul style="list-style-type: none"> - Generating ideas - Drafting, organizing and revising - Editing, proofreading and publishing - Write collaboratively Reflecting on Writing <ul style="list-style-type: none"> - Reflecting on growth
Overall Comparison	There is considerable relationship between the Ontario English Writer's Craft course and the writing courses in the Atlantic provinces. The courses in Ontario and in the Atlantic provinces contain opportunities for students to develop their craft of transactional, poetic and expressive writing. The courses also focus on the writing process and the development of a portfolio of work. The Ontario course places a greater emphasis on opportunities for metacognition. The Ontario course also includes opportunities to explore other writers and their writing, and careers in writing; this is not explicit in the courses in the Atlantic provinces.	
Additional Comments	The Writing courses in the Atlantic provinces also have a considerable relationship with the Ontario Writer's Craft, Grade 12, College Preparation (EWC4C).	

	New Brunswick	Ontario
Course Name	Trigonometry and 3-Space 121 (1030541), Enriched Trigonometry and 3-Space 122 (1030542), Regular	Advanced Functions, Grade 12, University Preparation MHF4U
Date of Curriculum	2003	2007
Hours of Instruction	90	110
Additional Course Information	Prerequisite: Functions and Relations 111/121 is recommended but not required	Prerequisite: Functions, Grade 11, University Preparation, or Mathematics for College Technology, Grade 12, College Preparation
Course Description	This elective course will generally be taken by students in Grade 12. Students will study the algebra of 3-space (modelling and sketching points, lines and planes in 3-space, solving systems of equations both algebraically and using matrices, and developing an understanding of matrix characteristics such as identities, inverses, and determinants); trigonometric functions (characteristics, transformations, reciprocals, inverses, and applications); and trigonometric equations and identities (solving equations and related problems, and proving identities). Students will work with both degree and radian measure.	This course extends students' experience with functions. Students will investigate the properties of polynomial, rational, logarithmic, and trigonometric functions; develop techniques for combining functions; broaden their understanding of rates of change; and develop facility in applying these concepts and skills. Students will also refine their use of the mathematical processes necessary for success in senior mathematics. This course is intended both for students taking the Calculus and Vectors course as a prerequisite for a university program and for those wishing to consolidate their understanding of mathematics before proceeding to any one of a variety of university programs.
Strands/Major Concepts	Algebra of 3-Space Trigonometric Functions Trig Equations & Identities Trig – Further Topics	Exponential and Logarithmic Functions Trigonometric Functions Polynomial and Rational Functions Characteristics of Functions
Overall Comparisons	<p>There is a very limited relationship between Advanced Functions (Ontario) and Trigonometry and 3-Space 121/122 (New Brunswick). However, if students have also completed the previous course Functions and Relations 111/112, then there is a considerable relationship to Advanced Functions (Ontario). The most notable difference between the courses is the unit <i>Polynomial and Rational Functions</i>. Work with polynomial and rational functions, along with composition of functions, is not taught until Calculus 120 in New Brunswick.</p> <p>Overall Expectations in Advanced Functions, Grade 12, (MHF4U) that are NOT found in the New Brunswick course or its prerequisites:</p> <p>Characteristics of Functions</p> <ul style="list-style-type: none"> determine functions that results from the addition, subtraction, multiplication and division of two functions and from the composition of two functions, describe some properties of the resulting functions, and solve related problems (Note: <i>partial coverage only, students in New Brunswick have not worked with composition of functions</i>) <p>Polynomial and Rational Functions</p> <ul style="list-style-type: none"> identify and describe some key features of polynomial functions, and make connections between the numeric, graphical, and algebraic representations of polynomial functions; identify and describe some key features of the graphs of rational functions, and represent rational functions graphically; solve problems involving polynomial and simple rational equations graphically and algebraically; demonstrate an understanding of solving polynomial and simple rational inequalities. 	
Additional Comments	<p>In New Brunswick, there are three main credit types:</p> <ul style="list-style-type: none"> Level 1 Enriched (for students who have demonstrated exceptional degree of academic ability or achievement), Level 2 Regular (for students expect to enter university or college), Level 3 (for students may have difficulty with level 2, or do not intend to pursue postsecondary study) <p>After Grade 10, one additional math credit is required for graduation. Credits in Grade 11 and 12 require only 90 hours of instruction. Mathematics in Grades 9 and 10 allow for 180 hours of instruction in each grade.</p>	

	New Brunswick	Ontario
Course Name	Advanced Mathematics with an Introduction to Calculus 120 (1030640)	Calculus and Vectors, Grade 12, University Preparation MCV4U
Date of Curriculum	2003	2007
Hours of Instruction	90	110
Additional Course Information	Prerequisite: Functions and Relations 11/112 and Trigonometry and 3-space 121/122	Prerequisite: MHF4U must be taken prior to or concurrently with Calculus and Vectors (MCV4U)
Course Description	This elective course is designed to follow Functions and Relations 111/112 and Trigonometry and 3-space 121/122. Students will study sequences and series (finite and infinite, convergent and divergent, sigma notation, concept of a limit, and mathematical induction); advanced topics with functions (combinations and compositions, polynomial, rational, irrational, and absolute value functions, and solving equations and inequalities); elements of differential calculus (rate of change, slope of a tangent to a curve, limits, derivatives from first principles, and power rule); and complex numbers (rectangular and polar forms and graphs, operations, and De Moivre's theorem).	This course builds on students' previous experience with functions and their developing understanding of rates of change. Students will solve problems involving geometric and algebraic representations of vectors, and representations of lines and planes in three-dimensional space; broaden their understanding of rates of change to include the derivatives of polynomial, rational, exponential, and sinusoidal functions; and apply these concepts and skills to the modelling of real-world relationships. Students will also refine their use of the mathematical processes necessary for success in senior mathematics. This course is intended for students who choose to pursue careers in fields such as science, engineering, economics, and some areas of business, including those students who will be required to take a university-level calculus, linear algebra, or physics course.
Strands/Major Concepts	Sequences and Series Function Toolkit (Composition of Functions, Polynomial Equations, Derivative, Sketching, Modeling with Exponential and Log Functions) Complex Numbers	Rate of Change Derivatives and their Applications Geometry and Algebra of Vectors
Overall Comparisons	<p>There is a considerable relationship between the two courses. The strand The Geometry and Algebra of Vectors, taught in Calculus and Vectors, is not taught in Calculus 120. However, the <i>Algebra of 3-Space</i> is a unit in Trigonometry and 3-Space 121/122. The unit explores equations of planes in 3-space, but does not utilize vectors to represent lines and planes. In New Brunswick vectors are initially explored in Grade 10 only.</p> <p>Overall Expectations in MCV4U that are NOT found in the New Brunswick course: The Geometry and Algebra of Vectors</p> <ul style="list-style-type: none"> • demonstrate an understanding of vectors in two-space and three-space by representing them algebraically and geometrically and by recognizing their applications; • perform operations on vectors in two-space and three-space, and use the properties of these operations to solve problems, including those arising from real-world applications; • distinguish between the geometric representations of a single linear equation or a system of two linear equations in two-space and three-space, and determine different geometric configurations of lines and planes in three-space; • represent lines and planes using scalar, vector, and parametric equations, and solve problems involving distances and intersections 	
Additional Comments	<p>In New Brunswick, there are three main credit types:</p> <ul style="list-style-type: none"> • Level 1 Enriched (for students who have demonstrated exceptional degree of academic ability or achievement), • Level 2 Regular (for students expect to enter university or college), • Level 3 (for students may have difficulty with level 2, or do not intend to pursue postsecondary study) <p>After Grade 10, one additional math credit is required for graduation. Credits in Grade 11 and 12 require only 90 hours of instruction. Mathematics in Grades 9 and 10 allow for 180 hours of instruction in each grade.</p>	

	New Brunswick	Ontario
Course Name	Patterns and Relations 113 (1030433) Level 3 Credit	Foundations for College Mathematics, Grade 12, College Preparation MAP4C
Date of Curriculum	2002	2007
Hours of Instruction	90	110
Additional Course Information	Prerequisite: Applications 113	Prerequisite: Foundations for College Mathematics, Grade 11, College Preparation or Functions and Applications, Grade 11, University/College Preparation
Course Description	This elective course follows Applications in Mathematics 113, and may be taken by students in grade 11 or 12. Students will study applications of trigonometry (particularly the Sine and Cosine Laws); patterns (exploring and differentiating among patterns and sequences, including arithmetic, power, geometric and Fibonacci); quadratics (exploring, describing and graphing quadratic relationships to solve problems, modelling using technology, and applying the general quadratic formula); and exponential growth (exploring, describing and graphing exponential relationships to solve problems, modelling using technology, applying rules for exponents, and solving problems involving compound interest and annuities).	This course enables students to broaden their understanding of real-world applications of mathematics. Students will analyse data using statistical methods; solve problems involving applications of geometry and trigonometry; solve financial problems connected with annuities, budgets, and renting or owning accommodation; simplify expressions; and solve equations. Students will reason mathematically and communicate their thinking as they solve multi-step problems. This course prepares students for college programs in areas such as business, health sciences, and human services, and for certain skilled trades.
Strands/Major Concepts	Applications of Trigonometry Quadratics Patterns (includes arithmetic and geometric sequences) Exponential Growth	Mathematical Models Personal Finance Geometry and Trigonometry Data Management
Overall Comparisons	<p>There is a strong relationship between Foundations for College Mathematics (MAP4C) and Patterns and Relations 113 (New Brunswick), including its prerequisite courses. Students completing Patterns and Relations 113 (New Brunswick) have worked with exponential functions, but not exponential equations.</p> <p>Overall Expectations in Foundations for College Mathematics, Grade 12 (MAP4C) that are NOT found in the New Brunswick course: Mathematical Models</p> <ul style="list-style-type: none"> evaluate powers with rational exponents, simplify algebraic expressions involving exponents, and solve problems involving exponential equations graphically and using common bases <p>(Note: partial coverage only, students in New Brunswick have not solved problems with exponential equations)</p>	
Additional Comments	<p>In New Brunswick, there are three main credit types:</p> <ul style="list-style-type: none"> Level 1 Enriched (for students who have demonstrated exceptional degree of academic ability or achievement), Level 2 Regular (for students expect to enter university or college), Level 3 (for students may have difficulty with level 2, or do not intend to pursue postsecondary study) <p>After Grade 10, one additional math credit is required for graduation. Credits in Grade 11 and 12 require only 90 hours of instruction. Mathematics in Grades 9 and 10 allow for 180 hours of instruction in each grade.</p>	

	New Brunswick	Ontario
Course Name	Patterns and Relations 113 (1030433) Level 3 Credit	Mathematics for College Technology, Grade 12, College Preparation MCT4C
Date of Curriculum	2002	2007
Hours of Instruction	90	110 hours
Additional Course Information	Prerequisite: Applications 113	Prerequisite: Functions and Applications, Grade 11, University/College Preparation or Functions, Grade 11, University Preparation
Course Description	This elective course follows Applications in Mathematics 113, and may be taken by students in grade 11 or 12. Students will study applications of trigonometry (particularly the Sine and Cosine Laws); patterns (exploring and differentiating among patterns and sequences, including arithmetic, power, geometric and Fibonacci); quadratics (exploring, describing and graphing quadratic relationships to solve problems, modelling using technology, and applying the general quadratic formula); and exponential growth (exploring, describing and graphing exponential relationships to solve problems, modelling using technology, applying rules for exponents, and solving problems involving compound interest and annuities).	This course enables students to extend their knowledge of functions. Students will investigate and apply properties of polynomial, exponential, and trigonometric functions; continue to represent functions numerically, graphically, and algebraically; develop facility in simplifying expressions and solving equations; and solve problems that address applications of algebra, trigonometry, vectors, and geometry. Students will reason mathematically and communicate their thinking as they solve multi-step problems. This course prepares students for a variety of college technology programs.
Strands/Major Concepts	Applications of Trig Quadratics Patterns (includes arithmetic and geometric sequences) Exponential Growth	Exponential Functions Polynomial Functions Trigonometric Functions Applications of Geometry
Overall Comparisons	<p>There is a very limited relationship between Mathematics for College Technology (MCT4C) and Patterns and Relations 113 (New Brunswick) Students from Patterns and Relations 113 will not have been taught the concepts from the strands Polynomials, and Trigonometric Functions.</p> <p>Overall Expectations in Foundations for Mathematics for College Technology, Grade 12 (MCT4C) that are NOT found in the New Brunswick course:</p> <p>Polynomial Functions</p> <ul style="list-style-type: none"> • make connections between the numeric, graphical and algebraic representations of polynomial functions; • solve polynomial equations by factoring, make connections between polynomial equations and formulae, and solve problems involving polynomial expressions arising from a variety of applications. <p>Trigonometric Functions</p> <ul style="list-style-type: none"> • make connections between the numeric, graphical and algebraic representations of sinusoidal functions; • demonstrate an understanding that sinusoidal functions can be used to model some periodic phenomena, and solve related problems, including those arising from real-world applications. 	
Additional Comments	<p>In New Brunswick, there are three main credit types:</p> <ul style="list-style-type: none"> • Level 1 Enriched (for students who have demonstrated exceptional degree of academic ability or achievement), • Level 2 Regular (for students expect to enter university or college), • Level 3 (for students may have difficulty with level 2, or do not intend to pursue postsecondary study) <p>After Grade 10, one additional math credit is required for graduation. Credits in Grade 11 and 12 require only 90 hours of instruction. Mathematics in Grades 9 and 10 allow for 180 hours of instruction in each grade.</p>	

	New Brunswick	Ontario
Course Name	Applications in Mathematics 113 (1030233) Level 3 Credit	Foundations for College Mathematics, Grade 11, College Preparation MBF3C
Date of Curriculum	2002	2007
Hours of Instruction	90	110
Additional Course Information	Prerequisite: Mathematics 10	Prerequisite: Foundations of Mathematics, Grade 10, Applied
Course Description	This course (or Geometry and Applications in Mathematics 111/112) is compulsory for high school graduation, and follows Mathematics 10. Students will study statistics (analyzing and applying sampling techniques, sampling variability, and confidence intervals); probability (applications involving the fundamental counting principle, area models, factorials, and simple permutations and combinations); and decision making in consumer situations; as well as pursuing an independent study.	This course enables students to broaden their understanding of mathematics as a problem solving tool in the real world. Students will extend their understanding of quadratic relations; investigate situations involving exponential growth; solve problems involving compound interest; solve financial problems connected with vehicle ownership; develop their ability to reason by collecting, analysing, and evaluating data involving one variable; connect probability and statistics; and solve problems in geometry and trigonometry. Students will consolidate their mathematical skills as they solve problems and communicate their thinking.
Strands/Major Concepts	Consumer Situations (Income, Taxes, Budgets, Credit, Transportation, Simple and Compound Interest) Statistics Probability Independent Study Unit	Mathematical Models Personal Finance Geometry and Trigonometry Data Management
Overall Comparisons	<p>There is limited relationship between Applications in Mathematics 113 (New Brunswick) and Foundations of College Mathematics (MBF3C). Courses are comparable in the units of personal finance, and data management. The unit Mathematical Models is not taught until the subsequent Patterns and Relations 113 course in New Brunswick. Trigonometry is explored in the Grade 10 course, but the Sine and Cosine law are not explored until the subsequent course Patterns and Relations 113.</p> <p>Overall Expectations in Foundations of College Mathematics (MBF3C) that are NOT found in the New Brunswick course:</p> <p>Mathematical Models</p> <ul style="list-style-type: none"> • make connections between the numeric, graphical, and algebraic representations of quadratic relations, and use the connections to solve problems; • demonstrate an understanding of exponents, and make connections between the numeric, graphical, and algebraic representations of exponential relations; • describe and represent exponential relations, and solve problems involving exponential relations arising from real-world applications. <p>Geometry and Trigonometry</p> <ul style="list-style-type: none"> • solve problems involving trigonometry in acute triangles using the sine law and the cosine law, including problems arising from real-world applications. 	
Additional Comments	<p>In New Brunswick, there are three main credit types:</p> <ul style="list-style-type: none"> • Level 1 Enriched (for students who have demonstrated exceptional degree of academic ability or achievement), • Level 2 Regular (for students expect to enter university or college), • Level 3 (for students may have difficulty with level 2, or do not intend to pursue postsecondary study) <p>After Grade 10, one additional math credit is required for graduation. Credits in Grade 11 and 12 require only 90 hours of instruction. Mathematics in Grades 9 and 10 allow for 180 hours of instruction in each grade. In New Brunswick, there are no credits (in the provincial curriculum) that are comparable to the Workplace math credits in Ontario.</p>	

	New Brunswick	Ontario
Course Name	Functions and Relations 111, Enriched, (1030331) Functions and Relations 112, Regular (1030332)	Functions and Applications, Grade 11, University/College Preparation MCF3M
Date of Curriculum	2002	2007
Hours of Instruction	90	110
Additional Course Information	Prerequisite: Geometry and Applications in Mathematics 111/112	Prerequisite: Principles of Mathematics, Grade 10, Academic or Foundations of Mathematics, Grade 10, Applied
Course Description	This elective course follows Geometry and Applications in Mathematics 111/112, and may be taken by students in Grade 11 or 12. Students will study applications of trigonometry (particularly the Sine and Cosine Laws); quadratics (exploring sequences, modelling with and analyzing quadratic functions, transformations, finite differences, and developing and applying the general quadratic formula); rate of change (including average versus instantaneous rate of change in quadratic situations); and exponential growth (modelling with and analyzing exponential and logarithmic functions, transformations, properties of exponents and logarithms, and exponential and logarithmic equations).	This course introduces basic features of the function by extending students' experiences with quadratic relations. It focuses on quadratic, trigonometric, and exponential functions and their use in modeling real-world situations. Students will represent functions numerically, graphically, and algebraically; simplify expressions; solve equations; and solve problems relating to applications. Students will reason mathematically and communicate their thinking as they solve multi-step problems.
Strands/Major Concepts	Quadratics Trigonometry Rates of Change Exponential Growth	Quadratic Functions Exponential Functions Trigonometric Functions
Overall Comparisons	There is a considerable relationship between Functions and Relations 111/112 (New Brunswick) and Functions and Applications. Graphs of Trigonometric Functions are not taught until Grade 12 in New Brunswick. Overall Expectations in Functions and Applications (MCF3M) that are NOT found in the New Brunswick course: Trigonometric Functions <ul style="list-style-type: none"> • demonstrate an understanding of periodic relationships and the sine function, and make connections between the numeric, graphical, and algebraic representations of sine functions; • identify and represent sine functions, and solve problems involving sine functions, including problems arising from real-world applications 	
Additional Comments	In New Brunswick, there are three main credit types: <ul style="list-style-type: none"> • Level 1 Enriched (for students who have demonstrated exceptional degree of academic ability or achievement), • Level 2 Regular (for students expect to enter university or college), • Level 3 (for students may have difficulty with level 2, or do not intend to pursue postsecondary study) After Grade 10, one additional math credit is required for graduation. Credits in Grade 11 and 12 require only 90 hours of instruction. Mathematics in Grades 9 and 10 allow for 180 hours of instruction in each grade. Note: There is a weaker relationship between Functions and Relations 111/112 (New Brunswick) and Functions (MCR3U). The additional unit on Discrete Functions found in Functions (MCR3U) does not get taught until Grade 12 in New Brunswick in Calculus 120. Note on Geometry and Applications in Mathematics 111 (1030131)/112 (1030132) This Grade 11 course is compulsory for high school graduation, and follows Mathematics 10. Students study statistics; probability; and circle geometry (both Euclidean and analytical); as well as pursuing an independent study. Due to the nature of the topics in the course, <i>Geometry and Applications in Mathematics 111/112</i> has a very weak relationship to Functions and Applications (MCF3M). Students from this course will not have sufficient instruction on any of the strands in MCF3M.	

	Newfoundland	Ontario
Course Name	Mathematics 3204, Academic (MAT3204) Mathematics 3205, Advanced (MAT3205)	Advanced Functions, Grade 12, University Preparation MHF4U
Date of Curriculum	2002	2007
Hours of Instruction	110	110
Additional Course Information	Prerequisite: Math 1204 (Grade 10 course)	Prerequisite: Functions, Grade 11, University Preparation, or Mathematics for College Technology, Grade 12, College Preparation
Course Description	Success in Mathematics 3204 is dependent upon knowledge and skills obtained in Mathematics 1204. This is the third course in the Mathematics 1204/2204/3204 sequence. It covers the same topics as Mathematics 3205, the main difference being depth of treatment. Mathematics 3204 and 2204 can be offered in either order to accommodate flexibility in delivery of programs in small schools. Topics: Quadratics, exponential and logarithmic functions, circle geometry, rate of change, and probability.	This course extends students' experience with functions. Students will investigate the properties of polynomial, rational, logarithmic, and trigonometric functions; develop techniques for combining functions; broaden their understanding of rates of change; and develop facility in applying these concepts and skills. Students will also refine their use of the mathematical processes necessary for success in senior mathematics. This course is intended both for students taking the Calculus and Vectors course as a prerequisite for a university program and for those wishing to consolidate their understanding of mathematics before proceeding to any one of a variety of university programs.
Strands/Major Concepts	Quadratics Patterns, Modeling, Graph, Solve Problems, Finite Differences, Transformations Rates of Change Average Rates of Change Exponential Growth Exponential, Logarithmic Relations, Equations and Graphs, Modeling Circle Geometry Properties, Reasoning and Proof, Analytic Geometry Probability Permutations, Combinations, Conditional Probability, Normal and Binomial Distributions	Exponential and Logarithmic Functions Trigonometric Functions Polynomial and Rational Functions Characteristics of Functions
Overall Comparisons	<p>There is a considerable relationship between Advanced Functions (Ontario) and Mathematics 3204/3205 (Newfoundland) and its prerequisites.</p> <p>The trigonometry unit from Advanced Functions (Ontario) is completed in Math 2204/2205 in Newfoundland (and further studied in MAT 3207 Calculus). The most notable difference between the two courses is the unit <i>Polynomial and Rational Functions</i>. In Math 3204/3205 (Newfoundland) the course focuses on quadratics. Work with polynomial and rational functions, along with composition of functions, is not taught until MAT3207 – Calculus. In Newfoundland Circle Geometry and Probability are included.</p> <p>Overall Expectations in Advanced Functions, Grade 12, (MHF4U) that are NOT found in the Newfoundland course or its prerequisites:</p> <p>Characteristics of Functions</p> <ul style="list-style-type: none"> determine functions that results from the addition, subtraction, multiplication and division of two functions and from the composition of two functions, describe some properties of the resulting functions, and solve related problems (Note: partial coverage only, students in Newfoundland have not worked with composition of functions) <p>Polynomial and Rational Functions</p> <ul style="list-style-type: none"> identify and describe some key features of polynomial functions, and make connections between the numeric, graphical, and algebraic representations of polynomial functions; identify and describe some key features of the graphs of rational functions, and represent rational functions graphically; solve problems involving polynomial and simple rational equations graphically and algebraically; demonstrate an understanding of solving polynomial and simple rational inequalities. 	

	Newfoundland	Ontario
Additional Comments	<p>Mathematics 3204 (academic) and Mathematics 3205 (Advanced) share program outcomes. Advanced Mathematics 12 has a few additional expectations and is more rigorous.</p> <p>In Newfoundland, a credit is related to 55 hours of instruction, and there are three credit types:</p> <ul style="list-style-type: none"> • Advanced (for students who have demonstrated exceptional degree of academic ability or achievement), • Academic (for students expect to enter university or college), • Practical (for students whose goal is a diploma and then workforce or selected area of post-secondary study) <p>After Grade 9, two additional math credits are required for graduation.</p> <p>A Note on Math 3103: Newfoundland uniquely offers an <i>advanced</i> course that focuses on algebra, MATH 3103. There is some overlap between Mathematics 3207 (Calculus) and Mathematics 3103 and normally students would choose one or the other.</p> <p>There is a strong relationship between Advanced Functions (Ontario) and Mathematics 3103 (Newfoundland) and its prerequisites. The course meets and exceeds the expectations for MHF4U, but students do not learn Calculus, nor do they do work related to Data Management (MDM4U). The course focuses on algebra.</p> <p>The course is designed for academic mathematics students who have plans for postsecondary which involves the study of mathematics.</p> <p>Topics: Number concepts and skills, polynomial equations, algebraic expressions, and rearranging formulas, functions, compositions, and inverses.</p>	

	Newfoundland	Ontario
Course Name	Mathematics 3207 (MAT3207) Advanced Credit	Calculus and Vectors, Grade 12, University Preparation MCV4U
Date of Curriculum	2002	2007
Hours of Instruction	110	110
Additional Course Information	Prerequisite: It is <i>recommended</i> that students complete Advanced Math 11 and Advanced Math 12, but Math 11 and Math 12 is sufficient.	Prerequisite: MHF4U must be taken prior to or concurrently with Calculus and Vectors (MCV4U)
Course Description	It is strongly recommended that students complete Mathematics 2204 or 2205 as well as Mathematics 3204 or 3205 before Mathematics 3207. Students can do Mathematics 3207 concurrently with one of the previously listed courses. This is the fourth course in the Advanced Mathematics Program and contains essential algebra for success in post-secondary mathematics. Topics: Sequences and series, functions including derivatives, trigonometry, and complex numbers.	This course builds on students' previous experience with functions and their developing understanding of rates of change. Students will solve problems involving geometric and algebraic representations of vectors, and representations of lines and planes in three-dimensional space; broaden their understanding of rates of change to include the derivatives of polynomial, rational, exponential, and sinusoidal functions; and apply these concepts and skills to the modelling of real-world relationships. Students will also refine their use of the mathematical processes necessary for success in senior mathematics. This course is intended for students who choose to pursue careers in fields such as science, engineering, economics, and some areas of business, including those students who will be required to take a university-level calculus, linear algebra, or physics course.
Strands/Major Concepts	Sequences and Series (Recursive Relations, Concept of Limit, Proof by Induction) Function Toolkit (Composition of Functions, Polynomial Equations, Derivative, Sketching, Modeling With Exponential and Log Functions) Trigonometry Complex Numbers	Rate of Change Derivatives and their Applications Geometry and Algebra of Vectors
Overall Comparisons	There is a considerable relationship between the two courses. The strand Geometry and Algebra of Vectors, taught in Calculus and Vectors, is not taught in Pre-Calculus Mathematics. However, the <i>Algebra of 3-Space</i> is a unit in Math 2204/2205 (Grade 11). The unit explores equations of planes in 3-space, but does not utilize vectors to represent lines and planes. Vectors are initially explored in Grade 10 only. Overall Expectations in MCV4U that are NOT found in the Newfoundland course: Geometry and Algebra of Vectors <ul style="list-style-type: none"> demonstrate an understanding of vectors in two-space and three-space by representing them algebraically and geometrically and by recognizing their applications; perform operations on vectors in two-space and three-space, and use the properties of these operations to solve problems, including those arising from real-world applications; distinguish between the geometric representations of a single linear equation or a system of two linear equations in two-space and three-space, and determine different geometric configurations of lines and planes in three-space; represent lines and planes using scalar, vector, and parametric equations, and solve problems involving distances and intersections. 	
Additional Comments	In Newfoundland, a credit is related to 55 hours of instruction, and there are three credit types: <ul style="list-style-type: none"> Advanced (for students who have demonstrated exceptional degree of academic ability or achievement), Academic (for students expect to enter university or college), Practical (for students whose goal is a diploma and then workforce or selected area of post-secondary study) After Grade 9, two additional math credits are required for graduation. A Note on Math 3103: Newfoundland uniquely offers an <i>advanced</i> course that focuses on algebra, MATH 3103. There is some overlap between Mathematics 3207 (Calculus) and Mathematics 3103 and normally students would choose one or the other. Math 3103 has a very limited relationship to Calculus and Vectors (students work with advanced functions but not with derivatives or vectors). There is a strong relationship between Mathematics 3103 (Newfoundland) and Advanced Functions (Ontario). Math 3103 is designed for academic mathematics students who have plans for postsecondary which involves the study of mathematics. Topics: Number concepts and skills, polynomial equations, algebraic expressions, and rearranging formulas, functions, compositions, and inverses.	

	Newfoundland	Ontario
Course Name	Mathematics 3206 (MAT 3206) Practical Credit	Foundations for College Mathematics, Grade 12, College Preparation MAP4C
Date of Curriculum	2002	2007
Hours of Instruction	110	110
Additional Course Information	Prerequisite: Math 1206	Prerequisite: Foundations for College Mathematics, Grade 11, College Preparation or Functions and Applications, Grade 11, University/College Preparation
Course Description	Success in Mathematics 3206 is dependent upon knowledge and skills obtained in Mathematics 1206. Topics: Patterns, quadratics, exponential growth, circle geometry, and probability.	This course enables students to broaden their understanding of real-world applications of mathematics. Students will analyse data using statistical methods; solve problems involving applications of geometry and trigonometry; solve financial problems connected with annuities, budgets, and renting or owning accommodation; simplify expressions; and solve equations. Students will reason mathematically and communicate their thinking as they solve multi-step problems. This course prepares students for college programs in areas such as business, health sciences, and human services, and for certain skilled trades.
Strands/Major Concepts	Patterns and Sequences Arithmetic, Power, Geometric Quadratics Graphs and Applications Exponential Growth Exponents, Graphs Circle Geometry Properties, Proofs Probability Simulations, Permutations, Combinations, Factorial Notation	Mathematical Models Personal Finance Geometry and Trigonometry Data Management
Overall Comparisons	<p>There is a considerable relationship between Foundations for College Mathematics (MAP4C) and Mathematics 3206 (Newfoundland), including its prerequisite courses. Several overall expectations from MAP4C were taught in the previous courses (MAT2206) including topics from Personal Finance and Trigonometry (sine and cosine law). Students completing MAT3206 (Newfoundland) have worked with exponential functions, but not exponential equations. Newfoundland's course requires students to work with concepts in Circle Geometry and in Probability that are not included in the expectations of MAP4C and its prerequisites.</p> <p>Overall Expectations in Foundations for College Mathematics, Grade 12 (MAP4C) that are NOT found in the Newfoundland course:</p> <p>Mathematical Models</p> <ul style="list-style-type: none"> evaluate powers with rational exponents, simplify algebraic expressions involving exponents, and solve problems involving exponential equations graphically and using common bases (Note: <i>partial coverage only, students in New Brunswick have not solved problems with exponential equations</i>) <p>Personal Finance</p> <ul style="list-style-type: none"> demonstrate an understanding of annuities, including mortgages, and solve related problems, using technology; 	
Additional Comments	<p>In Newfoundland, a credit is related to 55 hours of instruction, and there are three credit types:</p> <ul style="list-style-type: none"> Advanced (for students who have demonstrated exceptional degree of academic ability or achievement), Academic (for students expect to enter university or college), Practical (for students whose goal is a diploma and then workforce or selected area of post-secondary study) <p>After Grade 9, two additional math credits are required for graduation.</p>	

	Newfoundland	Ontario
Course Name	Mathematics 3206 (MAT 3206) Practical Credit	Mathematics for College Technology, Grade 12, College Preparation MCT4C
Date of Curriculum	2002	2007
Hours of Instruction	110	110
Additional Course Information	Prerequisite: Math 1206	Prerequisite: Functions and Applications, Grade 11, University/College Preparation or Functions, Grade 11, University Preparation
Course Description	Success in Mathematics 3206 is dependent upon knowledge and skills obtained in Mathematics 1206. Topics: Patterns, quadratics, exponential growth, circle geometry, and probability.	This course enables students to extend their knowledge of functions. Students will investigate and apply properties of polynomial, exponential, and trigonometric functions; continue to represent functions numerically, graphically, and algebraically; develop facility in simplifying expressions and solving equations; and solve problems that address applications of algebra, trigonometry, vectors, and geometry. Students will reason mathematically and communicate their thinking as they solve multi-step problems. This course prepares students for a variety of college technology programs.
Strands/Major Concepts	Patterns and Sequences Arithmetic, Power, Geometric Quadratics Graphs and Applications Exponential Growth Exponents, Graphs Circle Geometry Properties, Proofs Probability Simulations, Permutations, Combinations, Factorial Notation	Exponential Functions Polynomial Functions Trigonometric Functions Applications of Geometry
Overall Comparisons	<p>There is a very limited relationship between Mathematics for College Technology (MCT4C) and Mathematics 3206 (Newfoundland). Students from Mathematics 3206 will not have been taught the concepts from the strands Polynomials, and Trigonometric Functions.</p> <p>Overall Expectations in Foundations for Mathematics for College Technology, Grade 12 (MCT4C) that are NOT found in the Newfoundland course:</p> <p>Polynomial Functions</p> <ul style="list-style-type: none"> • make connections between the numeric, graphical and algebraic representations of polynomial functions; • solve polynomial equations by factoring, make connections between polynomial equations and formulae, and solve problems involving polynomial expressions arising from a variety of applications. <p>Trigonometric Functions</p> <ul style="list-style-type: none"> • make connections between the numeric, graphical and algebraic representations of sinusoidal functions; • demonstrate an understanding that sinusoidal functions can be used to model some periodic phenomena, and solve related problems, including those arising from real-world applications. 	
Additional Comments	<p>In Newfoundland, a credit is related to 55 hours of instruction, and there are three credit types:</p> <ul style="list-style-type: none"> • Advanced (for students who have demonstrated exceptional degree of academic ability or achievement), • Academic (for students expect to enter university or college), • Practical (for students whose goal is a diploma and then workforce or selected area of post-secondary study) <p>After Grade 9, two additional math credits are required for graduation.</p>	

	Newfoundland	Ontario
Course Name	Mathematics 2206, (MAT2206) Practical Credit	Foundations for College Mathematics, Grade 11, College Preparation MBF3C
Date of Curriculum	2002	2007
Hours of Instruction	110	110
Additional Course Information	Prerequisite: Mathematics 1206 or Mathematics 1204	Prerequisite: Foundations of Mathematics, Grade 10, Applied
Course Description	Success in Mathematics 2206 is dependent upon knowledge and skills obtained in Mathematics 1206. Topics: Decision making in consumer situations, applications of trigonometry, statistics, introduction to linear programming, and an independent study unit.	This course enables students to broaden their understanding of mathematics as a problem solving tool in the real world. Students will extend their understanding of quadratic relations; investigate situations involving exponential growth; solve problems involving compound interest; solve financial problems connected with vehicle ownership; develop their ability to reason by collecting, analysing, and evaluating data involving one variable; connect probability and statistics; and solve problems in geometry and trigonometry. Students will consolidate their mathematical skills as they solve problems and communicate their thinking.
Strands/Major Concepts	Linear Programming (Systems of Equations, Finding Optimal Solutions) Consumer Situations (Income, Taxes, Budgets, Credit, Transportation, Simple and Compound Interest) Statistics (Sampling, Bias, Distributions, Normal Curve, Standard Deviation) Trigonometry (Law of Sines and Cosines, Area of Triangles) Independent Study Unit	Mathematical Models Personal Finance Geometry and Trigonometry Data Management
Overall Comparisons	<p>There is a considerable relationship between Mathematics 2206 (Newfoundland) and Foundations of College Mathematics (MBF3C). Courses are comparable in the units of personal finance, trigonometry and data management. The unit Mathematical Models is not taught until the Mathematics 3206 (Grade 12) course in Newfoundland. This may be due in part to the fact that there are no math credits in Newfoundland that are comparable to the Workplace math credits in Ontario.</p> <p>Overall Expectations in Foundations of College Mathematics (MBF3C) that are NOT found in the Newfoundland course (not taught until Grade 12): Mathematical Models</p> <ul style="list-style-type: none"> • make connections between the numeric, graphical, and algebraic representations of quadratic relations, and use the connections to solve problems; • demonstrate an understanding of exponents, and make connections between the numeric, graphical, and algebraic representations of exponential relations; • describe and represent exponential relations, and solve problems involving exponential relations arising from real-world applications. 	
Additional Comments	<p>In Newfoundland, a credit is related to 55 hours of instruction, and there are three credit types:</p> <ul style="list-style-type: none"> • Advanced (for students who have demonstrated exceptional degree of academic ability or achievement), • Academic (for students expect to enter university or college), • Practical (for students whose goal is a diploma and then workforce or selected area of post-secondary study) <p>After Grade 9, two additional math credits are required for graduation. In Newfoundland, there are no credits (in the provincial curriculum) that are comparable to the Workplace math credits in Ontario.</p>	

	Newfoundland	Ontario
Course Name	Mathematics 2204, Academic, (MAT2204) Mathematics 2205, Advanced, (008145)	Functions and Applications, Grade 11, University/College Preparation MCF3M
Date of Curriculum	2002	2007
Hours of Instruction	110	110
Additional Course Information	Prerequisite: Mathematics 1204	Prerequisite: Principles of Mathematics, Grade 10, Academic or Foundations of Mathematics, Grade 10, Applied
Course Description	Success in Mathematics 2204 is dependent upon knowledge and skills obtained in Mathematics 1204. This is the second course in the Mathematics 1204/2204/3204 sequence. This course covers the same topics as Mathematics 2205, the main difference being the depth of treatment. Topics: Equations in 3-space, sinusoidal functions, trigonometric equations, statistics, trigonometry and its applications, and an independent study unit.	This course introduces basic features of the function by extending students' experiences with quadratic relations. It focuses on quadratic, trigonometric, and exponential functions and their use in modeling real-world situations. Students will represent functions numerically, graphically, and algebraically; simplify expressions; solve equations; and solve problems relating to applications. Students will reason mathematically and communicate their thinking as they solve multi-step problems.
Strands/Major Concepts	Algebra of 3-Space Systems of Equations, Relating Algebra and Geometry, Matrices Trigonometry Sinusoidal Functions, Transformations, Equations and Identities, Radian Measure, Sine and Cosine Law Statistics Sampling, Bias, Normal and Binomial Distribution, Confidence Intervals, Chi-Square Independent Study Unit	Quadratic Functions Exponential Functions Trigonometric Functions
Overall Comparisons	There is a very limited relationship between Math 2204/2205 (Newfoundland) and Functions and Applications. Only topics in Trigonometric Functions are identified in both curricula. Quadratic Functions and Exponential Functions do not get taught until Grade 12 in Newfoundland. Newfoundland does work with the algebra of 3-space including matrices, a required independent study unit, as well as topics in Statistics that are taught in Grade 12 in Ontario (Data Management). Initial work with functions and quadratics is done in Grade 10 in Newfoundland. Overall Expectations in Functions and Applications (MCF3M) that are NOT found in the Newfoundland course: Quadratic Functions <ul style="list-style-type: none"> • expand and simplify quadratic expressions, solve quadratic equations, and relate the roots of a quadratic equation to the corresponding graph; • solve problems involving quadratic functions, including problems arising from real-world applications. Exponential Functions <ul style="list-style-type: none"> • identify and represent exponential functions, and solve problems involving exponential functions, including those arising from real-world applications; • demonstrate an understanding of compound interest and annuities, and solve related problems. 	
Additional Comments	In Newfoundland, a credit is related to 55 hours of instruction, and there are three credit types: <ul style="list-style-type: none"> • Advanced (for students who have demonstrated exceptional degree of academic ability or achievement), • Academic (for students expect to enter university or college), • Practical (for students whose goal is a diploma and then workforce or selected area of post-secondary study) After Grade 9, two additional math credits are required for graduation. Note: The relationship between Math 2204/2205 (Newfoundland) and Functions (MCR3U) is very limited. The additional unit on Discrete Functions found in Functions (MCR3U) is not taught until Grade 12 in Newfoundland in the Pre-Calculus course.	

	Nova Scotia	Ontario
Course Name	Mathematics 12, Academic (008073) Advanced Mathematics 12, Advanced (008015)	Advanced Functions, Grade 12, University Preparation MHF4U
Date of Curriculum	2000	2007
Hours of Instruction	110	110
Additional Course Information	Prerequisite: Math 11 or Advanced Math 11 is recommended, but Math 10 is sufficient	Prerequisite: Functions, Grade 11, University Preparation, or Mathematics for College Technology, Grade 12, College Preparation
Course Description	<p>Students will:</p> <ul style="list-style-type: none"> Analyze and solve problems with quadratic relations and equations. Explore average rates of change Represent and analyze exponential and logarithmic functions, and solve exponential, and log equations and identities. Explore circle geometry by studying properties, deductive reasoning, analytic geometry Solve problems based on the counting of sets, using techniques such as permutations and combinations. Use normal and binomial probability distributions to solve problems involving uncertainty. 	<p>This course extends students' experience with functions. Students will investigate the properties of polynomial, rational, logarithmic, and trigonometric functions; develop techniques for combining functions; broaden their understanding of rates of change; and develop facility in applying these concepts and skills. Students will also refine their use of the mathematical processes necessary for success in senior mathematics. This course is intended both for students taking the Calculus and Vectors course as a prerequisite for a university program and for those wishing to consolidate their understanding of mathematics before proceeding to any one of a variety of university programs.</p>
Strands/Major Concepts	<p>Quadratics Patterns, Modeling, Graph, Solve Problems, Finite Differences, Transformations</p> <p>Rates of Change Average Rates of Change</p> <p>Exponential Growth Exponential, Logarithmic Relations, Equations and Graphs, Modeling</p> <p>Circle Geometry Properties, Reasoning and Proof, Analytic Geometry</p> <p>Probability Permutations, Combinations, Conditional Probability, Normal and Binomial Distributions</p>	<p>Exponential and Logarithmic Functions</p> <p>Trigonometric Functions</p> <p>Polynomial and Rational Functions</p> <p>Characteristics of Functions</p>
Overall Comparisons	<p>There is a considerable relationship between Advanced Functions (Ontario) and Mathematics 12 (Nova Scotia) and its prerequisites.</p> <p>The trigonometry unit from Advanced Functions (Ontario) is completed in Math 11 in Nova Scotia (and further studied in Pre-Calculus). The most notable difference between the two courses is the unit <i>Polynomial and Rational Functions</i>. In Math 12 (Nova Scotia) the course focuses on quadratics. Work with polynomial and rational functions, along with composition of functions, is not taught until Pre-Calculus 12. In Nova Scotia Circle Geometry and Probability are included.</p> <p>Overall Expectations in Advanced Functions, Grade 12, (MHF4U) that are NOT found in the Nova Scotia course or its prerequisites:</p> <p>Characteristics of Functions</p> <ul style="list-style-type: none"> determine functions that results from the addition, subtraction, multiplication and division of two functions and from the composition of two functions, describe some properties of the resulting functions, and solve related problems (Note: partial coverage only, students in Nova Scotia have not worked with composition of functions) <p>Polynomial and Rational Functions</p> <ul style="list-style-type: none"> identify and describe some key features of polynomial functions, and make connections between the numeric, graphical, and algebraic representations of polynomial functions; identify and describe some key features of the graphs of rational functions, and represent rational functions graphically; solve problems involving polynomial and simple rational equations graphically and algebraically; demonstrate an understanding of solving polynomial and simple rational inequalities. 	
Additional Comments	<p>Mathematics 12 (Academic) and Advanced Mathematics 12 share program outcomes. Advanced Mathematics 12 has a few additional expectations and is more rigorous. In Nova Scotia, there are four credit types:</p> <ul style="list-style-type: none"> Academic (for students expect to enter university or college), Advanced (for students who have demonstrated exceptional degree of academic ability or achievement), Graduation (for students whose goal is a diploma and then workforce or selected area of post-secondary study) or Open (not designed to meet post secondary requirements) <p>After Grade 9, two additional math credits are required for graduation.</p>	

	Nova Scotia	Ontario
Course Name	Pre-Calculus Mathematics 12 (008073) Advanced Credit	Calculus and Vectors, Grade 12, University Preparation MCV4U
Date of Curriculum	2002	2007
Hours of Instruction	110	110
Additional Course Information	Prerequisite: It is recommended that students complete Advanced Math 11 and Advanced Math 12, but Math 11 and Math 12 is sufficient.	Prerequisite: MHF4U must be taken prior to or concurrently with Calculus and Vectors (MCV4U)
Course Description	Pre-Calculus 12 is designed for students who wish to continue their study of mathematics and science in post-secondary institutions by introducing students to the mathematical methods of calculus. Students working in advanced courses will have been successful in prior math courses and have a willingness and ability to work with abstract concepts. The course builds on their understanding of functions in Math 11 and 12, and develops the concept of limits and derivatives. Complex numbers and trigonometry are also studied.	This course builds on students' previous experience with functions and their developing understanding of rates of change. Students will solve problems involving geometric and algebraic representations of vectors, and representations of lines and planes in three-dimensional space; broaden their understanding of rates of change to include the derivatives of polynomial, rational, exponential, and sinusoidal functions; and apply these concepts and skills to the modelling of real-world relationships. Students will also refine their use of the mathematical processes necessary for success in senior mathematics. This course is intended for students who choose to pursue careers in fields such as science, engineering, economics, and some areas of business, including those students who will be required to take a university-level calculus, linear algebra, or physics course.
Strands/Major Concepts	Sequences and Series (Recursive Relations, Concept of Limit, Proof by Induction) Function Toolkit (Composition of Functions, Polynomial Equations, Derivative, Sketching, Modeling with Exponential and Log Functions) Trigonometry Complex Numbers	Rate of Change Derivatives and their Applications Geometry and Algebra of Vectors
Overall Comparisons	<p>There is a considerable relationship between the two courses. The strand Geometry and Algebra of Vectors, taught in Calculus and Vectors, is not taught in Pre-Calculus Mathematics. However, the <i>Algebra of 3-Space</i> is a unit in Advanced Mathematics 11. The unit explores equations of planes in 3-space, but does not utilize vectors to represent lines and planes. Vectors are initially explored in Grade 10 only.</p> <p>Overall Expectations in MCV4U that are NOT found in the Nova Scotia course: Geometry and Algebra of Vectors</p> <ul style="list-style-type: none"> demonstrate an understanding of vectors in two-space and three-space by representing them algebraically and geometrically and by recognizing their applications; perform operations on vectors in two-space and three-space, and use the properties of these operations to solve problems, including those arising from real-world applications; distinguish between the geometric representations of a single linear equation or a system of two linear equations in two-space and three-space, and determine different geometric configurations of lines and planes in three-space; represent lines and planes using scalar, vector, and parametric equations, and solve problems involving distances and intersections 	
Additional Comments	<p>In Nova Scotia, there are four credit types:</p> <ul style="list-style-type: none"> Academic (for students expect to enter university or college), Advanced (for students who have demonstrated exceptional degree of academic ability or achievement), Graduation (for students whose goal is a diploma and then workforce or selected area of post-secondary study) or Open (not designed to meet post secondary requirements) <p>After Grade 9, two additional math credits are required for graduation.</p>	

	Nova Scotia	Ontario
Course Name	Mathematics Foundations 12 (008013) Graduation Credit	Foundations for College Mathematics, Grade 12, College Preparation MAP4C
Date of Curriculum	2001	2007
Hours of Instruction	110	110
Additional Course Information	Prerequisite: Math Foundations 11 or Math 11	Prerequisite: Foundations for College Mathematics, Grade 11, College Preparation or Functions and Applications, Grade 11, University/College Preparation
Course Description	Students will: <ul style="list-style-type: none"> • Explore and develop understanding of sequences. • Explore and solve with quadratic relations and equations. • Apply exponential relationships.. • Use inductive and deductive reasoning with properties of a circle. • Solve probability problems using simulations, and counting principles. 	This course enables students to broaden their understanding of real-world applications of mathematics. Students will analyse data using statistical methods; solve problems involving applications of geometry and trigonometry; solve financial problems connected with annuities, budgets, and renting or owning accommodation; simplify expressions; and solve equations. Students will reason mathematically and communicate their thinking as they solve multi-step problems. This course prepares students for college programs in areas such as business, health sciences, and human services, and for certain skilled trades.
Strands/Major Concepts	Sequences Arithmetic, Power, Geometric Quadratics Graphs and Applications Exponential Growth Exponents, Graphs Circle Geometry Properties, Proofs Probability Simulations, Permutations, Combinations, Factorial Notation	Mathematical Models Personal Finance Geometry and Trigonometry Data Management
Overall Comparisons	<p>There is a considerable relationship between Foundations for College Mathematics (MAP4C) and Mathematics Foundations 12 (Nova Scotia), including its prerequisite courses. Several overall expectations from MAP4C were taught in the prerequisite courses (Foundations 11) including topics from Personal Finance and Trigonometry (sine and cosine law). Students completing Foundations 12 (Nova Scotia) have worked with exponential functions, but not exponential equations. Concepts in Circle Geometry and in Probability are included.</p> <p>Overall Expectations in Foundations for College Mathematics, Grade 12 (MAP4C) that are NOT found in the Nova Scotia course:</p> <p>Mathematical Models</p> <ul style="list-style-type: none"> • evaluate powers with rational exponents, simplify algebraic expressions involving exponents, and solve problems involving exponential equations graphically and using common bases (Note: partial coverage only, students in New Brunswick have not solved problems with exponential equations) <p>Personal Finance</p> <ul style="list-style-type: none"> • demonstrate an understanding of annuities including mortgages, and solve related problems, using technology; 	
Additional Comments	<p>In Nova Scotia, there are four credit types:</p> <ul style="list-style-type: none"> • Academic (for students expect to enter university or college), • Advanced (for students who have demonstrated exceptional degree of academic ability or achievement), • Graduation (for students whose goal is a diploma and then workforce or selected area of post-secondary study) or • Open (not designed to meet post secondary requirements) <p>After Grade 9, two additional math credits are required for graduation.</p>	

	Nova Scotia	Ontario
Course Name	Mathematics Foundations 12 (008013) Graduation Credit	Mathematics for College Technology, Grade 12, College Preparation MCT4C
Date of Curriculum	2001	2007
Hours of Instruction	110	110 hours
Additional Course Information	Prerequisite: Math Foundations 11 or Math 11	Prerequisite: Functions and Applications, Grade 11, University/College Preparation or Functions, Grade 11, University Preparation
Course Description	Students will: <ul style="list-style-type: none"> • Explore and develop understanding of sequences. • Explore and solve with quadratic relations and equations. • Apply exponential relationships.. • Use inductive and deductive reasoning with properties of a circle. • Solve probability problems using simulations, and counting principles. 	This course enables students to extend their knowledge of functions. Students will investigate and apply properties of polynomial, exponential, and trigonometric functions; continue to represent functions numerically, graphically, and algebraically; develop facility in simplifying expressions and solving equations; and solve problems that address applications of algebra, trigonometry, vectors, and geometry. Students will reason mathematically and communicate their thinking as they solve multi-step problems. This course prepares students for a variety of college technology programs.
Strands/Major Concepts	Sequences Arithmetic, Power, Geometric Quadratics Graphs and Applications Exponential Growth Exponents, Graphs Circle Geometry Properties, Proofs Probability Simulations, Permutations, Combinations, Factorial Notation	Exponential Functions Polynomial Functions Trigonometric Functions Applications of Geometry
Overall Comparisons	<p>There is a very limited relationship between Mathematics for College Technology (MCT4C) and Mathematics Foundations 12 (Nova Scotia), including its prerequisite courses. Students from Foundations 12 will not have been taught the concepts from the strands Polynomials, and Trigonometric Functions to the same depth.</p> <p>Overall Expectations in Foundations for Mathematics for College Technology, Grade 12 (MCT4C) that are NOT found in the Nova Scotia course:</p> <p>Polynomial Functions</p> <ul style="list-style-type: none"> • make connections between the numeric, graphical and algebraic representations of polynomial functions; • solve polynomial equations by factoring, make connections between polynomial equations and formulae, and solve problems involving polynomial expressions arising from a variety of applications. <p>Trigonometric Functions</p> <ul style="list-style-type: none"> • make connections between the numeric, graphical and algebraic representations of sinusoidal functions; • demonstrate an understanding that sinusoidal functions can be used to model some periodic phenomena, and solve related problems, including those arising from real-world applications. 	
Additional Comments	<p>In Nova Scotia, there are four credit types:</p> <ul style="list-style-type: none"> • Academic (for students expect to enter university or college), • Advanced (for students who have demonstrated exceptional degree of academic ability or achievement), • Graduation (for students whose goal is a diploma and then workforce or selected area of post-secondary study) or • Open (not designed to meet post secondary requirements) <p>After Grade 9, two additional math credits are required for graduation.</p>	

	Nova Scotia	Ontario
Course Name	Mathematics Foundations 11, (008011) Graduation Credit	Foundations for College Mathematics, Grade 11, College Preparation MBF3C
Date of Curriculum	2000	2007
Hours of Instruction	110	110
Additional Course Information	Prerequisite: Mathematics Foundations 10 or Mathematics 10	Prerequisite: Foundations of Mathematics, Grade 10, Applied
Course Description	<p>Students will:</p> <ul style="list-style-type: none"> Analyze graphs or charts of given situations to derive specific information. Represent and analyze quadratic, polynomial and exponential functions, using technology as appropriate. Represent and analyze situations that involve expressions, equations and inequalities. Use linear programming to solve optimization problems. Develop and apply the geometric properties of circles and polygons to solve problems. Use measuring devices to make estimates and to perform calculations in solving problems. 	<p>This course enables students to broaden their understanding of mathematics as a problem solving tool in the real world. Students will extend their understanding of quadratic relations; investigate situations involving exponential growth; solve problems involving compound interest; solve financial problems connected with vehicle ownership; develop their ability to reason by collecting, analysing, and evaluating data involving one variable; connect probability and statistics; and solve problems in geometry and trigonometry. Students will consolidate their mathematical skills as they solve problems and communicate their thinking.</p>
Strands/Major Concepts	<p>Linear Programming (Systems of Equations, Finding Optimal Solutions)</p> <p>Consumer Situations (Income, Taxes, Budgets, Credit, Transportation, Simple and Compound Interest)</p> <p>Statistics (Sampling, Bias, Distributions, Normal Curve, Standard Deviation)</p> <p>Trigonometry (Law of Sines And Cosines, Area of Triangles)</p> <p>Independent Study Unit</p>	<p>Mathematical Models</p> <p>Personal Finance</p> <p>Geometry and Trigonometry</p> <p>Data Management</p>
Overall Comparisons	<p>There is a considerable relationship between Mathematics Foundations 11 (Nova Scotia) and Foundations of College Mathematics (MBF3C). Courses are comparable in the units of personal finance, trigonometry and data management. The unit Mathematical Models is not taught until the Mathematics Foundations 12 course in Nova Scotia. This may be due in part to the fact that there are no math credits in Nova Scotia that are comparable to the Workplace math credits in Ontario.</p> <p>Overall Expectations in Foundations of College Mathematics (MBF3C) that are NOT found in the Nova Scotia course (not taught until Grade 12):</p> <p>Mathematical Models</p> <ul style="list-style-type: none"> make connections between the numeric, graphical, and algebraic representations of quadratic relations, and use the connections to solve problems; demonstrate an understanding of exponents, and make connections between the numeric, graphical, and algebraic representations of exponential relations; describe and represent exponential relations, and solve problems involving exponential relations arising from real-world applications. 	
Additional Comments	<p>In Nova Scotia, there are four credit types:</p> <ul style="list-style-type: none"> Academic (for students expect to enter university or college), Advanced (for students who have demonstrated exceptional degree of academic ability or achievement), Graduation (for students whose goal is a diploma and then workforce or selected area of post-secondary study) or Open (not designed to meet post secondary requirements) <p>After Grade 9, two additional math credits are required for graduation. In Nova Scotia, there are no credits (in the provincial curriculum) that are comparable to the Workplace math credits in Ontario.</p>	

	Nova Scotia	Ontario
Course Name	Mathematics 11, Academic, (008067) Advanced Mathematics 11, Advanced, (008145)	Functions and Applications, Grade 11, University/College Preparation MCF3M
Date of Curriculum	2000	2007
Hours of Instruction	110	110
Additional Course Information	<i>Prerequisite:</i> Mathematics 10	<i>Prerequisite:</i> Principles of Mathematics, Grade 10, Academic or Foundations of Mathematics, Grade 10, Applied
Course Description	Students will: <ul style="list-style-type: none"> • Work with the algebra of 3-space by solving systems of equations. • Explore and derive properties of matrices. • Investigate periodic and sinusoidal functions. • Solve trig equations and use identities. • Apply statistical procedures including work with normal and binomial distributions. • Research, present and learn mathematics independently. 	This course introduces basic features of the function by extending students' experiences with quadratic relations. It focuses on quadratic, trigonometric, and exponential functions and their use in modeling real-world situations. Students will represent functions numerically, graphically, and algebraically; simplify expressions; solve equations; and solve problems relating to applications. Students will reason mathematically and communicate their thinking as they solve multi-step problems.
Strands/Major Concepts	Algebra of 3-Space Systems of Equations, Relating Algebra and Geometry, Matrices Trigonometry Sinusoidal Functions, Transformations, Equations and Identities, Radian Measure, Sine and Cosine Law Statistics Sampling, Bias, Normal and Binomial Distribution, Confidence Intervals, Chi-Square Independent Study Unit	Quadratic Functions Exponential Functions Trigonometric Functions
Overall Comparisons	There is a very limited relationship between Mathematics 11 (Nova Scotia) and Functions and Applications. Only topics in Trigonometric Functions are identified in both curricula. Quadratic Functions and Exponential Functions do not get taught until Grade 12 in Nova Scotia. Instead, Nova Scotia does work with the algebra of 3-space including matrices, a required independent study unit, as well as topics in Statistics that are taught in Grade 12 in Ontario (Data Management). Initial work with functions and quadratics is done in Grade 10 in Nova Scotia. Overall Expectations in Functions and Applications (MCF3M) that are NOT found in the Nova Scotia course: Quadratic Functions <ul style="list-style-type: none"> • expand and simplify quadratic expressions, solve quadratic equations, and relate the roots of a quadratic equation to the corresponding graph; • solve problems involving quadratic functions, including problems arising from real-world applications. Exponential Functions <ul style="list-style-type: none"> • identify and represent exponential functions, and solve problems involving exponential functions, including those arising from real-world applications; • demonstrate an understanding of compound interest and annuities, and solve related problems. 	
Additional Comments	In Nova Scotia, there are four credit types: <ul style="list-style-type: none"> • Academic (for students expect to enter university or college), • Advanced (for students who have demonstrated exceptional degree of academic ability or achievement), • Graduation (for students whose goal is a diploma and then workforce or selected area of post-secondary study) or • Open (not designed to meet post secondary requirements) After Grade 9, two additional math credits are required for graduation. Note: The relationship between Mathematics 11 (Nova Scotia) and Functions (MCR3U) is even weaker than the relationship to Functions and Applications. The additional unit on Discrete Functions found in Functions (MCR3U) does not get taught until Grade 12 in Nova Scotia in the Pre-Calculus course.	

	Prince Edward Island	Ontario
Course Name	Mathematics 621A (MAT621A) Academic	Advanced Functions, Grade 12, University Preparation MHF4U
Date of Curriculum	2002	2007
Hours of Instruction	110	110
Additional Course Information	Prerequisite: MAT521	Prerequisite: Functions, Grade 11, University Preparation, or Mathematics for College Technology, Grade 12, College Preparation
Course Description	This is a Grade 12 mathematics course intended for students planning to enter university arts and social science programs. Topics covered are: Transformations; Exponents and Logarithms; Sequences and Series; Trigonometric Functions; Combinatorics and Probability; and Statistics.	This course extends students' experience with functions. Students will investigate the properties of polynomial, rational, logarithmic, and trigonometric functions; develop techniques for combining functions; broaden their understanding of rates of change; and develop facility in applying these concepts and skills. Students will also refine their use of the mathematical processes necessary for success in senior mathematics. This course is intended both for students taking the Calculus and Vectors course as a prerequisite for a university program and for those wishing to consolidate their understanding of mathematics before proceeding to any one of a variety of university programs.
Strands/Major Concepts	Transformations Transformations of Functions Exponents and Logs Exponents, Exponential Function, Logarithmic Relations, Equations and Graphs Sequences and Series Arithmetic, Geometric, Infinite Trig Functions Statistics Binomial and Normal Distributions Permutations, Combinations Permutations, Combinations, Pascal's Triangle, Binomial Theorem, Probability	Exponential and Logarithmic Functions Trigonometric Functions Polynomial and Rational Functions Characteristics of Functions
Overall Comparisons	There is a very limited relationship between Advanced Functions (Ontario) and Mathematics 621A (PEI) and its prerequisites. MAT621A is intended for students planning to enter university arts and social science. It is a collection of topics from three Ontario courses: MHF4U, MDM4U, and MCT4C. Compared to 621B, 621A content is reduced on algebraic content and topics in statistics are added. It does not have the depth of treatment of statistics as Data Management (MDM4U). MAT621A does not lead to Calculus. The unit <i>Polynomial and Rational Functions</i> is taught in Grade 11 (MAT521B), but not to the level of detail and application required in Advanced Functions. The course focuses on quadratics. Students in Mathematics 621A study concepts in Statistics and Probability that are not taught in MHF4U or its prerequisites. Overall Expectations in Advanced Functions, Grade 12, (MHF4U) that are NOT found in the PEI course or its prerequisites: Polynomial and Rational Functions <ul style="list-style-type: none"> identify and describe some key features of polynomial functions, and make connections between the numeric, graphical, and algebraic representations of polynomial functions; identify and describe some key features of the graphs of rational functions, and represent rational functions graphically; (<i>only partially explored</i>) demonstrate an understanding of solving polynomial and simple rational inequalities.; (Note: only partially explored) Characteristics of Functions <ul style="list-style-type: none"> demonstrate an understanding and instantaneous rate of change, and determine, numerically and graphically, and interpret the average rate of change of a function over a given interval and the instantaneous rate of change for a given function at a given point; determine functions that results from the addition, subtraction, multiplication and division of two functions and from the composition of two functions, describe some properties of the resulting functions, and solve related problems (Note: only in Pre-Calculus course) Trigonometric Functions <ul style="list-style-type: none"> solve problems involving trigonometric equations and prove trigonometric identities; 	

	Prince Edward Island	Ontario
Additional Comments	<p>In PEI, there are four credit types:</p> <ul style="list-style-type: none"> • Enriched or Advanced (for students who have demonstrated exceptional degree of academic ability or achievement), • Academic (for students expect to enter university or college), • General (for students whose goal is a diploma and then workforce or selected area of post-secondary study) • Practical (not designed to meet post secondary requirements) <p>After Grade 9, two additional math credits are required for graduation.</p> <p>Note: In PEI, there is one enriched/advanced Grade 12 math credit (MAT611B) are two academic Grade 12 math credit (MAT621A and MAT621B).</p> <p>MAT621A has content that is between MHF4U and MCT4C.</p> <p>MAT621A has a very limited relationship to MHF4U, and a very limited relationship to MCT4C.</p>	

	Prince Edward Island	Ontario
Course Name	Mathematics 621B (MAT621B) Academic	Advanced Functions, Grade 12, University Preparation MHF4U
Date of Curriculum	2002	2007
Hours of Instruction	110	110
Additional Course Information	Prerequisite: MAT521	Prerequisite: Functions, Grade 11, University Preparation, or Mathematics for College Technology, Grade 12, College Preparation
Course Description	This is a Grade 12 mathematics course intended for all students planning to enter university business or science programs. The topics covered are: Transformations; Exponents and Logarithms; Sequences and Series; Trigonometric Functions; Conics; and Combinatorics and Probability. This course is highly recommended for students planning to take MAT611B.	This course extends students' experience with functions. Students will investigate the properties of polynomial, rational, logarithmic, and trigonometric functions; develop techniques for combining functions; broaden their understanding of rates of change; and develop facility in applying these concepts and skills. Students will also refine their use of the mathematical processes necessary for success in senior mathematics. This course is intended both for students taking the Calculus and Vectors course as a prerequisite for a university program and for those wishing to consolidate their understanding of mathematics before proceeding to any one of a variety of university programs.
Strands/Major Concepts	Transformations Transformations of Functions Exponents and Logs Exponents, Exponential Function, Logarithmic Relations, Equations and Graphs, Modeling Sequences and Series Recursive, Arithmetic, Geometric, Infinite Trig Functions Conics Permutations, Combinations Permutations, Combinations, Pascal's Triangle, Binomial Theorem, Probability	Exponential and Logarithmic Functions Trigonometric Functions Polynomial and Rational Functions Characteristics of Functions
Overall Comparisons	<p>There is a considerable relationship between Advanced Functions (Ontario) and Mathematics 621B (PEI) and its prerequisites. MAT621B is the prerequisite for Calculus in PEI.</p> <p>The unit <i>Polynomial and Rational Functions</i> is taught in Grade 11 (MAT521B), but not to the level of detail and application required in Advanced Functions. These concepts are re-visited in MAT611B. The Grade 11 course focuses on quadratics.</p> <p>The unit <i>Characteristics of Functions</i> with average rates of change and composition of functions is not taught until MAT611B (Calculus course). Students in Mathematics 621B study concepts in Conics and Probability that are not taught in MHF4U or its prerequisites.</p> <p>Overall Expectations in Advanced Functions, Grade 12, (MHF4U) that are NOT found in the PEI course or its prerequisites:</p> <p>Characteristics of Functions</p> <ul style="list-style-type: none"> demonstrate an understanding and instantaneous rate of change, and determine, numerically and graphically, and interpret the average rate of change of a function over a given interval and the instantaneous rate of change for a given function at a given point; determine functions that results from the addition, subtraction, multiplication and division of two functions and from the composition of two functions, describe some properties of the resulting functions, and solve related problems (Note: <i>only in Pre-Calculus course</i>) 	
Additional Comments	<p>In PEI, there are four credit types:</p> <ul style="list-style-type: none"> Enriched or Advanced (for students who have demonstrated exceptional degree of academic ability or achievement), Academic (for students expect to enter university or college), General (for students whose goal is a diploma and then workforce or selected area of post-secondary study) or Practical (not designed to meet post secondary requirements) <p>After Grade 9, two additional math credits are required for graduation.</p> <p>Note: In PEI, there is one advanced Grade 12 math credit (MAT611B) and two academic Grade 12 math credits (MAT621A and MAT621B).</p> <p>MAT621A is intended for students planning to enter university arts and social science. It does not have the depth of treatment of statistics as Data Management (MDM4U). MAT621A has content that is between MHF4U and MCT4C. MAT621A has a very limited relationship to MHF4U, and a very limited relationship to MCT4C.</p>	

	Prince Edward Island	Ontario
Course Name	Mathematics 611B (MAT611B) Advanced Credit	Calculus and Vectors, Grade 12, University Preparation MCV4U
Date of Curriculum	2003	2007
Hours of Instruction	110	110
Additional Course Information	Prerequisite: It is recommended that students complete MAT621B	Prerequisite: MHF4U must be taken prior to or concurrently with Calculus and Vectors (MCV4U)
Course Description	This course is designed for students with a strong mathematical background planning to enter university business or science programs. The topics covered are: Advanced Trigonometry, Complex Numbers and Polar Coordinates, Functions and Limits, Derivatives and Applications, and an Introduction to Integration.	This course builds on students' previous experience with functions and their developing understanding of rates of change. Students will solve problems involving geometric and algebraic representations of vectors, and representations of lines and planes in three-dimensional space; broaden their understanding of rates of change to include the derivatives of polynomial, rational, exponential, and sinusoidal functions; and apply these concepts and skills to the modelling of real-world relationships. Students will also refine their use of the mathematical processes necessary for success in senior mathematics. This course is intended for students who choose to pursue careers in fields such as science, engineering, economics, and some areas of business, including those students who will be required to take a university-level calculus, linear algebra, or physics course.
Strands/Major Concepts	Advanced Trig (Graphing, Trig Equations, Identities, Compound Angles) Complex Numbers (Polar Coordinates and Complex Numbers) Functions (Functions, Piecewise, Polynomial Equations, Graphing, Exponential, Logarithmic, Composition, Inverse) Continuity and Limits Derivatives Applications of Derivatives Integration	Rate of Change Derivatives and their Applications Geometry and Algebra of Vectors
Overall Comparisons	<p>There is a considerable relationship between the two courses. The strand Geometry and Algebra of Vectors, taught in Calculus and Vectors, is not taught in Math 611B.</p> <p>Overall Expectations in MCV4U that are NOT found in the PEI course: Geometry and Algebra of Vectors</p> <ul style="list-style-type: none"> • demonstrate an understanding of vectors in two-space and three-space by representing them algebraically and geometrically and by recognizing their applications; • perform operations on vectors in two-space and three-space, and use the properties of these operations to solve problems, including those arising from real-world applications; • distinguish between the geometric representations of a single linear equation or a system of two linear equations in two-space and three-space, and determine different geometric configurations of lines and planes in three-space; • represent lines and planes using scalar, vector, and parametric equations, and solve problems involving distances and intersections. 	
Additional Comments	<p>In PEI, there are four credit types:</p> <ul style="list-style-type: none"> • Enriched or Advanced (for students who have demonstrated exceptional degree of academic ability or achievement), • Academic (for students expect to enter university or college), • General (for students whose goal is a diploma and then workforce or selected area of post-secondary study) or • Practical (not designed to meet post secondary requirements) <p>After Grade 9, two additional math credits are required for graduation.</p>	

	Prince Edward Island	Ontario
Course Name	Mathematics 631A (MAT631A) General	Foundations for College Mathematics, Grade 12, College Preparation MAP4C
Date of Curriculum	2001	2007
Hours of Instruction	110	110
Additional Course Information	Prerequisite: MAT531A	Prerequisite: Foundations for College Mathematics, Grade 11, College Preparation or Functions and Applications, Grade 11, University/College Preparation
Course Description	MAT631A meets the requirements to enter many community college programs. MAT631A includes topics in Algebra, Probability, Trigonometry, and Consumer Mathematics. In Algebra, factoring and solving linear and quadratic equations are studied. The consumer topics include Income, Sales, and Property Taxes with a special unit on PEI taxes. As well, the economics of home ownership are explored, along with various types of investments.	This course enables students to broaden their understanding of real-world applications of mathematics. Students will analyse data using statistical methods; solve problems involving applications of geometry and trigonometry; solve financial problems connected with annuities, budgets, and renting or owning accommodation; simplify expressions; and solve equations. Students will reason mathematically and communicate their thinking as they solve multi-step problems. This course prepares students for college programs in areas such as business, health sciences, and human services, and for certain skilled trades.
Strands/Major Concepts	Algebra Probability Trigonometry Consumer Mathematics	Mathematical Models Personal Finance Geometry and Trigonometry Data Management
Overall Comparisons	The curriculum guide for this course is not publicly available. Based on the purpose and description of the course, there appears to be a considerable relationship between MAP4C (Ontario) and MAT631A and its prerequisite courses. Based on the Atlantic Provinces framework document, the overall expectations <i>related to exponential relations</i> from MAP4C will not be met MAT631A.	
Additional Comments	<p>In PEI, there are four credit types:</p> <ul style="list-style-type: none"> • Enriched or Advanced (for students who have demonstrated exceptional degree of academic ability or achievement), • Academic (for students expect to enter university or college), • General (for students whose goal is a diploma and then workforce or selected area of post-secondary study) or • Practical (not designed to meet post secondary requirements) <p>After Grade 9, two additional math credits are required for graduation.</p>	

	Prince Edward Island	Ontario
Course Name	Mathematics 651A (MAT551A) Practical	Mathematics for Work and Everyday Life, Grade 12, Workplace Preparation MEL4E
Date of Curriculum	2002	2007
Hours of Instruction	110	110
Additional Course Information	<i>Prerequisite:</i> Mathematics 551A4	<i>Prerequisite:</i> Mathematics for Work and Everyday Life, Grade 11, Workplace Preparation
Course Description	This course is intended for students who might benefit from a program that emphasizes problem solving. The content includes problems involving income banking, credit, transportation, housing, taxes, insurance, investments; and renting, purchasing, and budgeting.	This course enables students to broaden their understanding of mathematics as it is applied in the workplace and daily life. Students will investigate questions involving the use of statistics; apply the concept of probability to solve problems involving familiar situations; investigate accommodation costs and create household budgets; use proportional reasoning; estimate and measure; and apply geometric concepts to create designs. Students will consolidate their mathematical skills as they solve problems and communicate their thinking.
Strands/Major Concepts	Banking and Credit Transportation Housing Personal Finance	Reasoning with Data Personal Finance Applications of Measurement
Overall Comparisons	The curriculum guide for this course is not publicly available. Based on the purpose and description of the course, there appears to be a considerable relationship between MEL4E (ON) and MAT651A and its prerequisite courses. Concepts from strands Reasoning with Data and Applications of Measurement are evident in prerequisite courses.	
Additional Comments	<p>In PEI, there are four credit types:</p> <ul style="list-style-type: none"> • Enriched or Advanced (for students who have demonstrated exceptional degree of academic ability or achievement), • Academic (for students expect to enter university or college), • General (for students whose goal is a diploma and then workforce or selected area of post-secondary study) or • Practical (not designed to meet post secondary requirements) <p>After Grade 9, two additional math credits are required for graduation.</p>	

	Prince Edward Island	Ontario
Course Name	Mathematics 531A (MAT531A) General	Foundations for College Mathematics, Grade 11, College Preparation MBF3C
Date of Curriculum	2000	2007
Hours of Instruction	110	110
Additional Course Information	Prerequisite: Mat431A	Prerequisite: Foundations of Mathematics, Grade 10, Applied
Course Description	MAT531A continues the exploration of how Essential Skills are used in the workplace and in everyday life. MAT531A combined with the grade 12 mathematics (MAT631A) will meet the requirements to enter many community college programs. This course includes topics that prepare students to enter the workforce directly from high school: Income and Debt; Data Analysis; Measurement Technology; Relations and Formulas; Owning and Operating a Vehicle and Personal Income Tax.	This course enables students to broaden their understanding of mathematics as a problem solving tool in the real world. Students will extend their understanding of quadratic relations; investigate situations involving exponential growth; solve problems involving compound interest; solve financial problems connected with vehicle ownership; develop their ability to reason by collecting, analysing, and evaluating data involving one variable; connect probability and statistics; and solve problems in geometry and trigonometry. Students will consolidate their mathematical skills as they solve problems and communicate their thinking.
Strands/Major Concepts	Income and Debt Simple and Compound Interest Data Analysis Owning a Vehicle Measurement Technology Relations and Formulas Linear Relations and Graphs Probability Income Tax	Mathematical Models Personal Finance Geometry and Trigonometry Data Management
Overall Comparisons	There is very limited relationship between Foundations for College Mathematics (MBF3C) and in the PEI course (MAT531A). MAT531A is designed as a college preparation course, but the work with quadratic relations, trigonometry, and exponential relations is not taught until Grade 12 in PEI. Overall Expectations in Foundations of College Mathematics (MBF3C) that are NOT found in the PEI course (MAT531A): Mathematical Models • make connections between the numeric, graphical, and algebraic representations of quadratic relations, and use the connections to solve problems; • demonstrate an understanding of exponents, and make connections between the numeric, graphical, and algebraic representations of exponential relations; • describe and represent exponential relations, and solve problems involving exponential relations arising from real-world applications. Geometry and Trigonometry • solve problems involving trigonometry in acute triangles using the sine law and the cosine law, including problems arising from real-world applications.	
Additional Comments	In PEI, there are four credit types: <ul style="list-style-type: none"> • Enriched or Advanced (for students who have demonstrated exceptional degree of academic ability or achievement), • Academic (for students expect to enter university or college), • General (for students whose goal is a diploma and then workforce or selected area of post-secondary study) or • Practical (not designed to meet post secondary requirements) After Grade 9, two additional math credits are required for graduation.	

	Prince Edward Island	Ontario
Course Name	Mathematics 521A (MAT521A) Academic	Functions and Applications, Grade 11, University/College Preparation MCF3M
Date of Curriculum	2001	2007
Hours of Instruction	110	110
Additional Course Information	Prerequisite: MAT421A	Prerequisite: Principles of Mathematics, Grade 10, Academic or Foundations of Mathematics, Grade 10, Applied
Course Description	This is a second level mathematics course which is intended for all students planning to attend university and will be needed for some Holland College courses as well. It introduces students to topics such as: Systems of Linear Equations, Quadratic Functions, Trigonometry, Consumerism, and Matrices and Networks.	This course introduces basic features of the function by extending students' experiences with quadratic relations. It focuses on quadratic, trigonometric, and exponential functions and their use in modeling real-world situations. Students will represent functions numerically, graphically, and algebraically; simplify expressions; solve equations; and solve problems relating to applications. Students will reason mathematically and communicate their thinking as they solve multi-step problems.
Strands/Major Concepts	Linear Systems Systems of Equations Quadratic Functions Trigonometry Consumerism Compound Interest, Credit, Annuities Matrices and Networks	Quadratic Functions Exponential Functions Trigonometric Functions
Overall Comparisons	<p>There is a considerable relationship between MCF3M and MAT521A. Selected topics in Trigonometric Functions and Exponential Functions identified in MCF3M are not taught until Grade 12, or in MAT521B in PEI. PEI's course includes topics on consumerism that are covered in more depth than in the expectations in MCF3M and its prerequisite courses.</p> <p>Overall Expectations in Functions (MCF3M) that are NOT found in MAT521A course:</p> <p>Exponential Functions</p> <ul style="list-style-type: none"> identify and represent exponential functions, and solve problems involving exponential functions, including those arising from real-world applications; <p>Trigonometric Functions</p> <ul style="list-style-type: none"> demonstrate an understanding of periodic relationships and the sine function, and make connections between the numeric, graphical, and algebraic representations of sine functions; identify and represent sine functions, and solve problems involving sine functions, including those arising from real-world applications 	
Additional Comments	<p>In PEI, there are four credit types:</p> <ul style="list-style-type: none"> Enriched or Advanced (for students who have demonstrated exceptional degree of academic ability or achievement), Academic (for students expect to enter university or college), General (for students whose goal is a diploma and then workforce or selected area of post-secondary study) or Practical (not designed to meet post secondary requirements) <p>After Grade 9, two additional math credits are required for graduation. Note: In PEI, there two academic math credits in Grade 11. Students who are planning to take Calculus in Grade 12, normally take both MAT521A and 521B. Students not aiming for Calculus but plan on post-secondary placements will take 521A only.</p>	

	Prince Edward Island	Ontario
Course Name	Mathematics 521B (MAT521B) Academic	Functions, Grade 11, University Preparation MCR3U
Date of Curriculum	2000	2007
Hours of Instruction	110	110
Additional Course Information	Prerequisite: MAT421A	Prerequisite: Principles of Mathematics, Grade 10, Academic
Course Description	Although optional, this course is highly recommended for students planning to enter university business or science programs. The topics covered are: Radicals; Reasoning, Justification and Proof; Plane and Coordinate Geometry; Linear Inequalities and Linear Programming; Rational Expressions; Equations, Inequalities and Developing a Function Toolkit.	This course introduces the mathematical concept of the function by extending students' experiences with linear and quadratic relations. Students will investigate properties of discrete and continuous functions, including trigonometric and exponential functions; represent functions numerically, algebraically, and graphically; solve problems involving applications of functions; investigate inverse functions; and develop facility in determining equivalent algebraic expressions. Students will reason mathematically and communicate their thinking as they solve multi-step problems.
Strands/Major Concepts	Radicals and Exponentials Reasoning and Proof Plane and Coordinate Geometry Linear Inequalities Rational Expressions Equations and Function Toolkit	Characteristics of Functions Exponential Functions Discrete Functions Trigonometric Functions
Overall Comparisons	<p>There is a very limited relationship between MCR3U and MAT521B (assuming that student has also taken MAT521A which includes topics in trigonometry). MAT521B and MAT521A include many topics that are not taught in Ontario, or not taught until Grade 12 in Ontario.</p> <p>Exploring and applying the graphs of Trigonometric Functions and Exponential Functions identified in MCR3U are not taught until Grade 12 in PEI.</p> <p>Geometric Sequences and Series are not taught until Grade 12 in PEI.</p> <p>Overall Expectations in Functions (MCR3U) that are NOT found in the PEI course:</p> <p>Discrete Functions</p> <ul style="list-style-type: none"> demonstrate an understanding of recursive sequences, represent recursive sequences in a variety of ways, and make connections to Pascal's triangle; demonstrate an understanding of the relationships involved in arithmetic and geometric sequences and series, and solve related problems; <p>Trigonometric Functions</p> <ul style="list-style-type: none"> demonstrate an understanding of periodic relationships and sinusoidal functions, and make connections between the numeric, graphical, and algebraic representations of sinusoidal functions; identify and represent sinusoidal functions, and solve problems involving sinusoidal functions, including those arising from real-world applications. <p>Exponential Functions</p> <ul style="list-style-type: none"> identify and represent exponential functions, and solve problems involving exponential functions, including those arising from real-world applications. 	
Additional Comments	<p>In PEI, there are four credit types:</p> <ul style="list-style-type: none"> Enriched or Advanced (for students who have demonstrated exceptional degree of academic ability or achievement), Academic (for students expect to enter university or college), General (for students whose goal is a diploma and then workforce or selected area of post-secondary study) or Practical (not designed to meet post secondary requirements) <p>After Grade 9, two additional math credits are required for graduation.</p> <p>Note: In PEI, there two academic math credits in Grade 11. Students who are planning to take Calculus in Grade 12, normally take both MAT521A and 521B. Students not aiming for Calculus but plan on post-secondary placements, will take 521A only.</p>	

	Prince Edward Island	Ontario
Course Name	Mathematics 551A (MAT551A) Practical	Mathematics for Work and Everyday Life, Grade 11, Workplace Preparation MEL3E
Date of Curriculum	2001	2006
Hours of Instruction	110	110
Additional Course Information	Prerequisite: Mathematics 451A4	Prerequisite: Principles of Mathematics, Grade 9, Academic, or Foundations of Mathematics, Grade 9, Applied, or a ministry-approved locally developed Grade 10 mathematics course
Course Description	This course emphasis the concepts and skills associated with comprehending and using mathematics on a day to day basis. Included are the mathematics associated with utility bills, food buying and preparation, transportation, mortgages and loans, credit buying and insurance. In addition, the course includes interpreting charts, tables, graphs, rate schedules, scale drawings, and statistical information.	This course enables students to broaden their understanding of mathematics as it is applied in the workplace and daily life. Students will solve problems associated with earning money, paying taxes, and making purchases; apply calculations of simple and compound interest in saving, investing, and borrowing; and calculate the costs of transportation and travel in a variety of situations. Students will consolidate their mathematical skills as they solve problems and communicate their thinking.
Strands/Major Concepts	Consumer Mathematics Purchasing Statistics, Charts, Graphs	Earning and Purchasing Saving, Investing, and Borrowing Transportation and Travel
Overall Comparisons	The curriculum guide for this course is not publicly available. Based on the purpose and description of the course, there appears to be a considerable relationship between Mathematics 551A (PEI) and MEL3E (Ontario).	
Additional Comments	<p>In PEI, there are four credit types:</p> <ul style="list-style-type: none"> • Enriched or Advanced (for students who have demonstrated exceptional degree of academic ability or achievement), • Academic (for students expect to enter university or college), • General (for students whose goal is a diploma and then workforce or selected area of post-secondary study) or • Practical (not designed to meet post secondary requirements) <p>After Grade 9, two additional math credits are required for graduation.</p>	

	New Brunswick	Ontario
Course Name	New Brunswick: Physical Geography 110	Earth and Space Science, Grade 12, University Preparation, SES4U
Date of Curriculum	1994	2000
Hours of Instruction	110	110
Additional Course Information	<i>Prerequisite:</i> none specified. Physical Geography 110 counts as one of the senior science courses for New Brunswick graduation diploma.	<i>Prerequisite:</i> Grade 10 Science, Academic
Course Description	Physical Geography teaches that the relationship between the land and humanity works both ways. Course content is used to show the complex relationships between humanity and all other physical processes. The core of the course is the geographical knowledge and skills and then the development of either a climatological or a geological emphasis.	This course focuses on the Earth as a planet, and on the basic concepts and theories of Earth science and their relevance to everyday life. Students will examine the Earth's place in the solar system and, after a general introduction to Earth science, will explore in more detail the materials of the Earth, its internal and surficial processes, and its history. The course draws on astronomy, biology, chemistry, mathematics, and physics in its consideration of geological processes that can be observed directly or inferred from other evidence.
Strands/Major Concepts	Physical Geography consists of a core dealing with the Nature of Physical Geography; The Earth in Space; and Map, Photo and Satellite Image Interpretation. Then either a Climatological, a Geological, or a Combined Thematic Emphasis may be developed. The Climatological emphasis consists of a study of The Atmosphere, Climatology, Meteorology, and Natural Regions of the World. The Geological emphasis consists of a study of The Structure of the Earth, Continental Drift and Plate Tectonics, and Shaping the Landscape.	The Earth as a Planet Introduction to Earth Sciences Earth Materials Internal and Superficial Earth Processes Earth History
Overall Comparison	There is a very limited relationship between the two courses. The topics covered in the New Brunswick Physical Geography course could be similar to the Ontario course if a geological emphasis is taken, however if a climatological emphasis is taken the courses are very dissimilar.	

	New Brunswick	Ontario
Course Name	Environmental Science 122 or 123	Science, Grade 11, Workplace Preparation, SNC3E
Date of Curriculum	1997	2000
Hours of Instruction	110	110
Additional Course Information	<i>Prerequisite:</i> Not specified The course counts toward a Secondary School Diploma in the Atlantic Provinces. It is considered to be a general program.	<i>Prerequisite:</i> Science, Grade 10, Academic or Applied
Course Description	The programs for Environmental Science 122 and 123 both emphasize the basis of environmental science and its relationship to sustainability. Each program enables students to become aware of the tremendous impact of science and technology on society. The aim is to promote scientifically literate students who appreciate the delicate balance of nature and the importance of sustainable development.	This course provides students with the science-related knowledge and skills they need to help them make informed decisions in the workplace and in their personal lives. Students will explore a range of topics, including materials and safety; electrical circuits; micro-organisms; the human immune system and defences against disease; and the impact of humans on the environment. Emphasis is placed on relating these topics directly to students' experiences both in the world of work and in daily life.
Strands/Major Concepts	Introduction to Environmental Science Sustainable Development Pollution Resources	Materials and Safety Electrical Circuits Micro-organisms The Immune System and Human Health Human Impact on the Environment
Overall Comparison	There is a very limited relationship between these courses. In the Atlantic Provinces, the focus is on scientific literacy (as it is in Ontario). Scientific literacy is an evolving combination of the science-related attitudes, skills, and knowledge that students need to develop inquiry, problem-solving, and decision-making abilities, to become lifelong learners, and to maintain a sense of wonder about the world around them. The basic science skills are the same as the skills presented in Ontario. There is no exact match to the Ontario workplace course but these courses match the strand Human Impact on the Environment in the SNC3E course. The courses are academic courses and are more closely related in depth to the Ontario University/College courses but there is no exact content match. The general science skills are similar across the curricula but the specific content is different.	
Additional Comments	The Ontario curriculum also has a Grade 12 course, SNC4E that has a topic, Alternative Environments that may be covered through this course. Most of the topics are different from Ontario but the science skills are similar.	

	Newfoundland & Labrador	Ontario
Course Name	Earth Systems 3209 (64 3209)	Earth and Space Science, Grade 12, University Preparation, SES4U
Date of Curriculum	1999	2000
Hours of Instruction	110	110
Additional Course Information	<i>Prerequisite:</i> Science 1206 Earth Systems is one of the courses available for students to satisfy the Grade 12 Graduation Program science requirement. It may be used as a university entrance requirement.	<i>Prerequisite:</i> Grade 10 Science, Academic
Course Description	This course provides an introduction to Earth System Science. Students will view earth dynamics as the result of interactions between the geosphere, the hydrosphere, the atmosphere, and the biosphere. The course contains a strong laboratory component and a major project is required.	This course focuses on the Earth as a planet, and on the basic concepts and theories of Earth science and their relevance to everyday life. Students will examine the Earth's place in the solar system and, after a general introduction to Earth science, will explore in more detail the materials of the Earth, its internal and surficial processes, and its history. The course draws on astronomy, biology, chemistry, mathematics, and physics in its consideration of geological processes that can be observed directly or inferred from other evidence.
Strands/Major Concepts	Unit 1 Introduction Unit 2 The Earth's Systems Unit 3 The Geosphere Unit 4 The Earth Through Time	The Earth as a Planet Introduction to Earth Sciences Earth Materials Internal and Superficial Earth Processes Earth History
Overall Comparison	There is a strong relationship between the two courses. The topics covered in the Grade 12 Earth Systems course in Newfoundland and Labrador are similar to the Grade 12 SES4U course in Ontario but there is no mention of the Earth as a planet in space as there is in Ontario.	

	Nova Scotia	Ontario
Course Name	Geology 12 (01121 12)	Earth and Space Science, Grade 12, University Preparation, SES4U
Date of Curriculum	2002	2000
Hours of Instruction	110	110
Additional Course Information	<i>Prerequisite:</i> It is strongly recommended that all students take Grade 10 science as a background for senior science courses in Grades 11 and 12. Geology 12 is one of the courses available for students to satisfy the Grade 11-12 Graduation Program science requirement. It may also be offered as a half credit course composed of either the first 3 units (Geology 12A) or the last 3 units (Geology 12B).	<i>Prerequisite:</i> Grade 10 Science, Academic
Course Description	Geology 12 satisfies the second science credit requirement for high school graduation. It offers students the opportunity to study the nature of geology, geological principles and current geology-related issues such as earth materials, internal and surface processes, and issues relating to geological hazards and resource issues.	This course focuses on the Earth as a planet, and on the basic concepts and theories of Earth science and their relevance to everyday life. Students will examine the Earth's place in the solar system and, after a general introduction to Earth science, will explore in more detail the materials of the Earth, its internal and surficial processes, and its history. The course draws on astronomy, biology, chemistry, mathematics, and physics in its consideration of geological processes that can be observed directly or inferred from other evidence.
Strands/Major Concepts	The Nature of Geology Earth Materials Internal Processes Surface Processes Historical Geology Environmental Geology	The Earth as a Planet Introduction to Earth Sciences Earth Materials Internal and Superficial Earth Processes Earth History
Overall Comparison	There is a strong relationship between the two courses. The topics covered in the Grade 12 Geology course in Nova Scotia are similar to the Grade 12 SES4U course in Ontario but there is no mention of the Earth as a planet in space as there is in Ontario.	
Additional Comments	The Geology course has recently been revised in Nova Scotia. Release date not available.	

	Nova Scotia	Ontario
Course Name	Oceans 11 (011214)	Science, Grade 11, Workplace Preparation, SNC3E
Date of Curriculum	2002	2000
Hours of Instruction	110	110
Additional Course Information	<i>Prerequisite:</i> Not specified but it is assumed to be the Grade 10 science. The course counts towards a Secondary School Diploma in the Atlantic Provinces. The course is considered to be an Academic Course. Oceans 11 may also be offered as a half credit course composed of either the first 2 core modules (Oceans 11A) or the last core module plus one other optional module (Oceans 11B).	<i>Prerequisite:</i> Science, Grade 10, Academic or Applied
Course Description	Oceans 11 offers students the opportunity to explore aspects of global and local oceanography and current ocean-related issues. The course is designed to be flexible and meet the needs and interests of Nova Scotian students by connecting the study of oceans with local economic and community interests.	This course provides students with the science-related knowledge and skills they need to help them make informed decisions in the workplace and in their personal lives. Students will explore a range of topics, including materials and safety; electrical circuits; micro-organisms; the human immune system and defences against disease; and the impact of humans on the environment. Emphasis is placed on relating these topics directly to students' experiences both in the world of work and in daily life.
Strands/Major Concepts	Four modules of 25 – 30 hours each: Three Core: Structure and Motion (of Oceans) Marine Biome Coastal Zones Optional, one of the following: Aquaculture Fisheries Navigation	Materials and Safety Electrical Circuits Micro-organisms The Immune System and Human Health Human Impact on the Environment
Overall Comparison	There is a very limited relationship between these courses. The focus is on scientific literacy (as it is in Ontario). Scientific literacy is an evolving combination of the science-related attitudes, skills, and knowledge that students need to develop inquiry, problem-solving, and decision-making abilities, to become lifelong learners, and to maintain a sense of wonder about the world around them. The basic science skills are the same as the skills presented in Ontario.	
Additional Comments	The Ontario curriculum also has a Grade 12 course, SNC4E that has a topic, Alternative Environments that may be covered through course. Most of the topics are different from Ontario but the science skills are similar. There is no exact match to a workplace course in the Atlantic Provinces but these courses match the strand Human Impact on the Environment in the SNC3E course. The courses in the Atlantic Provinces are Academic courses and as such are a closer match in depth to the Ontario University/College courses but there is no exact content match. The general science skills are similar across the curricula but the specific content is different in the other jurisdictions.	

	Nova Scotia	Ontario
Course Name	Agriculture/Agrifood 11 (011224) Food Science 12 (11026)	Science, Grade 11, University/College Preparation, SNC3M
Date of Curriculum	2003	2000
Hours of Instruction	110	110
Additional Course Information	<i>Prerequisite:</i> Not specified but it is assumed to be the Grade 10 science. These courses all count towards a Secondary School Diploma in the Atlantic Provinces. Most of these courses are considered to be Academic Courses, except the AGR801A course, which is Open. Agriculture/Agrifood 11 may also be offered as a half credit course composed of either the core module plus one of the optional modules (Agriculture/Agrifood 11A) or two of the optional modules (Agriculture/Agrifood 11B).	<i>Prerequisite:</i> Grade 10 Science, Academic or Applied.
Course Description	Agriculture/Agrifood 11 Not specified in documents that were referenced, but the course examines the fundamentals of agriculture, the production of food, the support systems for agriculture, and details about food and its marketing so units should reflect this. Food Science 12 This course investigates the constituents of food, its preservation, its quality analysis and its packaging for sale.	This course enables students, including those who do not intend to pursue science-related programs at the postsecondary level, to increase their understanding of science and its technological applications. Students will explore a range of topics, including the safe use of everyday chemicals; the science of nutrition and body function; waste management; the application of scientific principles in space; and technologies in everyday life. Emphasis will be placed on the role of science and technology in daily life and in relation to social and environmental issues.
Strands/Major Concepts	Agriculture/Agrifood 11 consists of a core module (Fundamentals of Agriculture) and three of the following optional modules: Primary Production Systems Support Systems Beyond the Farm Gate Foods Project Food Science 12 consists of four modules: Food Constituents Preservation Factors Food Quality and Commodities Food Packaging	Everyday Chemicals and Safe Practices Body Input and Body Function Waste Management Science and Space Technologies in Everyday Life
Overall Comparison	There is a very limited relationship between these courses. The focus is on scientific literacy (as it is in Ontario). Scientific literacy is an evolving combination of the science-related attitudes, skills, and knowledge that students need to develop inquiry, problem-solving, and decision-making abilities, to become lifelong learners, and to maintain a sense of wonder about the world around them. The basic science skills are the same as the skills presented in Ontario. The particular content of these courses only matches parts of the Ontario science curriculum. There is no exact match to a University/College Preparation course.	
Additional Comments	The Ontario curriculum also has a Grade 12 course, SNC4M that has some similar topics, such as Pathogens and Disease and Science and Contemporary Issues that may be covered in some part in this course.	

	Prince Edward Island	Ontario
Course Name	Animal Science (AGR621A) Animal Science (AGR801A)	Science, Grade 11, University/College Preparation, SNC3M
Date of Curriculum	2000	2000
Hours of Instruction	110	110
Additional Course Information	<i>Prerequisite:</i> Not specified but it is assumed to be the Grade 10 science. These courses all count towards a Secondary School Diploma in the Atlantic Provinces. Most of these courses are considered to be Academic Courses, except the AGR801A course, which is Open.	<i>Prerequisite:</i> Grade 10 Science, Academic or Applied.
Course Description	Animal Science AGR621A Animal Science covers in detail such topics as: Animal Nutrition, Breeding, and Health. Dairy, Beef, Swine, Poultry Production, and various other Island livestock enterprises are also examined. This is an Advanced Level, Grade 12 course in PEI. Animal Science AGR801A This course is designed to develop an appreciation and awareness to the agricultural industry. The students are introduced to the farming industry in Canada and PEI, careers directly and indirectly related to agriculture and issues on farm safety and animal welfare.	This course enables students, including those who do not intend to pursue science-related programs at the postsecondary level, to increase their understanding of science and its technological applications. Students will explore a range of topics, including the safe use of everyday chemicals; the science of nutrition and body function; waste management; the application of scientific principles in space; and technologies in everyday life. Emphasis will be placed on the role of science and technology in daily life and in relation to social and environmental issues.
Strands/Major Concepts	Animal Science AGR621A consists of topics: Animal Nutrition Animal Breeding Animal Health Livestock Enterprises of PEI Animal Science AGR801A consists of topics: Livestock Nutrition Livestock Reproduction Livestock Diseases Management of Livestock	Everyday Chemicals and Safe Practices Body Input and Body Function Waste Management Science and Space Technologies in Everyday Life
Overall Comparison	There is a very limited relationship between these courses. The focus is on scientific literacy (as it is in Ontario). Scientific literacy is an evolving combination of the science-related attitudes, skills, and knowledge that students need to develop inquiry, problem-solving, and decision-making abilities, to become lifelong learners, and to maintain a sense of wonder about the world around them. The basic science skills are the same as the skills presented in Ontario. The particular content of these courses only matches parts of the Ontario science curriculum. There is no exact match to a University/College course but these courses match, in part, the strands Body Input and Body Function and Technologies in Everyday Life in the SNC3M course. The general science skills are similar across the curricula but the specific content is different in the other jurisdictions.	
Additional Comments	The Ontario curriculum also has a Grade 12 course, SNC4M that has some similar topics, such as Pathogens and Disease and Science and Contemporary Issues that may be covered in some part in this course.	

	Prince Edward Island	Ontario
Course Name	Oceanography OCN621A	Science, Grade 11, Workplace preparation, SNC3E
Date of Curriculum	2000	2000
Hours of Instruction	110	110
Additional Course Information	<p><i>Prerequisite:</i> Not specified but it is assumed to be the Grade 10 science.</p> <p>This course counts toward a Secondary School Diploma in the Atlantic Provinces. The course is considered to be an Academic Course.</p>	<p><i>Prerequisite:</i> Science, Grade 10, Academic or Applied</p>
Course Description	Oceanography 621 is an integrated science course that examines the geological, chemical, physical, and biological aspects of the marine environment. Students will be made aware of regional, national, and global ocean-related issues.	This course provides students with the science-related knowledge and skills they need to help them make informed decisions in the workplace and in their personal lives. Students will explore a range of topics, including materials and safety; electrical circuits; micro-organisms; the human immune system and defences against disease; and the impact of humans on the environment. Emphasis is placed on relating these topics directly to students' experiences both in the world of work and in daily life.
Strands/Major Concepts	Not specified in documents that were referenced, but the course examines the geological, chemical, physical, and biological aspects of the marine environment so units should reflect this.	Materials and Safety Electrical Circuits Micro-organisms The Immune System and Human Health Human Impact on the Environment
Overall Comparison	There is a very limited relationship between these courses. The focus is on scientific literacy (as it is in Ontario). Scientific literacy is an evolving combination of the science-related attitudes, skills, and knowledge that students need to develop inquiry, problem-solving, and decision-making abilities, to become lifelong learners, and to maintain a sense of wonder about the world around them. The basic science skills are the same as the skills presented in Ontario.	
Additional Comments	The Ontario curriculum also has a Grade 12 course, SNC4E that has a topic, Alternative Environments that may be covered through course. Most of the topics are different from Ontario but the science skills are similar.	

	Prince Edward Island	Ontario
Course Name	Agriscience AGS801A	Science, Grade 12, Workplace Preparation, SNC4E
Date of Curriculum	2000	2000
Hours of Instruction	110	110
Additional Course Information	<p><i>Prerequisite:</i> Not specified but it is assumed to be the Grade 10 science.</p> <p>This course count towards a Secondary School Diploma in the Prince Edward Island. It is considered to be an Open Course. It may be taken in Grade 11 or 12.</p> <p>Students who take AGS801 Agriscience may take one but not both of AGR621A (Animal Science) and AGR801A (Animal Science).</p>	<p><i>Prerequisite:</i> Grade 11 Science, Workplace.</p>
Course description	<p>Agriscience is the application of scientific principles and technology to the study of natural resource management and agriculture. Topics include: Air, Water and Soil Quality, Forestry and Wildlife Management, Aquaculture, Plant Science, Crop and Pest Management, Home Gardening and Indoor/Outdoor Plant Scaping.</p>	<p>This course provides students with the science-related knowledge and skills they need to help them make informed decisions in the workplace and in their personal lives. Students will explore a range of topics, including chemistry at home and at work; communications technology; medical technology; gardening, horticulture, landscaping, and forestry; and alternative life-sustaining environments. Emphasis is placed on relating these topics directly to students' experiences both in the world of work and in daily life.</p>
Strands/Major Concepts	<p>The topics covered in Agriscience AGS801A are: Air, Water and Soil Quality Forestry and Wildlife Management Aquaculture Plant Science Crop and Pest Management Home Gardening and Indoor/Outdoor Plant Scaping.</p>	<p>Chemistry at Home and Work Communications: Sounds and Pictures Medical Technology Gardening, Horticulture, Landscaping, and Forestry Alternative Environments</p>
Overall Comparison	<p>There is a very limited relationship between the two courses. The focus is on scientific literacy (as it is in Ontario). Scientific literacy is an evolving combination of the science-related attitudes, skills, and knowledge that students need to develop inquiry, problem-solving, and decision-making abilities, to become lifelong learners, and to maintain a sense of wonder about the world around them.</p> <p>The basic science skills taught in the Atlantic Provinces are the same as the skills presented in Ontario. There is no exact match to a workplace course in the Atlantic Provinces but this course matches the strand Gardening, Horticulture, Landscaping, and Forestry in the SNC4E course. This course in Prince Edward Island is an Open Course and as such is a closer match in depth to the Ontario University/College courses but there is no exact content match. The general science skills are similar across the curricula but the specific content is different in the other jurisdiction.</p>	
Additional Comments	<p>The Ontario curriculum also has a Grade 11 course, SNC3E that has a topic, Human Impact on the Environment that may be covered through this Prince Edward Island course. Most of the topics are different from Ontario but the science skills are similar.</p>	

	New Brunswick	Ontario
Course Name	Physics 112	Physics, Grade 11, University Preparation SPH3U
Date of Curriculum	2002	2000
Hours of Instruction	90	110
Additional Course Information	<i>No prerequisite:</i> However, students are expected to complete Physics 112 before enrolling in Physics 122. Physics 112 is the first of two physics courses designed for students who intend to go to university or technical school. Physics 112 can be used as a compulsory credit to meet high school graduation requirements. Students must achieve an average mark of 60% to pass the course.	<i>Prerequisite:</i> Grade 10 Science, Academic
Course Description	Topics include one-dimensional kinematics and dynamics, wave motion, sound and light, introduction to electromagnetic radiation, and a study of work/energy/power. The course aims to engage students in relating physics concepts to societal contexts and applications. A student-centered approach to theoretical and practical investigations is the basis of the curriculum.	This course develops students' understanding of the basic concepts of physics. Students study the laws of dynamics and explore different kinds of forces, the quantification and forms of energy (mechanical, sound, light, thermal, and electrical), and the way energy is transformed and transmitted. They develop scientific-inquiry skills as they verify accepted laws and solve both assigned problems and those emerging from their investigations. Students analyse the interrelationships between physics and technology, and consider the impact of technological applications of physics on society and the environment.
Strands/Major Concepts	Kinematics Dynamics Work and Energy Waves	Forces and Motion Energy, Work and Power Waves and Sound Light and Geometric Optics Electricity and Magnetism
Overall Comparison	There is a strong relationship between the two courses. A major concept in Ontario of Electricity and Magnetism is not taught in New Brunswick Physics 112.	
Additional Comments	Physics 111 is an enrichment course for students, interested in science, who have a better than average achievement in science and mathematics. The discovery approach and scientific method are used in this course which focuses on laboratory work. The topics from Physics 112 are covered in greater depth. The curriculum described in Foundation for the Atlantic Canada Science Curriculum was planned and developed collaboratively by regional committees. The process for developing the common science curriculum for Atlantic Canada involved regional consultation with the stakeholders in the education system in each Atlantic province. The Atlantic Canada science curriculum is consistent with the framework described in the pan-Canadian Common Framework of Science Learning Outcomes K to 12.	

	New Brunswick	Ontario
Course Name	Physics 122	Physics, Grade 12, University Preparation SPH4U
Date of Curriculum	2003	2000
Hours of Instruction	90	110
Additional Course Information	<i>No Prerequisite:</i> However, students are expected to take Physics 112 before Physics 122. Physics 122 is the second of two physics courses designed for students who intend to go to university or technical school. Physics 122 can be used to meet high school graduation requirements. Students must achieve an average mark of 60% to pass the course.	<i>Prerequisite:</i> Physics, Grade 11, University Preparation SPH3U
Course Description	Topics include linear motion, forces, two-dimensional motion, projectiles, circular motion and gravitation, fields (gravitational/electric/magnetic), electric circuits, electric motors and generators. Each topic is studied in its social context. Student experiences will include library research, laboratory investigations, and multi-sources of information, including print, software, video, and guest speakers.	This course enables students to deepen their understanding of the concepts and theories of physics. Students explore further the laws of dynamics and energy transformations, and investigate electrical, gravitational, and magnetic fields; electromagnetic radiation; and the interface between energy and matter. They further develop inquiry skills, learning, for example, how the interpretation of experimental data can provide indirect evidence to support the development of a scientific model. Students also consider the impact on society and the environment of technological applications of physics.
Strands/Major Concepts	Dynamic Extensions Projectiles, Circular Motion and Universal Gravitation Fields	Forces and Motion: Dynamics Energy and Momentum Electric, Gravitational and Magnetic Fields The Wave Nature of Light Matter Energy Interface
Overall Comparison	<p>There is a considerable relationship between the two courses. A major concept in Ontario of Matter - Energy Interface is not taught in Physics 122 in New Brunswick. The major concept in Ontario of the Wave Nature of light is taught in Physics 112 in New Brunswick. There is limited consideration for expectations relating to the social and environmental contexts of science and technology in Physics 122.</p> <p>Overall Expectations in Physics, Grade 12 (SPH4U) NOT found in the Atlantic Province (New Brunswick) course: Electric, Gravitational and Magnetic Fields</p> <ul style="list-style-type: none">and evaluate and describe the social and economic impact of technological developments related to the concept of fields. 	
Additional Comments	<p>Physics 121 is an enrichment course for students, interested in science, who have a better than average achievement in science and mathematics. The discovery approach and scientific method are used in this course which focuses on laboratory work. The topics from Physics 122 are covered in greater depth.</p> <p>The curriculum described in Foundation for the Atlantic Canada Science Curriculum was planned and developed collaboratively by regional committees. The process for developing the common science curriculum for Atlantic Canada involved regional consultation with the stakeholders in the education system in each Atlantic province. The Atlantic Canada science curriculum is consistent with the framework described in the pan-Canadian Common Framework of Science Learning Outcomes K to 12.</p>	

	Newfoundland & Labrador	Ontario
Course Name	Physics 2204	Physics, Grade 11, University Preparation SPH3U
Date of Curriculum	2002	2000
Hours of Instruction	110	110
Additional Course Information	<i>Prerequisite:</i> Science 1206 Students must achieve an average mark of 50% to pass the course. Students are expected to complete Physics 2204 before enrolling in Physics 3204.	<i>Prerequisite:</i> Grade 10 Science, Academic
Course Description	Kinematics is the study of how objects move. Students describe and explain the motion of objects both verbally and in written and mathematical forms (using algebraic and graphical analytical techniques). Dynamics is the study of the factors that cause objects to speed up, slow down, and change direction. Students investigate the effects of one-dimensional forces and, through the application of Newton's laws, analyse systems using their knowledge of dynamics. To make sense of what happens between parts of a system, students use the concepts of momentum and/or energy in familiar contexts before applying the concepts to less familiar situations. Students observe, predict, and explain specific wave behaviours, such as reflection, refraction, and diffraction for mechanical waves and sound waves. Using the wave principles they have developed, students explain and predict the behaviour of light and other electromagnetic waves.	This course develops students' understanding of the basic concepts of physics. Students study the laws of dynamics and explore different kinds of forces, the quantification and forms of energy (mechanical, sound, light, thermal, and electrical), and the way energy is transformed and transmitted. They develop scientific-inquiry skills as they verify accepted laws and solve both assigned problems and those emerging from their investigations. Students analyse the interrelationships between physics and technology, and consider the impact of technological applications of physics on society and the environment.
Strands/Major Concepts	Kinematics Dynamics Work and Energy Waves	Forces and Motion Energy, Work and Power Waves and Sound Light and Geometric Optics Electricity and Magnetism
Overall Comparison	There is a strong relationship between the two courses. A major concept in Ontario of Electricity and Magnetism is not taught in Newfoundland and Labrador until Physics 3204.	
Additional Comments	The curriculum described in Foundation for the Atlantic Canada Science Curriculum was planned and developed collaboratively by regional committees. The process for developing the common science curriculum for Atlantic Canada involved regional consultation with the stakeholders in the education system in each Atlantic province. The Atlantic Canada science curriculum is consistent with the framework described in the pan-Canadian Common Framework of Science Learning Outcomes K to 12.	

	Newfoundland and Labrador	Ontario
Course Name	Physics 3204	Physics, Grade 12, University Preparation SPH4U
Date of Curriculum	2003	2000
Hours of Instruction	110	110
Additional Course Information	<i>Prerequisites:</i> Physics 2204 Students must achieve an average mark of 50% to pass the course. Students must take a provincial examination. The final mark is an average of the mark submitted by the school and the provincial examination mark.	<i>Prerequisite:</i> Physics, Grade 11, University Preparation SPH3U
Course Description	The Renaissance and the Galilean method of doing science began the classical period in physical science. Students investigate concepts of force, momentum, and energy; methods to make precise observations of orbital motions; and a mathematical system to handle rates of change. Students have had experience with contact forces. Forces that exert influence through space without contact are more difficult to visualize. Historically, the notion of a field of influence which could be mapped and within which results are predictable went a long way in explaining and relating a wide range of different forces. The field remains one of the major unifying concepts of physics. The time period between 1890 and 1930 saw the development of concepts which are still referred to as "modern physics." At the same time, research was being carried out on the nature of electromagnetic phenomena, including the nature of light. Some radiation is harmless; other radiation is potentially harmful. Some kinds of radiation can be used in beneficial ways. Students explore the full range of types of radiation, including natural and artificial sources, and assess the risks and benefits of exposure to each of them.	This course enables students to deepen their understanding of the concepts and theories of physics. Students explore further the laws of dynamics and energy transformations, and investigate electrical, gravitational, and magnetic fields; electromagnetic radiation; and the interface between energy and matter. They further develop inquiry skills, learning, for example, how the interpretation of experimental data can provide indirect evidence to support the development of a scientific model. Students also consider the impact on society and the environment of technological applications of physics.
Strands/Major Concepts	Force, Motion, and Energy Fields Matter Energy Interface	Forces and Motion: Dynamics Energy and Momentum Electric, Gravitational and Magnetic Fields The Wave Nature of Light Matter Energy Interface
Overall Comparison	There is a strong relationship between the two courses. A major concept in Ontario the Wave Nature of Light is taught in Physics 2204 in Newfoundland and Labrador. Overall Expectations in Physics, Grade 12 (SPH4U) NOT found in the Newfoundland and Labrador course: Matter-Energy Interface <ul style="list-style-type: none"> • Demonstrate an understanding of Einstein's special theory of relativity and ... 	
Additional Comments	Physics 4224 is an Advanced Placement (AP) course open to students who have successfully completed Physics 3204, the highest provincially prescribed course in Physics. The curriculum described in Foundation for the Atlantic Canada Science Curriculum was planned and developed collaboratively by regional committees. The process for developing the common science curriculum for Atlantic Canada involved regional consultation with the stakeholders in the education system in each Atlantic province. The Atlantic Canada science curriculum is consistent with the framework described in the pan-Canadian Common Framework of Science Learning Outcomes K to 12.	

	Nova Scotia	Ontario
Course Name	Physics 11, Academic (011150)	Physics, Grade 11, University Preparation SPH3U
Date of Curriculum	2002	2000
Hours of Instruction	110	110
Additional Course Information	<i>Prerequisites:</i> Science 10 and Mathematics 10. Physics 11 is one of the prerequisites for Physics 12.	<i>Prerequisite:</i> Grade 10 Science, Academic
Course Description	<p>Physics is the branch of knowledge that studies the processes and structures of the natural world at the most fundamental level. Objects as small as atoms and as large as galaxies are investigated in an attempt to understand the underlying principles and structures. Physics is both descriptive and predictive: it can often explain how something works and predicts how its related technologies can be improved.</p> <p>Students explore how forces, velocity, and acceleration can be measured and represented as vectors. Students investigate the relationship among force, mass and acceleration, and the interaction of forces between two objects. The relationship among work, time, and power are analysed quantitatively. After exploring momentum as it relates to an object's motion, students determine which laws of conservation of energy or momentum are best used to solve real life situations involving collisions. Students investigate the common characteristics of mechanical, sound, and light waves, and explain and predict the behaviour of waves.</p>	<p>This course develops students' understanding of the basic concepts of physics. Students study the laws of dynamics and explore different kinds of forces, the quantification and forms of energy (mechanical, sound, light, thermal, and electrical), and the way energy is transformed and transmitted. They develop scientific-inquiry skills as they verify accepted laws and solve both assigned problems and those emerging from their investigations. Students analyse the interrelationships between physics and technology, and consider the impact of technological applications of physics on society and the environment.</p>
Strands/Major Concepts	Kinematics Dynamics Momentum and Energy Waves	Forces and Motion Energy, Work and Power Waves and Sound Light and Geometric Optics Electricity and Magnetism
Overall Comparison	There is a strong relationship between the two courses. A major concept in Ontario of Electricity and Magnetism is not taught in Nova Scotia until Physics 12.	
Additional Comments	Advanced Physics 11 (011020), a 1 credit course, takes an investigative approach to studying physics. Students develop major concepts in physics and demonstrate and apply these concepts in new and novel contexts. The content topics parallel those of Physics 11, Academic, but are treated in greater depth. Students can achieve credit for only one of Physics 11, Academic or Advanced Physics 11. The curriculum described in Foundation for the Atlantic Canada Science Curriculum was planned and developed collaboratively by regional committees. The process for developing the common science curriculum for Atlantic Canada involved regional consultation with the stakeholders in the education system in each Atlantic province. The Atlantic Canada science curriculum is consistent with the framework described in the pan-Canadian Common Framework of Science Learning Outcomes K to 12.	

	Nova Scotia	Ontario
Course Name	Physics 12, Academic (011152)	Physics, Grade 12, University Preparation SPH4U
Date of Curriculum	2003	2000
Hours of Instruction	110	110
Additional Course Information	<i>Prerequisites:</i> Physics 11 and Mathematics 11. Students are required to write a provincial examination. They must achieve an average mark of 50 % to pass. The provincial examination is worth 30% of their total mark.	<i>Prerequisite:</i> Physics, Grade 11, University Preparation SPH3U
Course Description	Students relate their study of mechanics to everyday occurrences and come to understand that the engineered world in which we live is built on the principles of classical physics. From skateboards to space shuttles, the cause and effect of motion are understood and applied. Students have had experience with contact forces. Forces that exert influence through space without contact are more difficult to visualize. Technological exploitation of our knowledge of electricity is expanding at an astonishing rate. The historical context of discovery and development in this area provides students with opportunities to explore the interconnectedness of science and technology. The time period between 1890 and 1930 saw the development of the concepts of "modern physics" as research was being conducted on the nature of electromagnetic phenomena and the nature of light. Students develop an integrated view of the achievements that form the essence of twentieth century physics. Students also explore the full range and types of radiation including natural and artificial sources, and assess the risks and benefits of exposure to each.	This course enables students to deepen their understanding of the concepts and theories of physics. Students explore further the laws of dynamics and energy transformations, and investigate electrical, gravitational, and magnetic fields; electromagnetic radiation; and the interface between energy and matter. They further develop inquiry skills, learning, for example, how the interpretation of experimental data can provide indirect evidence to support the development of a scientific model. Students also consider the impact on society and the environment of technological applications of physics.
Strands/Major Concepts	Force, Motion, Work and Energy Fields Waves and Modern Physics Radioactivity	Forces and Motion: Dynamics Energy and Momentum Electric, Gravitational and Magnetic Fields The Wave Nature of Light Matter Energy Interface
Overall Comparison	There is a strong relationship between the two courses. A major concept in Ontario the Wave Nature of Light is taught in Physics 11 in Nova Scotia. Overall Expectations in Physics, Grade 12 (SPH4U) NOT found in the Nova Scotia course: Forces and Motion: Dynamics <ul style="list-style-type: none"> Investigate...circular motion with the aid of vectors, graphs, and free body diagrams; Matter-Energy Interface <ul style="list-style-type: none"> Demonstrate an understanding of Einstein's special theory of relativity and ... 	
Additional Comments	Students may take, Advanced Physics 12 (011022), a 1-credit course, as an alternative to Physics 12, Academic. It takes an investigative approach to studying physics. Students develop major concepts in physics and demonstrate and apply these concepts in new and novel contexts. The content topics parallel those of Physics 12, Academic but are treated in greater depth. Students engage in a major individual research project. The curriculum described in Foundation for the Atlantic Canada Science Curriculum was planned and developed collaboratively by regional committees. The process for developing the common science curriculum for Atlantic Canada involved regional consultation with the stakeholders in the education system in each Atlantic province. The Atlantic Canada science curriculum is consistent with the framework described in the pan-Canadian Common Framework of Science Learning Outcomes K to 12.	

	Prince Edward Island	Ontario
Course Name	Physics 521A	Physics, Grade 11, University Preparation SPH3U
Date of Curriculum	2002	2000
Hours of Instruction	110	110
Additional Course Information	<i>No prerequisite:</i> However, students are expected to complete Science 421A before enrolling in Physics 521A. Physics 521A can be used as one of two compulsory science credits required to meet high school graduation requirements. Students must achieve an average mark of 50% to pass the course.	<i>Prerequisite:</i> Grade 10 Science, Academic
Course Description	The unifying theme is energy transformation and conservation, with major emphasis on waves. The program consists of waves (mechanical, sound, light); electricity and magnetism (static, current, magnetism, electromagnetism); atoms (atomic models, nuclear fission, and fusion).	This course develops students' understanding of the basic concepts of physics. Students study the laws of dynamics and explore different kinds of forces, the quantification and forms of energy (mechanical, sound, light, thermal, and electrical), and the way energy is transformed and transmitted. They develop scientific-inquiry skills as they verify accepted laws and solve both assigned problems and those emerging from their investigations. Students analyse the interrelationships between physics and technology, and consider the impact of technological applications of physics on society and the environment.
Strands/Major Concepts	Waves Mechanical Sound Light Electricity and Magnetism Static Current Magnetism Electromagnetism Atom Atomic Models Nuclear Fission and Fusion	Forces and Motion Energy, Work and Power Waves and Sound Light and Geometric Optics Electricity and Magnetism
Overall Comparison	Specific outcomes for this course were not available for this comparison.	
Additional Comments	The curriculum described in Foundation for the Atlantic Canada Science Curriculum was planned and developed collaboratively by regional committees. The process for developing the common science curriculum for Atlantic Canada involved regional consultation with the stakeholders in the education system in each Atlantic province. The Atlantic Canada science curriculum is consistent with the framework described in the pan-Canadian Common Framework of Science Learning Outcomes K to 12.	

	Prince Edward Island	Ontario
Course Name	Physics 621A	Physics, Grade 12, University Preparation SPH4U
Date of Curriculum	2003	2000
Hours of Instruction	110	110
Additional Course Information	<i>No prerequisite:</i> However, students are expected to complete Physics 521A before enrolling in Physics 621A. Physics 621A can be used as one of two compulsory science credits required to meet high school graduation requirements. Students must achieve an average mark of 50% to pass the course.	<i>Prerequisite:</i> Physics, Grade 11, University Preparation SPH3U
Course Description	The unifying theme is energy transformation and conservation, with a major emphasis on mechanics. The program consists of linear motion (uniform motion and accelerated motion); forces (vectors, Newton's Law, fields and forces); two-dimensional motion (projectile motion, circular motion); impulse and momentum (impulse, momentum, conservation of momentum); work and energy (work and energy transformations, kinetic energy, potential energy, conservation of energy, power).	This course enables students to deepen their understanding of the concepts and theories of physics. Students explore further the laws of dynamics and energy transformations, and investigate electrical, gravitational, and magnetic fields; electromagnetic radiation; and the interface between energy and matter. They further develop inquiry skills, learning, for example, how the interpretation of experimental data can provide indirect evidence to support the development of a scientific model. Students also consider the impact on society and the environment of technological applications of physics.
Strands/Major Concepts	Linear Motion Uniform Motion Accelerated Motion Forces Vectors Newton's Law Fields and Forces Two-Dimensional Motion Projectile Motion Circular Motion Impulse and Momentum Impulse Momentum Conservation of Momentum Work and Energy Work and Energy Transformations Kinetic Energy Potential Energy Conservation of Energy Power	Forces and Motion: Dynamics Energy and Momentum Electric, Gravitational and Magnetic Fields The Wave Nature of Light Matter Energy Interface
Overall Comparison	Specific outcomes for this course were not available for this comparison.	
Additional Comments	The curriculum described in Foundation for the Atlantic Canada Science Curriculum was planned and developed collaboratively by regional committees. The process for developing the common science curriculum for Atlantic Canada involved regional consultation with the stakeholders in the education system in each Atlantic province. The Atlantic Canada science curriculum is consistent with the framework described in the pan-Canadian Common Framework of Science Learning Outcomes K to 12.	

	New Brunswick	Ontario
Course Name	Chemistry 112	Chemistry, Grade 11, University Preparation SCH3U
Date of Curriculum	2003	2000
Hours of Instruction	90	110
Additional Course Information	<i>No Prerequisite:</i> However, students are expected to take Science 10 before Chemistry 112. Chemistry 112 is the first of two chemistry courses designed for students who intend to go to university or technical school.	<i>Prerequisite:</i> Science, Grade 10, Academic. Achievement of SCH3U leads to SCH4U
Course Description	This course is designed so that students make observations and draw conclusions that lead directly to important principles in chemistry. Topics include matter and energy in chemical change, matter as solutions and gases, quantitative relationships in chemical changes, chemical bonding in matter.	This course focuses on the concepts and theories that form the basis of modern chemistry. Students will study the behaviours of solids, liquids, gases, and solutions; investigate changes and relationships in chemical systems; and explore how chemistry is used in developing new products and processes that affect our lives and our environment. Emphasis will also be placed on the importance of chemistry in other branches of science.
Strands/Major Concepts	Matter and Energy in Chemical Change Matter as Solutions and Gases Quantitative Relationships in Chemical Changes Chemical Bonding in Matter	Matter and Chemical Bonding Quantities in Chemical Reactions Solutions and Solubility Gases and Atmospheric Chemistry Hydrocarbons and Energy
Overall Comparison	<p>There is a considerable relationship between the two courses. A major concept in Ontario of Hydrocarbons and Energy is not taught until Chemistry 122 in New Brunswick.</p> <p>Overall Expectations in Chemistry, Grade 11 (SCH3U) NOT found in the New Brunswick course: Solutions and Solubility</p> <ul style="list-style-type: none"> ...and explain how environmental water quality depends on the concentrations of a variety of dissolved substances. 	
Additional Comments	<p>Chemistry 111 is recommended for students who may intend to pursue science or engineering at the university level. Since these are enriched courses, students should have a genuine interest and better than average ability in science and mathematics. Students engage in individual projects and research. Topics similar to those in Chemistry 112 are covered in greater depth.</p> <p>The curriculum described in Foundation for the Atlantic Canada Science Curriculum was planned and developed collaboratively by regional committees. The process for developing the common science curriculum for Atlantic Canada involved regional consultation with the stakeholders in the education system in each Atlantic province. The Atlantic Canada science curriculum is consistent with the framework described in the pan-Canadian Common Framework of Science Learning Outcomes K to 12.</p>	

	New Brunswick	Ontario
Course Name	Chemistry 122	Chemistry, Grade 12, University Preparation SCH4U
Date of Curriculum	2003	2000
Hours of Instruction	90	110
Additional Course Information	<i>No Prerequisite:</i> However, students are expected to take Chemistry 112 before Chemistry 122. Chemistry 122 is the second of two chemistry courses designed for students who intend to go to university or technical school. Chemistry 122 can be used to meet high school graduation requirements. Students must achieve an average mark of 60% to pass the course.	<i>Prerequisite:</i> Chemistry, Grade 11, University Preparation SCH3U
Course Description	In Chemistry 122 each unit uses a different context to investigate the nature of chemical change. Organic compounds are investigated and compared to inorganic matter. Changes as they relate to chemical reactions of organic compounds in living and nonliving systems are examined. Energy in the form of heat is most commonly absorbed or released in chemical reactions. Changes in physical and nuclear systems are compared. Few chemical reactions proceed in only one direction; most are somewhat reversible. Chemical systems involving acids and bases are studied as examples. Electrochemical systems are examined, oxidation-reduction reactions are analysed, and the matter and energy involved are quantified.	This course enables students to deepen their understanding of chemistry through the study of organic chemistry, energy changes and rates of reaction, chemical systems and equilibrium, electrochemistry, and atomic and molecular structure. Students will further develop problem-solving and laboratory skills as they investigate chemical processes, at the same time refining their ability to communicate scientific information. Emphasis will be placed on the importance of chemistry in daily life, and on evaluating the impact of chemical technology on the environment.
Strands/Major Concepts	The Diversity of Matter: An Introduction to Organic Chemistry Thermochemical Changes Equilibrium, Acids, and Bases in Changes Electrochemical Changes (optional, if time permits)	Organic Chemistry Energy Changes and Rates of Reaction Chemical Systems and Equilibrium Electrochemistry Structure and Properties
Overall Comparison	There is a strong relationship between the two courses. A major concept in Ontario of Structure and Properties is taught in Chemistry 112 in the New Brunswick courses. A major concept in Ontario of Electrochemistry is optional , taught if time permits in New Brunswick. Overall Expectations in Chemistry, Grade 12 (SCH4U) NOT found in the New Brunswick course: Structure and Properties <ul style="list-style-type: none"> Demonstrate an understanding of quantum mechanical theory, and... 	
Additional Comments	Chemistry 121 is recommended for students who may intend to pursue science or engineering at the university level. Since these are enriched courses, students should have a genuine interest and better than average ability in science and mathematics. Students engage in individual projects and research. Topics similar to those in Chemistry 122 are covered in greater depth. The curriculum described in Foundation for the Atlantic Canada Science Curriculum was planned and developed collaboratively by regional committees. The process for developing the common science curriculum for Atlantic Canada involved regional consultation with the stakeholders in the education system in each Atlantic province. The Atlantic Canada science curriculum is consistent with the framework described in the pan-Canadian Common Framework of Science Learning Outcomes K to 12.	

	Newfoundland & Labrador	Ontario
Course Name	Chemistry 2202	Chemistry, Grade 11, University Preparation SCH3U
Date of Curriculum	2002	2000
Hours of Instruction	110	110
Additional Course Information	<i>Prerequisite:</i> Science 1206. Students must achieve an average mark of 50% to pass the course. Students are expected to complete Chemistry 2202 before enrolling in Chemistry 3202.	<i>Prerequisite:</i> Science, Grade 10, Academic. Achievement of SCH3U leads to SCH4U
Course Description	Chemistry is a qualitative and quantitative science. Students have generally been studying chemistry in a qualitative sense. In this introduction to the quantitative aspect of chemistry, students examine stoichiometry. Stoichiometry is the mole to mole relationship in a balanced chemical equation. Students apply chemical principles to everyday life and industry. When studying reactions, students investigate the usefulness of the reactions. The focus on problem-solving and decision-making and the corresponding calculations provide the tools to investigate and support their responses. All matter is held together by chemical bonding. Students study the different forces of attraction involved in matter and how it influences their properties. Organic chemistry is the study of molecular compounds of carbon. Students investigate the bonding capacity of carbon, hydrogen, oxygen, nitrogen, and the halogens as well as the potential for these atoms to form covalent compounds. Students explore the vastness of the number of organic molecules using isomers and polymers as examples. With so many different organic molecules to consider, students come to appreciate the need for a systematic naming scheme. Students discover how the classification of organic molecules into different family groups depends upon the type of bonding and atoms present and examine how these factors influence the reactivity of representative molecules from each of the different families.	This course focuses on the concepts and theories that form the basis of modern chemistry. Students will study the behaviours of solids, liquids, gases, and solutions; investigate changes and relationships in chemical systems; and explore how chemistry is used in developing new products and processes that affect our lives and our environment. Emphasis will also be placed on the importance of chemistry in other branches of science.
Strands/Major Concepts	Stoichiometry From Structures to Properties Organic Chemistry	Matter and Chemical Bonding Quantities in Chemical Reactions Solutions and Solubility Gases and Atmospheric Chemistry Hydrocarbons and Energy
Overall Comparison	There is a considerable relationship between the two courses. A major concept in Ontario of Gases and Atmospheric Chemistry is not taught until Chemistry 3202 in Newfoundland and Labrador. Overall Expectations in Chemistry, Grade 11 (SCH3U) NOT found in the Newfoundland & Labrador course: Matter and Chemical Bonding <ul style="list-style-type: none"> ...analyse chemical reactions in terms of the type of reaction and the reactivity of starting materials... Solutions and Solubility <ul style="list-style-type: none"> ...and explain how environmental water quality depends on the concentrations of a variety of dissolved substances. Hydrocarbons and Energy <ul style="list-style-type: none"> ...demonstrate an understanding...of hydrocarbons, especially with respect to the energy changes that occur in their combustion; ...and apply calorimetric techniques to the calculation of energy changes. 	
Additional Comments	The curriculum described in Foundation for the Atlantic Canada Science Curriculum was planned and developed collaboratively by regional committees. The process for developing the common science curriculum for Atlantic Canada involved regional consultation with the stakeholders in the education system in each Atlantic province. The Atlantic Canada science curriculum is consistent with the framework described in the pan-Canadian Common Framework of Science Learning Outcomes K to 12.	

	Newfoundland & Labrador	Ontario
Course Name	Chemistry 3202	Chemistry, Grade 12, University Preparation SCH4U
Date of Curriculum	2003	2000
Hours of Instruction	110	110
Additional Course Information	<i>Prerequisite:</i> Chemistry 2202 Students must achieve an average mark of 50% to pass the course. Students must take a provincial examination. The final mark is an average of the mark submitted by the school and the provincial examination mark.	<i>Prerequisite:</i> Chemistry, Grade 11, University Preparation SCH3U
Course Description	<p>Student investigation of factors which affect the rates of chemical reactions leads to a deeper understanding of chemical equilibrium and a quantitative treatment of reaction systems. The balance of opposing reactions in chemical equilibrium systems has issues relating to commercial/industrial production.</p> <p>Acids and bases have an effect on aqueous systems. Many acid-base systems involve proton transfer and are described quantitatively. Students are encouraged to value the role of precise observation and careful experimentation while looking at safe handling, storage, and disposal of chemicals. Students explore several ways of defining acids and bases. Energy is the essence of our existence as individuals and as a society. An abundance of fossil fuels has led to a world-wide appetite for energy. There are pros and cons to using fossil fuels. The relationship between energy and chemistry needs to be explored to help us find alternative fuels.</p> <p>Thermochemistry includes energy changes that occur with physical and chemical processes. Students study energy production and the application of chemical change related to practical situations that have helped society to progress.</p> <p>Matter is electrical in nature and some of its most important particles—electrons, protons, and ions—carry electric charge. When an electrical potential is applied between electrodes placed in a solution of ions, ions migrate to oppositely charged electrodes and chemical reactions take place. Quantitative aspects of this electrolysis are important in analytical chemistry and the chemical industry.</p>	<p>This course enables students to deepen their understanding of chemistry through the study of organic chemistry, energy changes and rates of reaction, chemical systems and equilibrium, electrochemistry, and atomic and molecular structure. Students will further develop problem-solving and laboratory skills as they investigate chemical processes, at the same time refining their ability to communicate scientific information. Emphasis will be placed on the importance of chemistry in daily life, and on evaluating the impact of chemical technology on the environment.</p>
Strands/Major Concepts	From Kinetics to Equilibrium Acids & Bases Thermochemistry Electrochemistry	Organic Chemistry Energy Changes & Rates of Reaction Chemical Systems & Equilibrium Electrochemistry Structure & Properties
Overall Comparison	<p>There is a strong relationship between the two courses. A major concept in Ontario of Organic Chemistry is taught in Chemistry 2202 in Newfoundland & Labrador. Another major concept in Ontario of Structure and Properties is taught, in part, in Chemistry 2202 in Newfoundland & Labrador.</p> <p>Overall Expectations in Chemistry, Grade 12 (SCH4U) NOT found in the Newfoundland & Labrador courses</p> <p>Structure and Properties</p> <ul style="list-style-type: none"> • Demonstrate an understanding of quantum mechanical theory, and... • Describe...technologies that have advanced the knowledge of atomic and molecular theory 	
Additional Comments	<p>Chemistry 4222 is an Advanced Placement (AP) course open to students who have successfully completed Chemistry 3202, the highest provincially prescribed course in Chemistry.</p> <p>The curriculum described in Foundation for the Atlantic Canada Science Curriculum was planned and developed collaboratively by regional committees. The process for developing the common science curriculum for Atlantic Canada involved regional consultation with the stakeholders in the education system in each Atlantic province. The Atlantic Canada science curriculum is consistent with the framework described in the pan-Canadian Common Framework of Science Learning Outcomes K to 12.</p>	

	Nova Scotia	Ontario
Course Name	Chemistry 11, Academic	Chemistry, Grade 11, University Preparation SCH3U
Date of Curriculum	2003	2000
Hours of Instruction	110	110
Additional Course Information	<i>Prerequisites:</i> Science 10 and Mathematics 10. Students must achieve an average mark of 50 % to pass.	<i>Prerequisite:</i> Science, Grade 10, Academic. Achievement of SCH3U leads to SCH4U
Course Description	Chemistry is a qualitative and quantitative science. Students will be introduced to the quantitative aspect of chemistry by examining stoichiometry. Stoichiometry is the mole to mole relationship in a balanced chemical equation. All matter is held together by chemical bonding. Students explore bonding in detail with consideration for the different forces of attraction involved in matter and how these forces influence their properties. Organic chemistry is the study of molecular compounds of carbon. Students investigate the bonding capacity of carbon, hydrogen, oxygen, nitrogen and the halogens, as well as the potential for these atoms to form covalent compounds. Students explore the wide variety of organic molecules using isomers and polymers as examples.	This course focuses on the concepts and theories that form the basis of modern chemistry. Students will study the behaviours of solids, liquids, gases, and solutions; investigate changes and relationships in chemical systems; and explore how chemistry is used in developing new products and processes that affect our lives and our environment. Emphasis will also be placed on the importance of chemistry in other branches of science.
Strands/Major Concepts	Stoichiometry From Structures to Properties Organic Chemistry	Matter and Chemical Bonding Quantities in Chemical Reactions Solutions and Solubility Gases and Atmospheric Chemistry Hydrocarbons and Energy
Overall Comparison	There is a considerable relationship between the two courses. A major concept in Ontario of Gases and Atmospheric Chemistry is not taught until Chemistry 12 in Nova Scotia. Overall Expectations in Chemistry, Grade 11 (SCH3U) NOT found in the Nova Scotia course: Matter and Chemical Bonding <ul style="list-style-type: none"> ...analyse chemical reactions in terms of the type of reaction and the reactivity of starting materials... Solutions and Solubility <ul style="list-style-type: none"> ...and explain how environmental water quality depends on the concentrations of a variety of dissolved substances. Hydrocarbons and Energy <ul style="list-style-type: none"> ...demonstrate an understanding...of hydrocarbons, especially with respect to the energy changes that occur in their combustion; ...and apply calorimetric techniques to the calculation of energy changes. 	
Additional Comments	Students may take, Advanced Chemistry 11 (011015), a 1-credit course, as an alternative to Chemistry 11, Academic. It takes an investigative approach to studying chemistry. Students develop major concepts in chemistry and demonstrate and apply these concepts in new and novel contexts. The content topics parallel those of Chemistry 11, Academic but are treated in greater depth. The curriculum described in Foundation for the Atlantic Canada Science Curriculum was planned and developed collaboratively by regional committees. The process for developing the common science curriculum for Atlantic Canada involved regional consultation with the stakeholders in the education system in each Atlantic province. The Atlantic Canada science curriculum is consistent with the framework described in the pan-Canadian Common Framework of Science Learning Outcomes K to 12.	

	Nova Scotia	Ontario
Course Name	Chemistry 12, Academic	Chemistry, Grade 12, University Preparation SCH4U
Date of Curriculum	2003.	2000
Hours of Instruction	110	110
Additional Course Information	<i>Prerequisites:</i> Chemistry 11 or Advanced Chemistry 11 and Advanced Mathematics 11. Students are required to write a provincial examination. They must achieve an average mark of 50% to pass. The provincial examination is worth 30% of their total mark.	<i>Prerequisite:</i> Chemistry, Grade 11, University Preparation SCH3U
Course Description	Thermochemistry includes energy changes that occur with physical and chemical processes. Students develop skills involving planning, recording, analysing, and evaluating energy changes. Students research fuels for energy in relevant contexts, consider global energy issues, and generate possible solutions. Many factors affect the rate of chemical reactions. Students describe reactions as dynamic equilibrium systems by criteria, equations, calculations, concentrations and experiments within the context of everyday phenomena. Students identify variables and perform experiments to test equilibrium shifts and reaction rates. Acids and bases have an effect on aqueous systems. Students explore acid-base systems quantitatively and perform experiments with consideration for the safe handling, storage, and disposal of chemicals. Students develop the concepts of electric forces, matter, and energy as they relate to chemical change and explore quantitative relationships in chemical changes. Students investigate the ways in which science and technology advanced in relation to each other.	This course enables students to deepen their understanding of chemistry through the study of organic chemistry, energy changes and rates of reaction, chemical systems and equilibrium, electrochemistry, and atomic and molecular structure. Students will further develop problem-solving and laboratory skills as they investigate chemical processes, at the same time refining their ability to communicate scientific information. Emphasis will be placed on the importance of chemistry in daily life, and on evaluating the impact of chemical technology on the environment.
Strands/Major Concepts	Thermochemistry From Solutions to Kinetics to Equilibrium Acids and Bases Electrochemistry	Organic Chemistry Energy Changes and Rates of Reaction Chemical Systems and Equilibrium Electrochemistry Structure and Properties
Overall Comparison	There is a strong relationship between the two courses. A major concept in Ontario of Organic Chemistry is taught in Chemistry 11, Academic in Nova Scotia. Another major concept in Ontario of Structure and Properties is taught, in part, in Chemistry 11 in Nova Scotia. Overall Expectations in Chemistry, Grade 12 (SCH4U) NOT found in the Nova Scotia courses: Structure and Properties <ul style="list-style-type: none"> • Demonstrate an understanding of quantum mechanical theory, and... • Describe...technologies that have advanced the knowledge of atomic and molecular theory Electrochemistry <ul style="list-style-type: none"> • ...explain the importance of electrochemical technology to the production and protection of metals; and assess environmental and safety issues associated with these technologies. 	
Additional Comments	Students may take, Advanced Chemistry 12 (011017), a 1-credit course, as an alternative to Chemistry 12, Academic. It takes an investigative approach to studying chemistry. Students develop major concepts in chemistry and demonstrate and apply these concepts in new and novel contexts. The content topics parallel those of Chemistry 12, Academic but are treated in greater depth. Students must complete a significant independent research project that relies on experimental investigations. The curriculum described in Foundation for the Atlantic Canada Science Curriculum was planned and developed collaboratively by regional committees. The process for developing the common science curriculum for Atlantic Canada involved regional consultation with the stakeholders in the education system in each Atlantic province. The Atlantic Canada science curriculum is consistent with the framework described in the pan-Canadian Common Framework of Science Learning Outcomes K to 12.	

	Prince Edward Island	Ontario
Course Name	Chemistry (CHM621A)	Chemistry, Grade 12, University Preparation SCH4U
Date of Curriculum	2002	2000
Hours of Instruction	110	110
Additional Course Information	<i>No prerequisite:</i> However, students are expected to complete Chemistry (CHM521A) before enrolling in Chemistry (CHM621A). Chemistry (CHM621A) can be used as one of two compulsory science credits required to meet high school graduation requirements. Students must achieve an average mark of 50% to pass the course.	<i>Prerequisite:</i> Chemistry, Grade 11, University Preparation SCH3U
Course Description	This course follows Chemistry 521A and includes a review and further development of the principles included there. The themes of systems, energy, and change are central in Chemistry 12. Equilibrium and matter are subordinate themes that are also addressed. Chemistry 12 consists of three units of study and an optional unit: The diversity of matter: An introduction to organic chemistry; thermochemical changes; equilibrium, acids, and bases in chemical changes; electrochemical changes (optional, if time permits).	This course enables students to deepen their understanding of chemistry through the study of organic chemistry, energy changes and rates of reaction, chemical systems and equilibrium, electrochemistry, and atomic and molecular structure. Students will further develop problem-solving and laboratory skills as they investigate chemical processes, at the same time refining their ability to communicate scientific information. Emphasis will be placed on the importance of chemistry in daily life, and on evaluating the impact of chemical technology on the environment.
Strands/Major Concepts	Thermochemistry From Solutions to Kinetics to Equilibrium Acids and Bases Electrochemistry	Organic Chemistry Energy Changes and Rates of Reaction Chemical Systems and Equilibrium Electrochemistry Structure and Properties
Overall Comparison	<p>There is a considerable relationship between the two courses. A major concept in Ontario of Organic Chemistry is taught in Chemistry (CHM521A) in Prince Edward Island. Another major concept in Ontario of Structure and Properties is taught, in part, in Chemistry (CHM521A) in Prince Edward Island. A major concept in Ontario of Electrochemistry is optional, taught if time permits in Prince Edward Island.</p> <p>Overall Expectations in Chemistry, Grade 12 (SCH4U) NOT found in the Prince Edward Island courses: Structure and Properties</p> <ul style="list-style-type: none"> • Demonstrate an understanding of quantum mechanical theory, and... • Describe...technologies that have advanced the knowledge of atomic and molecular theory 	
Additional Comments	<p>CHEM-Study (CHM 611A), a one credit academic course, is the follow-up to CHM511A. Again there is emphasis on discovery learning by means of experimentation. Topics covered include atomic structure, chemical bonding, reaction kinetics, acids and bases, oxidation and reduction, and radioactivity.</p> <p>The curriculum described in Foundation for the Atlantic Canada Science Curriculum was planned and developed collaboratively by regional committees. The process for developing the common science curriculum for Atlantic Canada involved regional consultation with the stakeholders in the education system in each Atlantic province. The Atlantic Canada science curriculum is consistent with the framework described in the pan-Canadian Common Framework of Science Learning Outcomes K to 12.</p>	

	New Brunswick	Ontario
Course Name	Biology 112 (1025132)	Biology, Grade 11, University Preparation SBI3U
Date of Curriculum	2002	2000
Hours of Instruction	90	110
Additional Course Information	<i>No Prerequisite:</i> However, students are expected to take Science 10 before Biology 112. Biology 112 is the first of two biology courses designed for students who may go to postsecondary institutions.	<i>Prerequisite:</i> Science, Grade 10, Academic Achievement of SBI3U leads to SBI4U.
Course Description	This course emphasizes the nature of life. Lecture and demonstration methods are used together with a laboratory program. Study includes biodiversity, cellular matter and energy flow, energy and matter exchange by humans and other organisms, and energy and matter exchange in ecosystems.	Course focuses on the processes involved in biological systems. Students will learn concepts and theories as they conduct investigations in the areas of cellular biology, microbiology, animal anatomy and physiology, plant structure and physiology, and environmental science. Emphasis on practical application of concepts, and on skills needed for further study in various branches of life sciences and related fields.
Strands/Major Concepts		Cellular Functions Genetic Continuity Internal Systems and Regulation Diversity of Living Things Plants: Anatomy and Growth
Overall Comparison	Specific outcomes for this course were not available for this comparison.	
Additional Comments	The curriculum described in Foundation for the Atlantic Canada Science Curriculum was planned and developed collaboratively by regional committees. The process for developing the common science curriculum for Atlantic Canada involved regional consultation with the stakeholders in the education system in each Atlantic province. The Atlantic Canada science curriculum is consistent with the framework described in the pan-Canadian Common Framework of Science Learning Outcomes K to 12.	

	New Brunswick	Ontario
Course Name	Biology 120 (1025140)	Biology, Grade 12, University Preparation SBI4U
Date of Curriculum	2003	2000
Hours of Instruction	90	110
Additional Course Information	<i>No Prerequisite:</i> However, students are expected to take Biology 112 Chemistry 112 before Biology 120. Biology 120 is the second of two biology courses designed for students who may go to a postsecondary institution.	<i>Prerequisite:</i> Biology, Grade 11, University Preparation SBI3U
Course Description	Laboratory and/or demonstration periods are an integral part of the course. Major topics include systems regulating change in human and other organisms, reproduction and development, chromosomes, genes, DNA, and change in populations, communities, and species.	This course provides students with the opportunity for in-depth study of the concepts and processes associated with biological systems. Students will study theory and conduct investigations in the area of metabolic processes, molecular genetics, homeostasis, evolution and population dynamics. Emphasis will be placed on achievement of the detailed knowledge and refined skills needed for further study in various branches of the life sciences and related fields.
Strands/Major Concepts	Information not available on the website.	<ul style="list-style-type: none"> - Metabolic Processes - Molecular Genetics - Homeostasis - Evolution - Population Dynamics
Overall Comparison	Specific outcomes for this course were not available for this comparison.	
Additional Comments	The curriculum described in Foundation for the Atlantic Canada Science Curriculum was planned and developed collaboratively by regional committees. The process for developing the common science curriculum for Atlantic Canada involved regional consultation with the stakeholders in the education system in each Atlantic province. The Atlantic Canada science curriculum is consistent with the framework described in the pan-Canadian Common Framework of Science Learning Outcomes K to 12. One credit reflects a minimum of 55 hours of instruction.	

	Newfoundland & Labrador	Ontario
Course Name	Biology 2201	Biology, Grade 11, University Preparation SBI3U
Date of Curriculum	2002	2000
Hours of Instruction	110	110
Additional Course Information	<i>Prerequisite:</i> Science 1206. Students must achieve an average mark of 50% to pass the course. Students are expected to complete Biology 2201 before enrolling in Biology 3201.	<i>Prerequisite:</i> Science, Grade 10, Academic Achievement of SBI3U leads to SBI4U.
Course Description	This course explores the unity and diversity of living things. The underlying concepts provide an awareness of the tremendous impact of biology and technology upon society. Cells are introduced as the basic units of life. Students investigate the role of cell structures in matter exchange and energy flow and recognize the impact of technology on current knowledge of cell structure and processes. The vast diversity of living things necessitates an organized system for their classification and study. Students investigate an overview of life's diversity within the biosphere. All living things struggle to maintain an internal balance in response to the constant pressure of external of external phenomena. Students investigate the role of various systems and influence of behaviour in the regulation of homeostasis. Ecosystems involve complex interactions between biotic and abiotic factors. Students investigate the role of these factors on population dynamics and the flow of energy within ecological systems.	Course focuses on the processes involved in biological systems. Students will learn concepts and theories as they conduct investigations in the areas of cellular biology, microbiology, animal anatomy and physiology, plant structure and physiology, and environmental science. Emphasis on practical application of concepts, and on skills needed for further study in various branches of life sciences and related fields.
Strands/Major Concepts	Matter and Energy for Life Biodiversity Maintaining dynamic Equilibrium I Interactions among Living Things	Cellular Functions Genetic Continuity Internal Systems and Regulation Diversity of Living Things Plants: Anatomy and Growth
Overall Comparison	There is a limited relationship between the two courses. Two major concepts found in the Ontario course of Genetic Continuity and Plant: Anatomy, Growth, and Functions are not taught in Grade 11 Biology. Genetic Continuity is taught in Grade 12 Biology in Newfoundland and Labrador. Overall Expectations in Biology, Grade 11 (SBI3U) NOT found in the Newfoundland & Labrador course: Cellular Functions <ul style="list-style-type: none"> Demonstrate an understanding of ... cell functions and their technological and environmental applications. 	
Additional Comments	The curriculum described in Foundation for the Atlantic Canada Science Curriculum was planned and developed collaboratively by regional committees. The process for developing the common science curriculum for Atlantic Canada involved regional consultation with the stakeholders in the education system in each Atlantic province. The Atlantic Canada science curriculum is consistent with the framework described in the pan-Canadian Common Framework of Science Learning Outcomes K to 12.	

	Newfoundland & Labrador	Ontario
Course Name	Biology 3201	Biology, Grade 12, University Preparation SBI4U
Date of Curriculum	2004	2000
Hours of Instruction	110	110
Additional Course Information	<p><i>Prerequisite:</i> Science 1206.</p> <p>Students must achieve an average mark of 50% to pass the course.</p> <p>Students are expected to complete Biology 2201 before enrolling in Biology 3201.</p> <p>Students must take a provincial examination. The final mark is an average of the mark submitted by the school and the provincial examination mark.</p>	<p><i>Prerequisite:</i> Biology, Grade 11, University Preparation SBI3U</p>
Course Description	<p>This course explores life from a molecular perspective. The underlying concepts demonstrate the molecular basis of regulation and evolutionary change. And foster an awareness of the tremendous impact of biology and technology on society. All living organisms struggle to maintain an internal balance in response to the constant pressure of external phenomena. Students investigate the role of chemical and electrochemical systems in the regulation of homeostasis and explore the impact of disease, medical technology, and drugs.</p> <p>Reproduction is essential for the continuity of the species. Students investigate reproductive processes at the cellular and multicellular levels and explore the influence of reproductive technologies. Much of the structure and function of organisms is determined by their genetic material. Students investigate the structure and replication of DNA, its transcription to RNA and translation into proteins. Students explore basic genetics, the effects of mutation, genetic disease, and genetic engineering. Science attempts to provide an explanation for the origin and evolution of life on earth. Students investigate evidence that supports the theory of evolution and analyse evolutionary mechanisms.</p>	<p>This course provides students with the opportunity for in-depth study of the concepts and processes associated with biological systems. Students will study theory and conduct investigations in the area of metabolic processes, molecular genetics, homeostasis, evolution and population dynamics. Emphasis will be placed on achievement of the detailed knowledge and refined skills needed for further study in various branches of the life sciences and related fields.</p>
Strands/Major Concepts	<p>Maintaining Dynamic Equilibrium II</p> <p>Reproduction and Development</p> <p>Genetic Continuity</p> <p>Evolution, change and Diversity</p>	<p>Metabolic Processes</p> <p>Molecular Genetics</p> <p>Homeostasis</p> <p>Evolution</p> <p>Population Dynamics</p>
Overall Comparison	<p>There is a considerable relationship between the two courses.</p> <p>A major concept in Ontario of Evolution is not taught in Newfoundland & Labrador. A major concept in Ontario of Population Dynamics is taught in Biology 2201 in Newfoundland & Labrador.</p> <p>Overall Expectations in Biology, Grade 12 (SBI4U) NOT found in the Newfoundland & Labrador course:</p> <p>Metabolic Processes</p> <ul style="list-style-type: none"> Conduct laboratory investigations into the transformation of energy in the cell, including photosynthesis and respiration... 	
Additional Comments	<p>Biology 4221 is an Advanced Placement (AP) course open to students who have successfully completed Biology 3201, the highest provincially prescribed course in Biology.</p> <p>The curriculum described in Foundation for the Atlantic Canada Science Curriculum was planned and developed collaboratively by regional committees. The process for developing the common science curriculum for Atlantic Canada involved regional consultation with the stakeholders in the education system in each Atlantic province.</p> <p>The Atlantic Canada science curriculum is consistent with the framework described in the pan-Canadian Common Framework of Science Learning Outcomes K to 12. One credit reflects a minimum of 55 hours of instruction.</p>	

	Nova Scotia	Ontario
Course Name	Biology 11, Academic	Biology, Grade 11, University Preparation SBI3U
Date of Curriculum	2002	2000
Hours of Instruction	110	110
Additional Course Information	<i>Prerequisites:</i> Science 10 Students must achieve an average mark of 50% to pass.	<i>Prerequisite:</i> Science, Grade 10, Academic Achievement of SBI3U leads to SBI4U.
Course Description	This course emphasizes the science themes: change, diversity, energy, equilibrium, matter, and systems. Students develop understanding of fundamental science concepts and principles and refine their understanding of the nature of science and technology and develop awareness of the impact of biology and associated technology on society and the limitations of science and technology in solving societal problems. Cells are introduced as the basic units of life. Students investigate the role of cell structures in matter exchange and energy flow and the impact of technology on understanding of cell structure and processes. The vast diversity of living things necessitates an organized system for their classification and study. Students investigate an overview of life's unity and diversity within the biosphere. All living things struggle to maintain an internal balance in response to the constant pressure of external phenomena. Students investigate the role of various systems and the influence of behaviour in the regulation of homeostasis. Ecosystems involve complex interactions between biotic and abiotic factors. Students investigate the role of these factors on population dynamics and the flow of energy within ecological systems.	Course focuses on the processes involved in biological systems. Students will learn concepts and theories as they conduct investigations in the areas of cellular biology, microbiology, animal anatomy and physiology, plant structure and physiology, and environmental science. Emphasis on practical application of concepts, and on skills needed for further study in various branches of life sciences and related fields.
Strands/Major Concepts	Matter and Energy for Life Biodiversity Maintaining Dynamic Equilibrium I Interactions among Living Things	Cellular Functions Genetic Continuity Internal Systems and Regulation Diversity of Living Things Plants: Anatomy and Growth
Overall Comparison	There is a limited relationship between the two courses. Two major concepts found in the Ontario course of Genetic Continuity and Plant: Anatomy, Growth, and Functions are not taught in Grade 11 Biology in Nova Scotia. Genetic Continuity is taught in Grade 12 Biology in Nova Scotia. Overall Expectations in Biology, Grade 11 (SBI3U) NOT found in the Nova Scotia course: Cellular Functions <ul style="list-style-type: none"> Demonstrate an understanding of ... cell functions and their technological and environmental applications. 	
Additional Comments	Students may take, Advanced Biology 11 (011155), a 1-credit course, as an alternative to Biology 11, Academic. It takes an investigative approach to studying biology. Students develop major concepts in biology and demonstrate and apply these concepts in new and novel contexts. The content topics parallel those of Biology 11, Academic but are treated in greater depth. The curriculum described in Foundation for the Atlantic Canada Science Curriculum was planned and developed collaboratively by regional committees. The process for developing the common science curriculum for Atlantic Canada involved regional consultation with the stakeholders in the education system in each Atlantic province. The Atlantic Canada science curriculum is consistent with the framework described in the pan-Canadian Common Framework of Science Learning Outcomes K to 12.	

	Nova Scotia	Ontario
Course Name	Biology 12, Academic	Biology, Grade 12, University Preparation SBI4U
Date of Curriculum	2003	2000
Hours of Instruction	110	110
Additional Course Information	<i>Prerequisites:</i> Biology 11, Academic or Advanced Biology 11. Students are required to write a provincial examination. They must achieve an average mark of 50% to pass. The provincial examination is worth 30% of their total mark.	<i>Prerequisite:</i> Biology, Grade 11, University Preparation SBI3U
Course Description	All living organisms struggle to maintain an internal balance in response to the constant pressure of external phenomena. Students investigate the chemical and electrochemical systems in the regulation of homeostasis and explore the impact of disease, medical technology, and drugs. Reproduction is essential for the continuity of a species. Students investigate the reproductive processes at the cellular and multicellular levels and explore the influence of reproductive technologies. Much of the structure and function of organisms is determined by their genetic material. Students investigate the structure and replication of DNA, its transcription to RNA, and its translation into proteins. Students explore basic genetics, the effects of mutation, genetic disease, and genetic engineering. Science attempts to provide an explanation for the origin and evolution of life on earth. Students investigate the evidence that supports the theory of evolution and analyse evolutionary mechanisms.	This course provides students with the opportunity for in-depth study of the concepts and processes associated with biological systems. Students will study theory and conduct investigations in the area of metabolic processes, molecular genetics, homeostasis, evolution and population dynamics. Emphasis will be placed on achievement of the detailed knowledge and refined skills needed for further study in various branches of the life sciences and related fields.
Strands/Major Concepts		Metabolic Processes Molecular Genetics Homeostasis Evolution Population Dynamics
Overall Comparison	Specific outcomes for this course were not available for this comparison.	
Additional Comments	Students may take, Advanced Biology 12 (011011), a 1-credit course, as an alternative to Biology 12, Academic. It takes an investigative approach to studying biology. Students develop major concepts in biology and demonstrate and apply these concepts in new and novel contexts. The content topics parallel those of Biology 12, Academic but are treated in greater depth. The curriculum described in Foundation for the Atlantic Canada Science Curriculum was planned and developed collaboratively by regional committees. The process for developing the common science curriculum for Atlantic Canada involved regional consultation with the stakeholders in the education system in each Atlantic province. The Atlantic Canada science curriculum is consistent with the framework described in the pan-Canadian Common Framework of Science Learning Outcomes K to 12.	

	Prince Edward Island	Ontario
Course Name	Biology 521A	Biology, Grade 11, University Preparation SBI3U
Date of Curriculum	2002	2000
Hours of Instruction	110	110
Additional Course Information	<i>No prerequisite:</i> However, students are expected to complete Science 431A (SCI431A) before enrolling in Biology 521A (BIO521A). Biology 521A (BIO521A) can be used as one of two compulsory science credits required to meet high school graduation requirements. Students must achieve an average mark of 50% to pass the course.	<i>Prerequisite:</i> Science, Grade 10, Academic Achievement of SBI3U leads to SBI4U.
Course Description	This course emphasizes the unifying concepts of change, diversity, energy, equilibrium, matter, systems and models as they relate to biology and enables students to gain awareness of the tremendous impact of biology and technology upon society. Students explore the cell as a basic unit of life, explore organism diversity in the biosphere and unity among living things by investigating the development of organizational systems. Students trace energy flow as it moves from the environment through photosynthetic and cellular respiration systems and explore the associated cycling of matter in the biosphere. Students examine organism systems responsible for exchanging energy and matter with the environment and interacting with pathogenic organisms. The human organism is used as a principle model. Students examine characteristics of representative ecosystems, and the interactions of organisms which mediate the flow and energy and matter through ecosystems.	Course focuses on the processes involved in biological systems. Students will learn concepts and theories as they conduct investigations in the areas of cellular biology, microbiology, animal anatomy and physiology, plant structure and physiology, and environmental science. Emphasis on practical application of concepts, and on skills needed for further study in various branches of life sciences and related fields.
Strands/Major Concepts	Biodiversity Cellular Matter and Energy Flow Energy and Matter Exchange by Human and other Organisms Energy and Matter Exchange in Ecosystems	Cellular Functions Genetic Continuity Internal Systems and Regulation Diversity of Living Things Plants: Anatomy and Growth
Overall Comparison	There is a limited relationship between the two courses. A major concept in Ontario of Plants: Anatomy, Growth, and Functions is not taught in the Prince Edward Island course. A major concept in Ontario of Genetic Continuity is not taught until Biology 621A in Prince Edward Island. Overall Expectations in Biology, Grade 11 (SBI3U) NOT found in the Prince Edward Island course: Cellular Functions <ul style="list-style-type: none"> Investigate the fundamental molecular principles and mechanisms that govern energy-transforming activities in all living matter, ...microbial; Internal Systems and Regulation <ul style="list-style-type: none"> Describe and explain the major processes, mechanisms, and systems, including respiratory, circulatory and digestive systems, by which plants...maintain their internal environment; Illustrate and explain, through laboratory investigations, the contribution of various types of systems and processes to internal regulation in plant...systems; 	
Additional Comments	The curriculum described in Foundation for the Atlantic Canada Science Curriculum was planned and developed collaboratively by regional committees. The process for developing the common science curriculum for Atlantic Canada involved regional consultation with the stakeholders in the education system in each Atlantic province. The Atlantic Canada science curriculum is consistent with the framework described in the pan-Canadian Common Framework of Science Learning Outcomes K to 12.	

	Prince Edward Island	Ontario
Course Name	Biology 621A	Biology, Grade 12, University Preparation SBI4U
Date of Curriculum	2003	2000
Hours of Instruction	110	110
Additional Course Information	<i>No prerequisite:</i> However, students are expected to complete Biology 521A (BIO 521A) before enrolling in Biology 621A (BIO 621A). Biology (BIO 621A) can be used as one of two compulsory science credits required to meet high school graduation requirements. Students must achieve an average mark of 50% to pass the course.	<i>Prerequisite:</i> Biology, Grade 11, University Preparation SBI3U
Course Description	This course provides students with the opportunity to develop the central ideas and principles that unify biological concepts including: biodiversity, energy flow and cellular matter, energy and matter exchange by humans and other organisms, and the energy-matter exchange in representative ecosystems. Students are introduced to cells as specialized biochemical units which process various organic compounds. The human organism is used as the principle model for detailed examination of chemical and electrical systems that regulate change to maintain equilibria; and for detailed examination of how genetic hormonal and environmental factors cause change during the reproduction and development of organisms. Students explore the responsibility of chromosomes, genes, and DNA for diversity and change in living systems over a wide range of organizational levels from molecular to organism. Students explore equilibrium and change in population gene pools, and the consequences of change. Students evaluate growth patterns, models, and predictions based upon quantitative data and an introduction to chaos.	This course provides students with the opportunity for in-depth study of the concepts and processes associated with biological systems. Students will study theory and conduct investigations in the area of metabolic processes, molecular genetics, homeostasis, evolution and population dynamics. Emphasis will be placed on achievement of the detailed knowledge and refined skills needed for further study in various branches of the life sciences and related fields.
Strands/Major Concepts	Systems Regulating Change in Humans and other Organisms Reproduction and Development Chromosomes, Genes and DNA Changes in Populations, Communities and Species	Metabolic Processes Molecular Genetics Homeostasis Evolution Population Dynamics
Overall Comparison	There is a considerable relationship between the two courses. A major concept in Ontario of Metabolic Processes is not taught in Biology 621A (BIO621A) in the Prince Edward Island course. Overall expectations in Ontario Biology, Grade 12, University Preparation (SBI4U) not found in the Prince Edward Island course: Evolution <ul style="list-style-type: none"> • evaluate the scientific evidence that supports the theory of evolution; • analyse how the science of evolution can be related to current areas of biological study, and how technological development has extended or modified knowledge in the field of evolution. 	
Additional Comments	The curriculum described in Foundation for the Atlantic Canada Science Curriculum was planned and developed collaboratively by regional committees. The process for developing the common science curriculum for Atlantic Canada involved regional consultation with the stakeholders in the education system in each Atlantic province. The Atlantic Canada science curriculum is consistent with the framework described in the pan-Canadian Common Framework of Science Learning Outcomes K to 12.	

Credit Equivalency Resource Package

Course Comparisons British Columbia

**English
Math
Science**



reach every student



Introduction

Organizing Framework

Curriculum documents, Integrated Resource Packages (IRPs) contain Prescribed Learning Outcomes, Suggested Instructional Strategies, Suggested Assessment Strategies, and Recommended Learning Resources.

The prescribed learning outcomes set the learning standards for the provincial K–12 education system and form the prescribed curriculum for British Columbia. They are statements of what students are expected to know and do at the end of an indicated grade or course.

Assessment

Prescribed learning outcomes, expressed in measurable terms, provide the basis for the development of learning activities, and assessment and evaluation strategies. Schools have the responsibility to ensure that all prescribed learning outcomes in each IRP are met. It is expected that student achievement will vary in relation to the prescribed learning outcomes. Evaluation, reporting, and student placement with respect to these outcomes are dependent on the professional judgment and experience of teachers.

The British Columbia Performance Standards describe and illustrate four levels of student performance in terms of prescribed learning outcomes relevant to the key areas. The standards focus exclusively on performance assessment. In performance assessment, students are asked to apply the skills and concepts they have learned to complete complex, realistic tasks. This type of assessment supports a criterion-referenced approach to evaluation and enables teachers, students, and parents to compare student performance to provincial standards. Each set of assessment strategies begins with a context statement that suggests an overall approach for the assessment of content, processes, and procedures. Teachers use a variety of strategies to assess students' levels of understanding in relation to outcomes. Possible strategies include performance assessment, oral and written reports, and student self-assessment.

Criterion-referenced letter grades in Grades 4 to 12 indicate students' levels of performance as they relate to the prescribed learning outcomes set out in IRPs for each subject or course and the learning outcomes for locally-developed courses. Letter grades must be on report cards in Grades 8 to 12. Teacher evaluation is based on six levels of achievement based on a letter grade: **A** through **C**. **C** indicates the student has met the criteria. Percentages associated with the letter grades are: **A: 86-100%**, **B: 73-85%**, **C+: 67-72%**, **C: 60- 66%**, **C-: 50 -59%**, **F: 0-49%**. The successful completion of a course requires a **minimum of a C-**. A successfully completed course earns a student 4 credits, e.g., Language Arts 11 (equal to one credit in Ontario).

Formal reports for each student in **Grades 10, 11, and 12** must:

- provide Ministry-approved letter grades as set out in the Provincial Letter Grades Order to indicate the student's level of performance as it relates to the learning outcomes for each course or subject and grade
- include percentages for all courses numbered 10, 11, and 12

The following rubric may be useful in guiding decisions for granting a credit:

Very Limited Relationship - many overall expectations missing, student may be very challenged in subsequent courses that build from this course.

Considerable Relationship - several overall expectations are not met, but a generally thorough coverage of expectations is evident in course or in its prerequisite courses, ...

Strong Relationship - all or almost all overall expectations are met, thorough coverage of expectations is evident in course or in its prerequisite courses, ...

Courses Compared

British Columbia	Ontario
English	
English Language Arts 11 (EN 11)	English, Grade 11, College Preparation ENG3C
English Language Arts 11 (EN 11)	English, Grade 11, University Preparation ENG3U
Communications 11 (COM 11)	English, Grade 11, Workplace Preparation ENG3E
English 12 (EN 12)	English, Grade 12, College Preparation ENG4C
English 12 (EN 12)	English, Grade 12, University Preparation ENG4U
Technical and Professional Communications (TPC 12)	English, Grade 12, University Preparation ENG4U
Communications 12 (COM 12)	English, Grade 12, Workplace Preparation ENG4E
English Literature 12 (LIT 12)	Studies in Literature, Grade 12, University Preparation ETS4U
Math	
Essentials of Mathematics 11 (EMA 11)	Mathematics for Work and Everyday Life, Grade 11, Workplace Preparation MEL3E
Principles of Mathematics 11 (MA 11)	Functions and Applications, Grade 11, University/College Preparation MCF3M
Principles of Mathematics 11 (MA 11)	Functions, Grade 11, University Preparation MCR3U
Applications of Mathematics 11 (AMA 11)	Foundations of College Mathematics, Grade 11, College Preparation MBF3C
Essentials of Mathematics 12 (EMA 12)	Mathematics for Work and Everyday Life, Grade 12, Workplace Preparation MEL4E
Applications of Mathematics 12 (AMA 12)	Mathematics for College Technology, Grade 12, College Preparation MCT4C
Principles of Mathematics 12 (MA 12)	Advanced Functions, Grade 12, University Preparation MHF4U
Science	
Biology 11 (BI 11)	Biology, Grade 11, University Preparation SBI3U
Biology 11 (BI 11)	Biology, Grade 11, College Preparation SBI3C
Chemistry 11 (CH 11)	Chemistry, Grade 11, University Preparation SCH3U
Chemistry 11 (CH 11)	Chemistry, Grade 12, College Preparation SCH4C
Science and Technology 11 (SCT11)	Science, Grade 11, University/College Preparation SNC3M
Science and Technology 11 (SCT11)	Science, Grade 12 University/College Preparation SNC4M
Physics 11 (PH 11)	Physics, Grade 11, University Preparation SPH3U
Introduction to Forests 11 (FOR 11)	Science, Grade 11 Workplace Preparation, SNC3E
Geology 12 (GEOL 12)	Earth and Space Science, Grade 12, University Preparation SES4U
Applications of Physics 11 (PHA 11)	Physics, Grade 12, College Preparation SPH4C
Chemistry 12 (CH 12)	Chemistry, Grade 12, University Preparation SCH4U
Earth Science 11 (ESC 11)	Earth and Space Science, Grade 12, University Preparation SES4U
Physics 12 (PH 12)	Physics, Grade 12, University Preparation SPH4U
Biology 12 (BI 12)	Biology, Grade 12, University Preparation SBI4U
Introduction to Forests 12 (FOR 12)	Science, Grade 12, Workplace Preparation SNC4E

	British Columbia	Ontario
Course Name	English Language Arts 11 (EN 11)	English, Grade 11, College Preparation ENG3C
Date of Curriculum	1996	2007 (draft)
Hours of Instruction	120	110
Additional Course Information	An English language arts course is required in Grade 10, 11 and 12 for graduation.	ENG2P is a prerequisite for ENG3C.
Course Description	The English Language Arts 11 ... curriculum provides students with the opportunity to study literary and informational (including technical) communications and the mass media and thereby experience the power of language. Students are presented with a window into the past, a complex portrayal of the present, and questions about the future. They also come to understand language as a human system of communication—dynamic and evolving, but also systematic and governed by rules.	This course emphasizes the development of literacy, critical thinking, and communication skills. Students will study the content, form, and style of informational texts and literary works from Canada and other countries; write reports, correspondence, and persuasive essays; and analyse media forms, audiences, and media industry practices. An important focus will be on establishing appropriate voice and using business and technical language with precision and clarity.
Strands/Major Concepts	<p>Comprehend and Respond</p> <ul style="list-style-type: none"> - Strategies and Skills - Comprehension - Engagement and Personal Response - Critical Analysis <p>Communicate Ideas and Information</p> <ul style="list-style-type: none"> - Knowledge of Language - Composing and Creating - Improving Communications - Presenting and Valuing <p>Self and Society</p> <ul style="list-style-type: none"> - Personal Awareness - Working Together - Building Community 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening to Understand - Speaking to Communicate - Reflecting on Skills and Strategies <p>Reading</p> <ul style="list-style-type: none"> - Reading for Meaning - Understanding Form and Style - Reading with Fluency - Reflecting on Skills and Strategies <p>Writing</p> <ul style="list-style-type: none"> - Developing and Organizing Content - Using Knowledge of Form and Style - Applying Knowledge of Conventions - Reflecting on Skills and Strategies <p>Media Literacy</p> <ul style="list-style-type: none"> - Understanding Media Texts - Understanding Forms and Conventions - Creating Media Texts - Reflecting on Skills and Strategies
Overall Comparison	<p>There is a strong relationship between the two courses. Most of the concepts in ENG3C are addressed in EN 11, including outcomes related to the study of literary, informational and media texts. ENG3C has a greater focus on reflecting on personal skills and strategies in all strand areas. This is addressed to a lesser degree in EN 11.</p> <p>The Ontario course also includes expectations relating to creating media texts. While students study and use media in the British Columbia course, there is no explicit reference to creating media texts.</p>	
Additional Comments	EN 11 is also comparable to ENG3U.	

	British Columbia	Ontario
Course Name	English Language Arts 11 (EN 11)	English, Grade 11, University Preparation ENG3U
Date of Curriculum	1996	2007 (draft)
Hours of Instruction	120	110
Additional Course Information	An English language arts course is required in Grade 10, 11 and 12 for graduation.	ENG2D is a prerequisite for ENG3U.
Course Description	The English Language Arts 11 ... curriculum provides students with the opportunity to study literary and informational (including technical) communications and the mass media and thereby experience the power of language. Students are presented with a window into the past, a complex portrayal of the present, and questions about the future. They also come to understand language as a human system of communication—dynamic and evolving, but also systematic and governed by rules.	This course emphasizes the development of literacy, critical thinking, and communication skills. Students will analyse challenging texts from various periods; conduct research and analyse the information gathered; write persuasive and literary essays; and analyse the relationship among media forms, audiences, and media industry practices. An important focus will be on understanding the development of the English language.
Strands/Major Concepts	<p>Comprehend and Respond</p> <ul style="list-style-type: none"> - Strategies and Skills - Comprehension - Engagement and Personal Response - Critical Analysis <p>Communicate Ideas and Information</p> <ul style="list-style-type: none"> - Knowledge of Language - Composing and Creating - Improving Communications - Presenting and Valuing <p>Self and Society</p> <ul style="list-style-type: none"> - Personal Awareness - Working Together - Building Community 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening to Understand - Speaking to Communicate - Reflecting on Skills and Strategies <p>Reading</p> <ul style="list-style-type: none"> - Reading for Meaning - Understanding Form and Style - Reading with Fluency - Reflecting on Skills and Strategies <p>Writing</p> <ul style="list-style-type: none"> - Developing and Organizing Content - Using Knowledge of Form and Style - Applying Knowledge of Conventions - Reflecting on Skills and Strategies <p>Media Literacy</p> <ul style="list-style-type: none"> - Understanding Media Texts - Understanding Forms and Conventions - Creating Media Texts - Reflecting on Skills and Strategies
Overall Comparison	<p>There is a strong relationship between the two courses. Most of the concepts in ENG3U are addressed in EN 11, including outcomes related to the study of literary, informational and media texts. ENG3U has a greater focus on reflecting on personal skills and strategies in all strand areas. This is addressed to a lesser degree in EN 11.</p> <p>The Ontario course includes expectations relating to creating media texts. While students study and use media in the British Columbia course, there is no explicit reference to creating media texts.</p>	
Additional Comments	ENG11 is also comparable to ENG3C.	

	British Columbia	Ontario
Course Name	Communications 11 (COM 11)	English, Grade 11, Workplace Preparation ENG3E
Date of Curriculum	1998	2007 (draft)
Hours of Instruction	120	110
Additional Course Information	An English language arts course is required in Grade 10, 11 and 12 for graduation. Communications 11 is designed for students who do not plan to pursue academic studies beyond Grade 12.	ENG2L or ENG2P are pre-requisites
Course Description	Communications 11 ... is intended to help students develop the language competency fundamental to many opportunities in life, including continued learning, employment, and social interaction. The curriculum provides students with opportunities to study a broad range of informational and literary works and to practice using language in written, oral, and visual forms for a variety of functions. The curriculum places special emphasis on ensuring that students graduate with strong basic language skills.	This course emphasizes the development of literacy, critical thinking, and communication skills. Students will study the content, form, and style of informational texts and literary works; write explanations, letters, and reports; and investigate the connections among media forms, audiences, and media industry practices. An important focus will be on using language clearly, accurately, and effectively in a variety of contexts.
Strands/Major Concepts	<p>Comprehend and Respond</p> <ul style="list-style-type: none"> - Strategies and Skills - Comprehension - Engagement and Personal Response - Critical Analysis <p>Communicate Ideas and Information</p> <ul style="list-style-type: none"> - Knowledge of Language - Composing and Creating - Improving Communications - Presenting and Valuing <p>Self and Society</p> <ul style="list-style-type: none"> - Personal Awareness - Working Together - Building Community 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening to Understand - Speaking to Communicate - Reflecting on Skills and Strategies <p>Reading</p> <ul style="list-style-type: none"> - Reading for Meaning - Understanding Form and Style - Reading with Fluency - Reflecting on Skills and Strategies <p>Writing</p> <ul style="list-style-type: none"> - Developing and Organizing Content - Using Knowledge of Form and Style - Applying Knowledge of Conventions - Reflecting on Skills and Strategies <p>Media Literacy</p> <ul style="list-style-type: none"> - Understanding Media Texts - Understanding Forms and Conventions - Creating Media Texts - Reflecting on Skills and Strategies
Overall Comparison	<p>There is a strong relationship between the two courses. Most of the major concepts in ENG3E are addressed in COM 11, including the study of media literacy, and the focus on the use of workplace communication skills and texts. ENG3C has a greater focus on reflecting on personal skills and strategies in all strand areas. This is not as explicit in COM 11.</p> <p>The Ontario course also includes expectations relating to creating media texts. While students study and use media in the British Columbia course, there is no explicit reference to creating media texts.</p>	

	British Columbia	Ontario
Course Name	English 12 (EN 12)	English, Grade 12, College Preparation ENG4C
Date of Curriculum	1996	2007 (draft)
Hours of Instruction	120	110
Additional Course Information	An English language arts course is required in Grade 10, 11 and 12 for graduation. EN12 prepares students for postsecondary education and a broad range of career options.	ENG3C is a prerequisite for ENG4C.
Course Description	The English Language Arts 12 curriculum provides students with the opportunity to study literary and informational (including technical) communications and the mass media and thereby experience the power of language. Students are presented with a window into the past, a complex portrayal of the present, and questions about the future. They also come to understand language as a human system of communication—dynamic and evolving, but also systematic and governed by rules.	This course emphasizes the development of literacy, critical thinking, and communication skills. Students will analyse information texts and literary works from various time periods, countries, and cultures: write research reports, summaries, and short analytical essays; complete an independent study project; and analyse interactions among media forms, audiences, and media industry practices. An important focus will be on establishing appropriate style and using business and technical language effectively.
Strands/Major Concepts	<p>Comprehend and Respond</p> <ul style="list-style-type: none"> - Strategies and Skills - Comprehension - Engagement and Personal Response - Critical Analysis <p>Communicate Ideas and Information</p> <ul style="list-style-type: none"> - Knowledge of Language - Composing and Creating - Improving Communications - Presenting and Valuing <p>Self and Society</p> <ul style="list-style-type: none"> - Personal Awareness - Working Together - Building Community 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening to Understand - Speaking to Communicate - Reflecting on Skills and Strategies <p>Reading</p> <ul style="list-style-type: none"> - Reading for Meaning - Understanding Form and Style - Reading with Fluency - Reflecting on Skills and Strategies <p>Writing</p> <ul style="list-style-type: none"> - Developing and Organizing Content - Using Knowledge of Form and Style - Applying Knowledge of Conventions - Reflecting on Skills and Strategies <p>Media Literacy</p> <ul style="list-style-type: none"> - Understanding Media Texts - Understanding Forms and Conventions - Creating Media Texts - Reflecting on Skills and Strategies
Assessment/Evaluation	A provincial examination is required for this course. The exam mark is blended with the course final mark; the exam mark is worth 40% of the final.	
Overall Comparison	<p>There is a strong relationship between the two courses. Most of the concepts in ENG4C are addressed in EN 12, including outcomes related to the study of literary and non-literary forms, and media texts, and the extension of learning to situations beyond the classroom.</p> <p>ENG4C has a greater focus on reflecting on personal skills and strategies in all strand areas. This is addressed to a lesser degree in EN 12.</p> <p>The Ontario course also includes expectations relating to creating media texts. While students study and use media in the British Columbia course, there is no explicit reference to creating media texts.</p>	
Additional Comments	If the code QEN 12 is used, it means the student was exempted from the provincial exam. EN 12 is also comparable to ENG4U.	

	British Columbia	Ontario
Course Name	English 12 (EN 12)	English, Grade 12, University Preparation ENG4U
Date of Curriculum	1996	2007 (draft)
Hours of Instruction	120	110
Additional Course Information	An English language arts course is required in Grade 10, 11 and 12 for graduation. EN12 prepares students for postsecondary education and a broad range of career options.	ENG3U is a prerequisite for ENG4U.
Course Description	The English Language Arts 12 curriculum provides students with the opportunity to study literary and informational (including technical) communications and the mass media and thereby experience the power of language. Students are presented with a window into the past, a complex portrayal of the present, and questions about the future. They also come to understand language as a human system of communication—dynamic and evolving, but also systematic and governed by rules.	This course emphasizes consolidation of literacy, critical thinking, and communication skills. Students will analyse a range of challenging texts from various time periods, countries, and cultures, write analytical and argumentative essays and a major paper for an independent literary research project, and apply key concepts to analyse media works. An important focus will be on understanding academic language and using it coherently and confidently in discussion and argument.
Strands/Major Concepts	<p>Comprehend and Respond</p> <ul style="list-style-type: none"> - Strategies and Skills - Comprehension - Engagement and Personal Response - Critical Analysis <p>Communicate Ideas and Information</p> <ul style="list-style-type: none"> - Knowledge of Language - Composing and Creating - Improving Communications - Presenting and Valuing <p>Self and Society</p> <ul style="list-style-type: none"> - Personal Awareness - Working Together - Building Community 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening to Understand - Speaking to Communicate - Reflecting on Skills and Strategies <p>Reading</p> <ul style="list-style-type: none"> - Reading for Meaning - Understanding Form and Style - Reading with Fluency - Reflecting on Skills and Strategies <p>Writing</p> <ul style="list-style-type: none"> - Developing and Organizing Content - Using Knowledge of Form and Style - Applying Knowledge of Conventions - Reflecting on Skills and Strategies <p>Media Literacy</p> <ul style="list-style-type: none"> - Understanding Media Texts - Understanding Forms and Conventions - Creating Media Texts - Reflecting on Skills and Strategies
Assessment/Evaluation	A provincial examination is required for this course. The exam mark is blended with the course final mark; the exam mark is worth 40% of the final.	
Overall Comparison	There is a strong relationship between the two courses. Most of the concepts in ENG4U are addressed in EN 12, including outcomes related to the study of literary and non-literary forms, and media texts, and the extension of learning to situations beyond the classroom. ENG4U has a greater focus on reflecting on personal skills and strategies in all strand areas. This is addressed to a lesser degree in EN 12. The Ontario course also includes expectations relating to creating media texts. While students study and use media in the British Columbia course, there is no explicit reference to creating media texts.	
Additional Comments	If the code QEN 12 is used, it means the student was exempted from the provincial exam. EN 12 is also comparable to ENG4C.	

	British Columbia	Ontario
Course Name	Technical and Professional Communications (TPC 12)	English, Grade 12, University Preparation ENG4U
Date of Curriculum	1996	2007 (draft)
Hours of Instruction	120	110
Additional Course Information	An English language arts course is required in Grade 10, 11 and 12 for graduation. TPC 12 addresses the needs of students who want to pursue immediate career opportunities or further study in professional fields (e.g., medicine, engineering), science/applied science (e.g., health care research), technical and vocational fields (e.g., trade apprenticeships), and business and administrative settings	ENG3U is a prerequisite for ENG4U.
Course Description	The emphasis is on developing students' understanding of the nature of technical and professional communications and of the various contexts in which they are used. Students use collaborative processes similar to those employed in the workplace and address real or simulated communications challenges that are related to technical and professional issues. In learning to respond creatively and effectively to these challenges, students are expected to apply research skills and to analyse and assess technical and professional materials. They are also expected to develop the planning, drafting, and editing skills needed to produce communications products.	This course emphasizes consolidation of literacy, critical thinking, and communication skills. Students will analyse a range of challenging texts from various time periods, countries, and cultures, write analytical and argumentative essays and a major paper for an independent literary research project, and apply key concepts to analyse media works. An important focus will be on understanding academic language and using it coherently and confidently in discussion and argument.
Strands/Major Concepts	<p>Reading, Viewing, and Listening</p> <ul style="list-style-type: none"> - Comprehension - Critical Analysis - Research I - Research II <p>Writing, Representing, and Speaking</p> <ul style="list-style-type: none"> - Products and Presentations I - Products and Presentations II - Planning - Drafting - Revising and Editing <p>Communication and Collaboration</p> <ul style="list-style-type: none"> - Nature of Language - Process and Systems I - Process and Systems II - Working with Others 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening to Understand - Speaking to Communicate - Reflecting on Skills and Strategies <p>Reading</p> <ul style="list-style-type: none"> - Reading for Meaning - Understanding Form and Style - Reading with Fluency - Reflecting on Skills and Strategies <p>Writing</p> <ul style="list-style-type: none"> - Developing and Organizing Content - Using Knowledge of Form and Style - Applying Knowledge of Conventions - Reflecting on Skills and Strategies <p>Media Literacy</p> <ul style="list-style-type: none"> - Understanding Media Texts - Understanding Forms and Conventions - Creating Media Texts - Reflecting on Skills and Strategies
Assessment/Evaluation	There is a provincial examination with the exam mark worth 40% of the final mark.	ENG4U counts as one of the compulsory courses required for graduation.
Overall Comparison	There is a considerable relationship between the two courses. Many of the areas in ENG4U are addressed in TPC12, including reading and writing informational texts, conducting research and presenting findings. TPC12 does not address the study or creation of literary fiction texts, whereas it is an emphasis in ENG4U. The British Columbia course does not emphasize the study and creation of media texts. ENG4U does not emphasize the use of technical and professional communications, including writing and speaking in workplace/professional situations to the degree TPC12 does.	
Additional Comments	If the code QTPC 12 is used, it means the student was exempted from the provincial exam. In Grade 12, either English 12 or Technical and Professional Communications 12 will satisfy provincially prescribed graduation requirements. A student may take both English 12 and Technical and Professional Communications 12. There is also a very limited relationship (i.e., some overlap) between TPC 12 and the Ontario optional English course EBT4O.	

	British Columbia	Ontario
Course Name	Communications 12 (COM 12)	English, Grade 12, Workplace Preparation ENG4E
Date of Curriculum	1998	2007 (draft)
Hours of Instruction	120	110
Additional Course Information	An English language arts course is required in Grade 10, 11 and 12 for graduation. Communications 12 is designed for students who do not plan to pursue academic studies beyond Grade 12.	ENG3E
Course Description	Communications 12 is intended to help students develop the language competency fundamental to many opportunities in life, including continued learning, employment, and social interaction. The curriculum provides students with opportunities to study a broad range of informational and literary works and to practice using language in written, oral, and visual forms for a variety of functions. The curriculum places special emphasis on ensuring that students graduate with strong basic language skills.	This course emphasizes consolidation of literacy, critical thinking, and communication skills. Students will study information texts and literature from various countries and cultures; write summaries, reports, résumés, and short essays; complete an independent research project; and explain the connections among media forms, audiences and media industry practices. An important focus will be on using specialized language related to the workplace accurately and coherently in appropriate contexts.
Strands/Major Concepts	<p>Comprehend and Respond</p> <ul style="list-style-type: none"> - Strategies and Skills - Comprehension - Engagement and Personal Response - Critical Analysis <p>Communicate Ideas and Information</p> <ul style="list-style-type: none"> - Knowledge of Language - Composing and Creating - Improving Communications - Presenting and Valuing <p>Self and Society</p> <ul style="list-style-type: none"> - Personal Awareness - Working Together - Building Community 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening to Understand - Speaking to Communicate - Reflecting on Skills and Strategies <p>Reading</p> <ul style="list-style-type: none"> - Reading for Meaning - Understanding Form and Style - Reading with Fluency - Reflecting on Skills and Strategies <p>Writing</p> <ul style="list-style-type: none"> - Developing and Organizing Content - Using Knowledge of Form and Style - Applying Knowledge of Conventions - Reflecting on Skills and Strategies <p>Media Literacy</p> <ul style="list-style-type: none"> - Understanding Media Texts - Understanding Forms and Conventions - Creating Media Texts - Reflecting on Skills and Strategies
Assessment/Evaluation	A provincial examination is required for this course. The exam mark is blended with the course final mark; the exam mark is worth 40% of the final.	
Overall Comparison	<p>There is a strong relationship between the two courses. Most of the major concepts in ENG4E are addressed in COM 12, including the study of media literacy, and the focus on the use of workplace communication skills and texts. ENG4E has a greater focus on reflecting on personal skills and strategies in all strand areas. This is not as explicit in COM 12.</p> <p>The Ontario course also includes expectations relating to creating media texts. While students study and use media in the British Columbia course, there is no explicit reference to creating media texts.</p>	
Additional Comments	If the code QCOM 12 is used, it means the student was exempted from the provincial exam.	

	British Columbia	Ontario
Course Name	English Literature 12 (LIT 12)	Studies in Literature, Grade 12, University Preparation ETS4U
Date of Curriculum	2003	2007 (draft)
Hours of Instruction	120	110
Additional Course Information	An English language arts course is required in Grade 10, 11 and 12 for graduation. This course is primarily intended for students who wish to go on to study English literature or related humanities at post-secondary.	ENG3U is a prerequisite for ETS4U.
Course Description	The aim of English Literature 12 is to enhance students' literacy through the study of a body of works representative of the literary heritage of English-speaking peoples. English Literature 12 offers senior students opportunities to examine and appreciate this rich heritage... The study of great works of English literature increases students' interpersonal skills, aesthetic appreciation, and critical judgment. In addition, it promotes the development of strong communication skills, intellectual discipline, and the open-mindedness required for the world of work and further learning.	This course is for students with a special interest in literature and literary criticism. The course may focus on themes, genres, time periods, or countries. Students will analyse a range of forms and stylistic elements of literary texts and respond personally, critically, and creatively to them. They will also assess critical interpretations, write analytical essays, and complete an independent study project.
Strands/Major Concepts	Critical and Personal Response to Literature The Literary Tradition of the English Language (Classical to Present) Anglo-Saxon and Medieval Literature Renaissance and 17th Century Literature 18th Century and Romantic Literature Victorian and 20th Century Literature Literary Analysis	Reading and Analysing Literature <ul style="list-style-type: none"> - Understanding Text - Reading Strategies Reading Social and Cultural Contexts <ul style="list-style-type: none"> - Analysing Text - Critical Literacy Exploring Literary Interpretations <ul style="list-style-type: none"> - Elements of Literary Style - Critical Interpretations - Function and Significance
Assessment/Evaluation	As of 2004, a provincial examination is optional for this course. The student, not the school, chooses to write the exam. If the exam is written, it is blended with the course final mark; the exam mark is worth 40% of the final.	ETS4U may count as one of the Group 1 compulsory courses required for graduation.
Overall Comparison	There is a strong relationship between the two courses. Most of the concepts in ETS4U are addressed in LIT 12; the intent of both courses is the reading, analysing and responding to literature. The inclusion of reading strategies and critical literacy is not explicit in the British Columbia course. The expectations of ETS4U allow for literature study of a wider range of themes, time periods, countries, and genres.	
Additional Comments	LIT 12 lists specified readings, and these specific texts are embedded in the outcomes. The course focuses largely on British literature.	

	British Columbia	Ontario
Course Name	Essentials of Mathematics 11 (EMA 11)	Mathematics for Work and Everyday Life, Grade 11, Workplace Preparation MEL3E
Date of Curriculum	2006	2007
Hours of Instruction	120	110
Additional Course Information	Prerequisite: Essentials of Mathematics 10	Prerequisite: Principles of Mathematics, Grade 9, Academic, or Foundations of Mathematics, Grade 9, Applied, or a ministry-approved locally developed Grade 10 mathematics course
Course Description	Students solve problems related to personal and business finance, including income derived in different ways, costs related to financial decisions such as borrowing, travel, and foreign purchases, saving, borrowing, and acquiring a vehicle. Students analyse data found in a variety of formats by means of words, charts, tables, graphs, and formulas. Students take measurements using appropriate tools such as rulers, calipers, and micrometers in both Imperial and SI measurements and convert measurements between the two systems in order to solve a variety of problems. Students represent data effectively and make predictions and inferences based on these representations.	This course enables students to broaden their understanding of mathematics as it is applied in the workplace and daily life. Students will solve problems associated with earning money, paying taxes, and making purchases; apply calculations of simple and compound interest in saving, investing, and borrowing; and calculate the costs of transportation and travel in a variety of situations. Students will consolidate their mathematical skills as they solve problems and communicate their thinking.
Strands/Major Concepts	Income and Debt (Solve Consumer, Investment and Credit Problems) Personal Income Tax Owning a Vehicle Business Planning Relations and Formulas (Linear Relations) Measurement Technology (Use Measuring Devices and Conversions to Solve Problems) Statistics and Probability	Earning and Purchasing Saving, Investing, Borrowing Transportation and Travel
Overall Comparison	There is a strong relationship between the two courses. Both courses focus on earning, purchasing, saving, borrowing, and vehicle costs. Students in BC course do introductory work in linear relations which is not required for Workplace Preparation mathematics courses in Ontario. Overall Expectations MEL3E NOT in the British Columbia course: Transportation and Travel <ul style="list-style-type: none"> • plan and justify a route for a trip by automobile, and solve problems involving the associated costs; • interpret information about different modes of transportation, and solve related problems. 	

	British Columbia	Ontario
Course Name	Principles of Mathematics 11 (MA 11)	Functions and Applications, Grade 11, University/College Preparation MCF3M
Date of Curriculum	2006	2007
Hours of Instruction	120	110
Additional Course Information	Prerequisite: Principles of Mathematics 10	Prerequisite: Principles of Mathematics, Grade 10, Academic or Foundations of Mathematics, Grade 10, Applied
Course Description	Students represent algebraic expressions in multiple ways and use algebraic and graphical models to generalize patterns, make predictions, and solve problems. Students describe and compare everyday phenomena, using either direct or indirect measurement, describe the characteristics of 3-D objects and 2-D shapes, and analyse the relationships among them.	This course introduces basic features of the function by extending students' experiences with quadratic relations. It focuses on quadratic, trigonometric, and exponential functions and their use in modelling real-world situations. Students will represent functions numerically, graphically, and algebraically; simplify expressions; solve equations; and solve problems relating to applications. Students will reason mathematically and communicate their thinking as they solve multi-step problems.
Strands/Major Concepts	Variables and Equations (Linear and Quadratic Equations) Relations and Functions (Quadratic, Polynomial and Rational Functions, Inverses) 3-D Objects and 2-D Shapes (Coordinate Geometry, Deductive Geometry)	Quadratic Functions Exponential Functions Trigonometric Functions
Overall Comparison	There is a very limited relationship between the two courses. Major topics in Trigonometric Functions and Exponential Functions are not taught until Grade 12 in British Columbia. Students from BC have studied 2-D deductive geometry that is not evident to the same depth in the Ontario course. Overall Expectations MCF3M NOT in the British Columbia course: Exponential Functions <ul style="list-style-type: none"> simplify and evaluate numerical expressions involving exponents, and make connections between the numeric, graphical, and algebraic representations of exponential functions; (Note: <i>partial coverage only, students in BC have limited work with exponential functions</i>) identify and represent exponential functions, and solve problems involving exponential functions, including those arising from real-world applications. Trigonometric Functions <ul style="list-style-type: none"> demonstrate an understanding of periodic relationships and the sine function, and make connections between the numeric, graphical, and algebraic representations of sine functions; identify and represent sine functions, and solve problems involving sine functions, including problems arising from real-world applications. 	
Additional Comments	Principles of Mathematics 11 has a very limited relationship to Functions, MCR3U as well.	

	British Columbia	Ontario
Course Name	Principles of Mathematics 11 (MA 11)	Functions, Grade 11, University Preparation MCR3U
Date of Curriculum	2006	2007
Hours of Instruction	120	110
Additional Course Information	Prerequisite: Principles of Mathematics 10	Prerequisite: Principles of Mathematics, Grade 10, Academic
Course Description	Students represent algebraic expressions in multiple ways and use algebraic and graphical models to generalize patterns, make predictions, and solve problems. Students describe and compare everyday phenomena, using either direct or indirect measurement, describe the characteristics of 3-D objects and 2-D shapes, and analyse the relationships among them.	This course introduces the mathematical concept of the function by extending students' experiences with linear and quadratic relations. Students will investigate properties of discrete and continuous functions, including trigonometric and exponential functions; represent functions numerically, algebraically, and graphically; solve problems involving applications of functions; investigate inverse functions; and develop facility in determining equivalent algebraic expressions. Students will reason mathematically and communicate their thinking as they solve multi-step problems.
Strands/Major Concepts	Variables and Equations (Linear and Quadratic Equations) Relations and Functions (Quadratic, Polynomial and Rational Functions, Inverses) 3-D Objects and 2-D Shapes (Coordinate Geometry, Deductive Geometry)	Characteristics of Functions Exponential Functions Discrete Functions Trigonometric Functions
Overall Comparison	<p>There is a very limited relationship between the two courses. Major topics in Trigonometric Functions and Exponential Functions are not taught until Grade 12 in British Columbia. Geometric Sequences and series are not taught until Grade 12 in British Columbia. Financial Applications are not taught in this British Columbia math course. Students from BC have studied 2-D deductive geometry that is not evident to the same depth in the Ontario course.</p> <p>Overall Expectations MCR3U NOT in the British Columbia course:</p> <p>Exponential Functions</p> <ul style="list-style-type: none"> • make connections between the numeric, graphical, and algebraic representations of exponential functions; • identify and represent exponential functions, and solve problems involving exponential functions, including those arising from real-world applications. <p>Trigonometric Functions</p> <ul style="list-style-type: none"> • demonstrate an understanding of periodic relationships and the sine function, and make connections between the numeric, graphical, and algebraic representations of sine functions; • identify and represent sine functions, and solve problems involving sine functions, including problems arising from real-world applications. <p>Discrete Functions</p> <ul style="list-style-type: none"> • demonstrate an understanding of recursive sequences, represent recursive sequences in a variety of ways, and make connections to Pascal's triangle; • demonstrate an understanding of the relationships involved in arithmetic and geometric sequences and series, and solve related problems; (Note: geometric sequences and series are not taught in British Columbia by Grade 11, and arithmetic sequences are taught in Grade 10 in British Columbia) • make connections between sequences, series, and financial applications, and solve problems involving compound interest and ordinary annuities. 	
Additional Comments	Principles of Mathematics 11 has a very limited relationship to Functions and Applications, MCF3M as well.	

	British Columbia	Ontario
Course Name	Applications of Mathematics 11 (AMA 11)	Foundations of College Mathematics, Grade 11, College Preparation MBF3C
Date of Curriculum	2006	2007
Hours of Instruction	120	110
Additional Course Information	Prerequisite: Applications of Mathematics 10	Prerequisite: Foundations of Mathematics, Grade 10, Applied
Course Description	Students demonstrate an understanding of and proficiency with calculations, including making decisions concerning which arithmetic operation or operations to use to solve a problem and then solve the problem. Students represent algebraic expressions in multiple ways and use algebraic and graphical models to generalize patterns, make predictions, and solve problems. Students describe and compare everyday phenomena, using either direct or indirect measurement.	This course enables students to broaden their understanding of mathematics as a problem solving tool in the real world. Students will extend their understanding of quadratic relations; investigate situations involving exponential growth; solve problems involving compound interest; solve financial problems connected with vehicle ownership; develop their ability to reason by collecting, analysing, and evaluating data involving one variable; connect probability and statistics; and solve problems in geometry and trigonometry. Students will consolidate their mathematical skills as they solve problems and communicate their thinking.
Strands/Major Concepts	Number (Solve Consumer, Investment and Credit Problems) Variables and Equations (Linear Equations, System of Linear Equations and Inequalities, Quadratic, Exponential) Relations and Functions (Quadratic and Exponential Functions) Measurement (Enlarge and Reduce by a Scale, Use Tolerances and Percentage Error) Statistics And Probability (Analyze Graphs and Charts)	Mathematical Models Personal Finance Geometry And Trigonometry Data Management
Overall Comparison	<p>There is a considerable relationship between the two courses. At the end of the Grade 11 course, students from British Columbia will:</p> <ul style="list-style-type: none"> – have a limited overview of Personal Finances, but will be exposed to the essential concepts. – have studied exponential equations, but not exponential functions. <p>Students in BC study inequalities and measurement tolerances which are not in Ontario course. Students in BC studied the equivalent trigonometry concepts in Grade 10.</p> <p>Overall Expectations MBF3C NOT in the British Columbia course:</p> <p>Mathematical Models</p> <ul style="list-style-type: none"> • demonstrate an understanding of exponents, and make connections between the numeric, graphical, and algebraic representations of exponential relations; • describe and represent exponential relations, and solve problems involving exponential relations arising from real-world applications. <p>Personal Finance</p> <ul style="list-style-type: none"> • compare simple and compound interest, relate compound interest to exponential growth, and solve problems involving compound interest; • interpret information about owning and operating a vehicle, and solve problems involving the associated costs. 	

	British Columbia	Ontario
Course Name	Essentials of Mathematics 12 (EMA 12)	Mathematics for Work and Everyday Life, Grade 12, Workplace Preparation MEL4E
Date of Curriculum	2006	2007
Hours of Instruction	120	110
Additional Course Information	Prerequisite: Essentials of Mathematics 11	Prerequisite: Mathematics for Work and Everyday Life, Grade 11, Workplace Preparation
Course Description	Students identify the types and functions of insurance, the preparation of a personal financial plan, the types of taxes imposed by different levels of government, and the costs associated with foreign purchasing and currency exchange. Students use patterns to describe the world and to solve problems. Students describe and compare everyday phenomena, using either direct or indirect measurement, describe the characteristics of 3-D objects and 2-D shapes, and analyse the relationships among them. Students use experimental and theoretical probability to represent and solve problems involving uncertainty.	This course enables students to broaden their understanding of mathematics as it is applied in the workplace and daily life. Students will investigate questions involving the use of statistics; apply the concept of probability to solve problems involving familiar situations; investigate accommodation costs and create household budgets; use proportional reasoning; estimate and measure; and apply geometric concepts to create designs. Students will consolidate their mathematical skills as they solve problems and communicate their thinking.
Strands/Major Concepts	Personal Finance (Home Purchase Costs, Life and Property Insurance) Investments (Financial Planning, Stocks, Bonds, etc.) Government Finances (Federal, Provincial and Municipal Revenues and Taxes) Variables (Variation and Proportion, Formula Substitution) Measurement (Designs and Costs)	Reasoning with Data Personal Finance Applications of Measurement
Assessment/Evaluation	Essentials of Mathematics 10 and 11 or 12 are two of the courses available for students to satisfy the Graduation Program mathematics requirement.	
Overall Comparison	There is a strong relationship between the two courses. Overall expectations for MEL4E are met by Essentials of Mathematics 12 or were taught in Essentials of Mathematics 11 or 10. Students in BC are required to work with algebraic concepts (e.g., variation, formulas) at a level that is beyond Workplace Preparation requirements in Ontario, but is much less rigorous than the College Preparation courses in Ontario.	
Additional Comments	Essentials of Mathematics 12 requires the students to do more complex calculations and analysis related to housing costs and investments than in Mathematics for Work and Everyday Life, Grade 12 MEL4E. However, students from Essentials of Mathematics 12 are not exposed to the algebraic concepts required for Foundations for College Mathematics 12 MAP4C.	

	British Columbia	Ontario
Course Name	Applications of Mathematics 12 (AMA 12)	Mathematics for College Technology, Grade 12, College Preparation MCT4C
Date of Curriculum	2006	2007
Hours of Instruction	120	110
Additional Course Information	Prerequisite: Applications of Mathematics 11	Prerequisite: Functions and Applications, Grade 11, University/College Preparation or Functions, Grade 11, University Preparation
Course Description	Students use models, matrices, and technology to solve problems. Students use sinusoidal patterns to describe the world and to solve problems. Students describe and design objects and layouts, using either direct or indirect measurement, and use vectors to solve problems. Students use experimental and theoretical probability to represent and solve problems involving uncertainty.	This course enables students to extend their knowledge of functions. Students will investigate and apply properties of polynomial, exponential, and trigonometric functions; continue to represent functions numerically, graphically, and algebraically; develop facility in simplifying expressions and solving equations; and solve problems that address applications of algebra, trigonometry, vectors, and geometry. Students will reason mathematically and communicate their thinking as they solve multi-step problems. This course prepares students for a variety of college technology programs.
Strands/Major Concepts	Number (Matrices, Spreadsheets) Patterns (Sinusoidal Curves) Measurement (Complex Measurement and Design Problems) 3-D Objects, 2-D Shapes (Properties and Applications of Vectors) Chance	Exponential Functions Polynomial Functions Trigonometric Functions Applications of Geometry
Assessment/Evaluation	Applications of Mathematics 12 has an optional provincial Graduation Program examination, worth 40% of the final course mark for students who choose to write it. Students who plan to attend a post-secondary institution are advised to take the exam. Applications of Mathematics 10 and 11 or 12 are two of the courses available for students to satisfy the Graduation Program mathematics requirement.	
Overall Comparison	There is a considerable relationship between the two courses. Students have worked with exponential equations, but not with exponential functions to the depth required in the Ontario course. Work with polynomials is limited to quadratics (degree 2), and not with polynomials of higher degree as required in the Ontario course. Students from the BC course <i>Applications of Mathematics 12</i> have done additional work with matrices that is not in the Ontario course. In BC, work with exponential equations was taught in the Grade 11 program. Overall Expectations MCT4C NOT in the British Columbia course: Polynomial Functions • solve polynomial equations by factoring, make connections between polynomial equations and formulae, and solve problems involving polynomial expressions arising from a variety of applications. Exponential Functions • solve problems involving exponential equations graphically, including problems arising from real-world applications; (Note: <i>partial coverage only, students in BC have less experience working with exponential functions and logarithms</i>)	
Additional Comments	The overall expectations of Foundations for College Mathematics, Grade 12, College Preparation MAP4C, are also met by Applications of Mathematics 12. However, Mathematics for College Technology MCT4C is more closely aligned with Applications of Mathematics 12.	

	British Columbia	Ontario
Course Name	Principles of Mathematics 12 (MA 12)	Advanced Functions, Grade 12, University Preparation MHF4U
Date of Curriculum	2006	2007
Hours of Instruction	120	110
Additional Course Information	Prerequisite: Principles of Mathematics 11	Prerequisite Functions, Grade 11, University Preparation, or Mathematics for College Technology, Grade 12, College Preparation
Course Description	Students use patterns to describe the world and to solve problems; represent algebraic expressions in multiple ways; and, use algebraic and graphical models to generalize patterns, make predictions, and solve problems. Students perform, analyse, and create transformations of functions and relations that are described by equations or graphs. Students solve problems based on the counting of sets, using techniques such as the fundamental counting principle, permutations, combinations, and combining of simpler probabilities.	This course extends students' experience with functions. Students will investigate the properties of polynomial, rational, logarithmic, and trigonometric functions; develop techniques for combining functions; broaden their understanding of rates of change; and develop facility in applying these concepts and skills. Students will also refine their use of the mathematical processes necessary for success in senior mathematics. This course is intended both for students taking the Calculus and Vectors course as a prerequisite for a university program and for those wishing to consolidate their understanding of mathematics before proceeding to any one of a variety of university programs.
Strands/Major Concepts	Patterns (Geometric Sequences and Series) Variables and Equations (Exponential, Logarithmic and Trig Equations) Relations and Functions (Exponential, Logarithmic and Trig Equations) Transformations (Study of Transformations of Functions) Chance (Permutations, Combinations, Conditional Probability)	Exponential and Logarithmic Functions Trigonometric Functions Polynomial and Rational Functions Characteristics of Functions
Assessment/Evaluation	Principles of Mathematics 12 has an optional provincial Graduation Program examination, worth 40% of the final course mark for students who choose to write it. Students who plan to attend a post-secondary institution are advised to take the exam. Principles of Mathematics 10 and 11 or 12 are two of the courses available for students to satisfy the Graduation Program mathematics requirement.	
Overall Comparison	There is a considerable relationship between the two courses. Characteristics of Functions in Advanced Functions, is not taught in Principles of Mathematics 12. Students in BC study the strand <i>Chance</i> which is taught in <i>Mathematics for Data Management Grade 12</i> , MDM4U, in Ontario. Overall Expectations MHF4U NOT in the British Columbia course: Characteristics of Functions <ul style="list-style-type: none"> demonstrate an understanding and instantaneous rate of change, and determine, numerically and graphically, and interpret the average rate of change of a function over a given interval and the instantaneous rate of change for a given function at a given point; (Note: <i>partial coverage only, students in BC have only limited exposure to instantaneous rates of changes</i>) determine functions that results from the addition, subtraction, multiplication and division of two functions and from the composition of two functions, describe some properties of the resulting functions, and solve related problems (Note: <i>partial coverage only, students in BC have not worked with composition of functions</i>) 	
Additional Comments	No match to <i>Calculus and Vectors, Grade 12</i> , MCV4U No match to <i>Mathematics for Data Management Grade 12</i> , MDM4U, with only 1 strand (Chance) that is aligned	

	British Columbia	Ontario
Course Name	Biology 11 (BI 11)	Biology, Grade 11, University Preparation SBI3U
Date of Curriculum	2006	2000
Hours of Instruction	120	110
Additional Course Information	<i>Prerequisite:</i> Science 10 Biology 11 is one of the courses available for students to satisfy the Grade 11-12 Graduation Program science requirement.	<i>Prerequisite:</i> Science, Grade 10, Academic Achievement of SBI3U leads to SBI4U.
Course Description	Biology is a scientific discipline that studies a great variety of organisms. It is widely accepted that a few major themes exist in biology, and the use of these can provide an organizational framework for studying biology. The three themes for Biology 11 are: <ul style="list-style-type: none"> - Unity and Diversity - Evolutionary Relationships - Ecological Relationships 	Course focuses on the processes involved in biological systems. Students will learn concepts and theories as they conduct investigations in the areas of cellular biology, microbiology, animal anatomy and physiology, plant structure and physiology, and environmental science. Emphasis on practical application of concepts, and on skills needed for further study in various branches of life sciences and related fields.
Strands/Major Concepts	<ul style="list-style-type: none"> - Processes of Science - Taxonomy - Evolution - Ecology - Microbiology (Viruses/Kingdom Monera) - Plant Biology - Animal Biology 	<ul style="list-style-type: none"> - Cellular Functions - Genetic Continuity - Internal Systems and Regulation - Diversity of Living Things - Plants: Anatomy and Growth
Overall Comparison	<p>There is a very limited relationship between the two courses. Major topics of Cellular Functions, Genetic Continuity, Internal Systems and Regulation and Plants: Anatomy, Growth, and Functions are not taught until Grade 12 in British Columbia. In Grade 12, with the exception of the Cell Functions strand, these topics are only taught in part.</p> <p>Overall Expectations SBI3U NOT in the British Columbia course:</p> <p>Cellular Functions</p> <ul style="list-style-type: none"> • demonstrate an understanding of cell structure and function and the processes of metabolism and membrane transport • demonstrate an understanding of the relationship between cell functions and their technological and environmental applications <p>Genetic Continuity</p> <ul style="list-style-type: none"> • demonstrate an understanding of the necessity of meiosis • perform laboratory studies of meiosis and analyse the results of genetic research related to the laws of heredity • outline the scientific findings and some of the technological advances that led to genetic technology, and demonstrate awareness of some of the social and political issues raised by genetic research and reproductive technology <p>Internal Systems and Regulation</p> <ul style="list-style-type: none"> • describe and explain the major processes, mechanisms and systems, including the respiratory, circulatory, and digestive systems, by which plants and animals maintain their internal environment • illustrate and explain, through laboratory investigations, the contributions of various types of systems and processes to internal regulation in plant and animal systems • evaluate the impact of personal lifestyle decisions on the health of humans, and analyse how societal concern for maintaining human health has advanced the development of technologies related to the regulation of internal systems <p>Plants: Anatomy, Growth and Functions</p> <ul style="list-style-type: none"> • demonstrate an understanding, based in part on their own investigations, of the connections among the factors that affect the growth of plants • evaluate how energy and nutritional needs of population influence the development and use of plant science and technology 	
Additional Comments	The British Columbia course Biology 12 BI 12 is also not a match to Biology 11 SBI3U.	

	British Columbia	Ontario
Course Name	Biology 11 (BI 11)	Biology, Grade 11, College Preparation SBI3C
Date of Curriculum	2006	2000
Hours of Instruction	120	110
Additional Course Information	<i>Prerequisite:</i> Science 10 Biology 11 is one of the courses available for students to satisfy the Grade 11-12 Graduation Program requirements.	<i>Prerequisite:</i> Science, Grade 10, Academic and Applied.
Course Description	Biology is a scientific discipline that studies a great variety of organisms. It is widely accepted that a few major themes exist in biology, and the use of these can provide an organizational framework for studying biology. The three themes for Biology 11 are: - Unity and Diversity - Evolutionary Relationships - Ecological Relationships	This course focuses on the processes involved in biological systems. Students will learn concepts and theories as they conduct investigations in the areas of cellular biology, microbiology, animal anatomy and physiology, plant structure and physiology, and environmental science. Emphasis will be placed on the practical application of concepts, and on the skills needed for further study in various branches of the life sciences and related fields.
Strands/Major Concepts	- Processes of Science - Taxonomy - Evolution - Ecology - Microbiology (Viruses/Kingdom Monera) - Plant Biology - Animal Biology	- Cellular Biology - Microbiology - Animal Anatomy and Physiology - Plant Structure and Physiology - Environmental Science
Overall Comparison	<p>There is a considerable relationship between the two courses. A major topic Cellular Biology is not taught until Grade 12 in British Columbia.</p> <p>Overall Expectations SBI3C NOT in the British Columbia course:</p> <p>Cellular Biology</p> <ul style="list-style-type: none"> • demonstrate an understanding of the basic processes of cellular biology, including membrane transport, cellular respiration, photosynthesis, and enzyme activity; • investigate the factors that influence cellular activity using appropriate laboratory equipment and techniques; • demonstrate an understanding of the importance of cellular processes in their personal lives, as well as in the development and application of biotechnology <p>Animal Anatomy and Physiology</p> <ul style="list-style-type: none"> • investigate, with the aid of laboratory procedures, the physiological mechanisms of animal systems that are responsible for the physical health of the individual; • demonstrate an understanding of the connections among health, preventive measures, and treatment, and of their social and economic implications. <p>Plant Structure and Physiology</p> <ul style="list-style-type: none"> • evaluate the roles of plants in the urban community, in various technologies and industries, and in natural ecosystems. <p>Environmental Science</p> <ul style="list-style-type: none"> • explain why it is important to be aware of the impact of human activities on the natural environment. 	

	British Columbia	Ontario
Course Name	Chemistry 11 (CH 11)	Chemistry, Grade 11, University Preparation SCH3U
Date of Curriculum	2006	2000
Hours of Instruction	120	110
Additional Course Information	<i>Prerequisite:</i> Science 10. Chemistry 11 is one of the courses available for students to satisfy the Grade 11-12 Graduation Program science requirement.	<i>Prerequisite:</i> Science, Grade 10, Academic. Achievement of SCH3U leads to SCH4U
Course Description	Chemistry is the science that deals with the properties and reactions of materials. It is concerned with the identification, characterization, and transformations of matter, and with the energy changes accompanying these transformations. Through participation in co-operative labs, independent research, and other classroom experiences, students acquire knowledge, skills, and attitudes that enable them to pursue further study and experience success in the workplace as informed decision makers and full participants.	This course focuses on the concepts and theories that form the basis of modern chemistry. Students will study the behaviours of solids, liquids, gases, and solutions; investigate changes and relationships in chemical systems; and explore how chemistry is used in developing new products and processes that affect our lives and our environment. Emphasis will also be placed on the importance of chemistry in other branches of science.
Strands/Major Concepts	<ul style="list-style-type: none"> - Skills and Processes of Chemistry - The Nature of Matter - Mole Concept - Chemical Reactions - Atomic Theory - Solution Chemistry - Organic Chemistry 	<ul style="list-style-type: none"> - Matter and Chemical Bonding - Quantities in Chemical Reactions - Solutions and Solubility - Gases and Atmospheric Chemistry - Hydrocarbons and Energy
Overall Comparison	<p>There is a considerable relationship between the two courses. A major topic Gases and Atmospheric chemistry is not taught until Grade 12 in British Columbia.</p> <p>Overall Expectations SCH3U NOT in the British Columbia course:</p> <p>Matter and Chemical Bonding</p> <ul style="list-style-type: none"> • describe how an understanding of matter and its properties can lead to the production of useful substances and new technologies. <p>Quantities in Chemical Reactions</p> <ul style="list-style-type: none"> • demonstrate an awareness of the importance of quantitative chemical relationships in the home or in industry <p>Solutions and Solubility</p> <ul style="list-style-type: none"> • relate a scientific knowledge of solutions and solubility to everyday applications, and explain how environmental water quality depends on the concentrations of a variety of dissolved substances. <p>Gases and Atmospheric Chemistry</p> <ul style="list-style-type: none"> • demonstrate an understanding of the laws that govern the behaviour of gases; • investigate through experimentation the relationships among the pressure, volume, and temperature of a gas, and solve problems involving quantity of substance in moles, molar masses and volumes, and the gas laws; • describe how knowledge of gases has helped to advance technology, and how such technological advances have led to a better understanding of environmental phenomena and issues. 	
Additional Comments	The British Columbia course Chemistry 12 (CH 12) is not a match for SCH3U.	

	British Columbia	Ontario
Course Name	Chemistry 11 (CH 11)	Chemistry, Grade 12, College Preparation SCH4C
Date of Curriculum	2006	2000
Hours of Instruction	120	110
Additional Course Information	<i>Prerequisite:</i> Science 10 Chemistry 11 is one of the courses available for students to satisfy the Grade 11-12 Graduation Program science requirements.	<i>Prerequisite:</i> Science, Grade 10, Academic and Applied.
Course Description	Chemistry is the science that deals with the properties and reactions of materials. It is concerned with the identification, characterization, and transformations of matter, and with the energy changes accompanying these transformations. Through participation in co-operative labs, independent research, and other classroom experiences, students acquire knowledge, skills, and attitudes that enable them to pursue further study and experience success in the workplace as informed decision makers and full participants.	This course introduces students to the concepts that form the basis of modern chemistry. Students will study qualitative analysis, quantitative relationships in chemical reactions, organic chemistry and electrochemistry, and chemistry as it relates to the quality of the environment. Students will employ a variety of laboratory techniques, develop skills in data collection and scientific analysis, and communicate scientific information using appropriate terminology. Emphasis will be placed on the role of chemistry in daily life and in the development of new technologies and products.
Strands/Major Concepts	<ul style="list-style-type: none"> - Skills and Processes of Chemistry - The Nature of Matter - Mole Concept - Chemical Reactions - Atomic Theory - Solution Chemistry - Organic Chemistry 	<ul style="list-style-type: none"> - Matter and Qualitative Analysis - Organic Chemistry - Electrochemistry - Chemical Calculations - Chemistry in the Environment
Overall Comparison	<p>There is a very limited relationship between the two courses. Major topics Matter and Qualitative Analysis, Electrochemistry and Chemistry and the Environment are taught, in part, in Grade 12 Chemistry in British Columbia.</p> <p>Overall Expectations SCH4C NOT in Chemistry 11, the British Columbia course:</p> <p>Matter and Qualitative Analysis</p> <ul style="list-style-type: none"> • demonstrate an understanding of the basic principles of qualitative analysis and underlying theories; • describe the role and importance in society of some of the applications of qualitative analysis. <p>Electrochemistry</p> <ul style="list-style-type: none"> • demonstrate an understanding of the chemical processes that take place in galvanic and electrolytic cells; • investigate through experimentation the ease of oxidation of metals, and build electrochemical cells and describe their functioning; • explain the importance for industry and the consequences for the environment of common electrochemical processes. <p>Chemical Calculations</p> <ul style="list-style-type: none"> • explain the importance of quantitative chemical relationships in industry and in everyday life. <p>Chemistry in the Environment</p> <ul style="list-style-type: none"> • demonstrate an understanding of the nature and role of elements and compounds in the environment, including acids and bases, and gases in the atmosphere; • use the techniques involved in the quantitative analysis of solutions effectively and accurately; • assess the effects and the implications for society of the levels of various substances in the environment, and demonstrate an awareness of the need for both government and individual citizens to take measures that will ensure a healthy environment. 	
Additional Comments	The British Columbia course Chemistry 12 is not a match for SCH4C although some of the Overall Expectations for Matter and Qualitative Analysis, Electrochemistry and Chemistry in the Environment are taught, in part.	

	British Columbia	Ontario
Course Name	Science and Technology 11 (SCT 11)	Science, Grade 11, University/College Preparation SNC3M
Date of Curriculum	1995 (Revision available 2007 with optional implementation in 2008/09.)	2000
Hours of Instruction	120	110
Additional Course Information	<i>Prerequisite:</i> Grade 10 science. This course counts towards the British Columbia Graduation Diploma.	<i>Prerequisite:</i> Grade 10 Science, Academic or Applied.
Course Description	Science and Technology 11 is a selected studies course concerned with inventions and discoveries, and the ways in which science and technology affect the wellbeing of individuals and of our global society. Students learn about invention, entrepreneurship, and experimentation through the practical application of the skills that are required in business, science, formal debate, and technology. Students have opportunities to appreciate the history of science, technology, and human thought; to learn ethical, responsible decision-making; and to learn to take innovative approaches to the challenges of life.	This course enables students, including those who do not intend to pursue science-related programs at the postsecondary level, to increase their understanding of science and its technological applications. Students will explore a range of topics, including the safe use of everyday chemicals; the science of nutrition and body function; waste management; the application of scientific principles in space; and technologies in everyday life. Emphasis will be placed on the role of science and technology in daily life and in relation to social and environmental issues.
Strands/Major Concepts	The course is divided into five organizers that are divided into 15 modules. A. Introduction to Science and Technology • Module 1: The Nature and Interaction of Science, Technology, and Society B. Communications and Explorations • Module 2: Computers and Information Technology • Module 3: Space • Module 4: Transportation C. Environment and Resources • Module 5: Resource Management and Environmental Planning • Module 6: Pollution • Module 7: Energy and Environmental Trade-offs D. Human Requirements • Module 8: Medicine, Health, and Technology • Module 9: Shelter • Module 10: Food Production and Distribution • Module 11: Technology for the Home E. Lifestyles, Choices, and the Future • Module 12: Consumerism and Population • Module 13: Military and Defence Technology • Module 14: Leisure and Recreational Technology • Module 15: The Future	Everyday Chemicals and Safe Practices Body Input and Body Function Waste Management Science and Space Technologies in Everyday Life
Overall Comparison	There is a considerable relationship between the two courses. The actual performance of experiments is not required by the British Columbia course, rather they are described and analyzed only. A few experiments may be performed to illustrate the scientific method.	
Additional Comments	SNC4M has some similar topics that may be covered in British Columbia.	

	British Columbia	Ontario
Course Name	Science and Technology 11 (SCT 11)	Science, Grade 12, University/College Preparation SNC4M
Date of Curriculum	1995 (draft revision available 2007 optional implementation in 2008/09.)	2000
Hours of Instruction	120	110
Additional Course Information	<i>Prerequisite:</i> Not specified but it is assumed to be the Grade 10 science. This course counts towards the British Columbia Graduation Diploma.	<i>Prerequisite:</i> Grade 11 SNC3M
Course Description	Science and Technology 11 is a selected studies course concerned with inventions and discoveries, and the ways in which science and technology affect the wellbeing of individuals and of our global society. Students learn about invention, entrepreneurship, and experimentation through the practical application of the skills that are required in business, science, formal debate, and technology. The course gives students opportunities to appreciate the history of science, technology, and human thought; to learn ethical, responsible decision-making; and to learn to take innovative approaches to the challenges of life.	This course enables students, including those who do not intend to pursue science-related programs at the postsecondary level, to further develop their understanding of science and its technological applications. Students will explore a range of topics, including organic products in everyday life; pathogens and disease; energy alternatives and their impact globally; communications systems; and science and contemporary societal issues. Emphasis will be placed on relating these topics to global issues as well as to daily life, and on developing skills in the areas of experimentation, research, critical thinking, and analysis.
Strands/Major Concepts	<p>The course is divided into five organizers that are divided into 15 modules, 2 core and 2 or 3 optional modules to be determined in consultation with the students.</p> <p>A. Introduction to Science and Technology</p> <ul style="list-style-type: none"> • Module 1: The Nature and Interaction of Science, Technology, and Society <p>B. Communications and Explorations</p> <ul style="list-style-type: none"> • Module 2: Computers and Information Technology • Module 3: Space • Module 4: Transportation <p>C. Environment and Resources</p> <ul style="list-style-type: none"> • Module 5: Resource Management and Environmental Planning • Module 6: Pollution • Module 7: Energy and Environmental Trade-offs <p>D. Human Requirements</p> <ul style="list-style-type: none"> • Module 8: Medicine, Health, and Technology • Module 9: Shelter • Module 10: Food Production and Distribution • Module 11: Technology for the Home <p>E. Lifestyles, Choices, and the Future</p> <ul style="list-style-type: none"> • Module 12: Consumerism and Population • Module 13: Military and Defence Technology • Module 14: Leisure and Recreational Technology • Module 15: The Future 	<p>Organic Products in Everyday Life</p> <p>Pathogens and Disease</p> <p>Energy Alternatives and Global Impact</p> <p>Communications Systems</p> <p>Science and Contemporary Societal Issues</p>
Assessment/Evaluation		This course counts towards the Ontario Graduation requirements of a Senior Science course.
Overall Comparison	There is a very limited relationship between these two courses.	
Additional Comments	SNC3M has some similar topics that may be covered in this course in British Columbia.	

	British Columbia	Ontario
Course Name	Physics 11 (PH 11)	Physics, Grade 11, University Preparation SPH3U
Date of Curriculum	2006	2000
Hours of Instruction	120	110
Additional Course Information	<i>Prerequisite:</i> Science, Grade 10. PH 11 Physics 11 is one of the courses available for students to satisfy the Grade 11-12 Graduation Program science requirement.	<i>Prerequisite:</i> Grade 10 Science, Academic
Course Description	Physics 11 is an introductory course that focusses on the principles and theories of physics, encourages investigation of physical relationships, and illustrates the relationship between theory and application. The application of physics to everyday situations is highlighted throughout the curriculum. The organizers in this course have been chosen to be representative of physics, and the skills and knowledge provide a solid base for further study.	This course develops students' understanding of the basic concepts of physics. Students study the laws of dynamics and explore different kinds of forces, the quantification and forms of energy (mechanical, sound, light, thermal, and electrical), and the way energy is transformed and transmitted. They develop scientific-inquiry skills as they verify accepted laws and solve both assigned problems and those emerging from their investigations. Students analyse the interrelationships between physics and technology, and consider the impact of technological applications of physics on society and the environment.
Strands/Major Concepts	The learning outcomes are grouped under the nine curriculum organizers: <ul style="list-style-type: none"> - Skills, Methods and Nature of Physics - Wave Motion and Geometric Optics - Kinematics - Forces - Newton's Laws - Momentum - Energy - Special Relativity - Nuclear Fission and Fusion 	<ul style="list-style-type: none"> - Forces and Motion - Energy, Work and Power - Waves and Sound - Light and Geometric Optics - Electricity and Magnetism
Overall Comparison	<p>There is a considerable relationship between the two courses. A major topic Electricity and Magnetism is not taught until Grade 12 in British Columbia. A major topic Waves and Sound is not taught in British Columbia Science 8–10 or Physics 11 and 12.</p> <p>Overall Expectations SPH3U NOT in the British Columbia course:</p> <p>Electricity and Magnetism</p> <ul style="list-style-type: none"> • demonstrate an understanding of the properties, physical quantities, principles, and laws related to electricity, magnetic fields, and electromagnetic induction; • carry out experiments or simulations, and construct a prototype device, to demonstrate characteristic properties of magnetic fields and electromagnetic induction; • identify and describe examples of domestic and industrial technologies that were developed on the basis of the scientific understanding of magnetic fields. <p>Waves and Sound</p> <ul style="list-style-type: none"> • demonstrate an understanding of the properties of mechanical waves and sound and the principles underlying the production, transmission, interaction, and reception of mechanical waves and sound; • investigate the properties of mechanical waves and sound through experiments or simulations, and compare predicted results with actual results; • describe and explain ways in which mechanical waves and sound are produced in nature, and evaluate the contributions to entertainment, health, and safety of technologies that make use of mechanical waves and sound. 	

	British Columbia	Ontario
Course Name	Introduction to Forests 11 (FOR 11)	Science, Grade 11, Workplace Preparation SNC3E
Date of Curriculum	1997 (Revision available in '07 with optional implementation in 2008/09.)	2000
Hours of Instruction	120	110
Additional Course Information	<i>Prerequisite:</i> Grade 10 science. This course counts towards the British Columbia Graduation Diploma and it may lead to further study in the Grade 12 Forests course, FOR12.	<i>Prerequisite:</i> Science, Grade 10, Academic or Applied
Course Description	Forests 11 is an introductory course that describes the relationships between society and forest ecosystems, as well as identifying essential elements required for forest management and the creation of forest products. Forests 11 encourages the study of forests in a local context and the application of the understanding thus acquired to a provincial context.	This course provides students with the science-related knowledge and skills they need to help them make informed decisions in the workplace and in their personal lives. Students will explore a range of topics, including materials and safety; electrical circuits; micro-organisms; the human immune system and defences against disease; and the impact of humans on the environment. Emphasis is placed on relating these topics directly to students' experiences both in the world of work and in daily life.
Strands/Major Concepts	The prescribed learning outcomes are grouped under nine organizers: Forests and Society Forest Ecology Plants Trees Animals Measurement Forest Resources Land-Use Planning Forest Management	Materials and Safety Electrical Circuits Micro-organisms The Immune System and Human Health Human Impact on the Environment
Overall Comparison	<p>There is a very limited relationship between the two courses. In Forests 11 and 12, students develop the knowledge, skills, and attitudes necessary for scientific literacy through four processes: working scientifically, communicating scientifically, using science, and acting responsibly.</p> <p>The basic science skills taught in British Columbia are the same as the skills presented in Ontario. The content of this course only matches parts of the Ontario science curriculum but some of the topics are an extension of concepts introduced in the Grade 9 and 10 Biology strands in Ontario.</p> <p>The Ontario curriculum does not consider the details about forestry covered in British Columbia but the ideas about safety, micro-organisms and the environment have some similarity in content.</p> <p>Forests 11 and 12 components of the Resource Sciences 11 and 12 curriculum reflect the common rationale for all science education:</p> <ul style="list-style-type: none"> • describe the science knowledge and processes used to investigate the various natural resources in the province • provide students with hands-on opportunities to gain understanding of how this science is applied in the everyday management of natural resources. 	
Additional Comments	SNC4E has some topics that may be covered in British Columbia. Most of the topics are different from the Ontario course but the science skills are similar.	

	British Columbia	Ontario
Course Name	Geology 12 (GEOL 12)	Earth and Space Science, Grade 12, University Preparation SES4U
Date of Curriculum	2006 Note: Scheduled implementation Sept. '07.	2000
Hours of Instruction	120	110
Additional Course Information	<i>Prerequisite:</i> Grade 11 course Geology 12 is a course available for students to satisfy the Grade 11–12 Graduation Program science requirement.	<i>Prerequisite:</i> Grade 10 Science, Academic.
Course Description	The Geology 12 curriculum builds on the Geological Science and Earth History sections of the Earth Science 11 curriculum. As with Earth Science 11, field and laboratory work are an integral part of this course.	This course focuses on the Earth as a planet, and on the basic concepts and theories of Earth science and their relevance to everyday life. Students will examine the Earth's place in the solar system and, after a general introduction to Earth science, will explore in more detail the materials of the Earth, its internal and surficial processes, and its history. The course draws on astronomy, biology, chemistry, mathematics, and physics in its consideration of geological processes that can be observed directly or inferred from other evidence.
Strands/Major Concepts	The prescribed learning outcomes are grouped under six organizers: Introduction to Geology 12 Earth Materials (Rocks and Minerals) Earth Resources Geological Time Internal Processes and Plate Tectonic Theory Surface Processes and the Hydrosphere	The Earth as a Planet Introduction to Earth Sciences Earth Materials Internal and Superficial Earth Processes Earth History
Assessment/Evaluation	Geology 12 has an optional Graduation Program examination, worth 40% of the final course mark for students who choose to write it. Although students are not required to take this exam to receive credit for the course, they should be advised that some post-secondary institutions require Grade 12 exams to meet entrance requirements, and that writing Grade 12 exams also provides opportunities for provincial scholarships.	
Overall Comparison	There is a strong relationship between the two courses. The topics covered in the Grade 12 course in British Columbia are similar to the Grade 12 Ontario course in the areas of the geology but the British Columbia course is greater in depth in the topics. SES4U covers many of the expectations of the two British Columbia courses ESC 11 and GEOL 12. The main difference is the depth of the content in the geology concepts.	
Additional Comments	There is a planned revision of this course for 2008–09 in British Columbia. Ontario's course is undergoing revisions presently.	

	British Columbia	Ontario
Course Name	Applications of Physics 11 (PHA 11)	Physics, Grade 12, College Preparation SPH4C
Date of Curriculum	1997	2000
Hours of Instruction	120	110
Additional Course Information	<i>Prerequisite:</i> Science, Grade 10	<i>Prerequisite:</i> Science, Grade 10, Academic or Applied
Course Description	Applications of Physics 11 is an introductory course that focusses on the basic concepts and theories of physics, how they are applied in various technologies, and how they are linked to everyday life. Relationships between concepts are clearly demonstrated through the use of one or more of four basic systems: mechanical, fluid, electrical, and thermal. In some instances, the nature of the topic does not permit ready separation into four systems. In these cases, the systems have been grouped or considered as a single topic. To help them understand the relationships between the four systems, students should be given opportunities to compare and contrast them. For example, when the learning activities for the force, pressure, voltage, and temperature organizers are completed, students should be given an opportunity to explore the similarities and differences among these systems.	This course develops students' understanding of the basic concepts of physics. Students will explore these concepts as they relate to mechanical, electrical, fluid (hydraulic and pneumatic), and communications systems, as well as to the operation of commonly used tools and equipment. They will develop scientific-inquiry skills as they verify accepted laws of physics and solve both assigned problems and those emerging from their investigations. Students will also consider the impact of technological applications of physics on society and the environment.
Strands/Major Concepts	The prescribed learning outcomes for Applications of Physics 11 are grouped under the following curriculum organizers: Force Pressure in a Fluid System Voltage in an Electrical System Temperature in a Thermal System Rate Work in Mechanical and Fluid Systems Energy Resistance	Mechanical Systems Electricity and Electronics Hydraulic and Pneumatic Systems Communications Technology
Overall Comparison	There is a strong relationship between the two courses. A major topic in Ontario of Electricity and Electronic is taught, in part, in Grade 11 Applications of Physics PHA11, but electronics is covered in more depth in Grade 12 Applications of Physics PHA12. Overall Expectations in SPH4C NOT in the British Columbia course: Electricity and Electronics: <ul style="list-style-type: none"> • demonstrate an understanding of common applications ofelectronic circuits, and the function and configuration of the components used; Communications Technology <ul style="list-style-type: none"> • identify and describe Canadian contributions to communications technology, and demonstrate awareness of the wide-ranging and ever-growing influence of communications technology on the global community. Energy Transformations <ul style="list-style-type: none"> • ... evaluate the potential of energy-transformation technologies that use sources of renewable energy. 	
Additional Comments	The British Columbia course Applications of Physics 12 (PHA 12) is a limited match to Physics SPH4C.	

	British Columbia	Ontario
Course Name	Chemistry 12 (CH 12)	Chemistry, Grade 12, University Preparation SCH4U
Date of Curriculum	1995 (Revised IRP implemented in Sept. '07.)	2000
Hours of Instruction	120	110
Additional Course Information	<i>Prerequisite:</i> Chemistry 11 (CH 11) Chemistry 12 is one of the courses available for students to satisfy the Grade 11-12 Graduation Program science requirement.	<i>Prerequisite:</i> Chemistry, Grade 11, University Preparation SCH3U
Course Description	The curriculum organizers for Chemistry 12 reflect the main areas of the subject that students are expected to address. The learning outcomes for Chemistry 12 are grouped under five curriculum organizers: - Reaction Kinetics - Dynamic Equilibrium - Solubility Equilibria - Acids, Bases, and Salts - Oxidation-Reduction	This course enables students to deepen their understanding of chemistry through the study of organic chemistry, energy changes and rates of reaction, chemical systems and equilibrium, electrochemistry, and atomic and molecular structure. Students will further develop problem-solving and laboratory skills as they investigate chemical processes, at the same time refining their ability to communicate scientific information. Emphasis will be placed on the importance of chemistry in daily life, and on evaluating the impact of chemical technology on the environment.
Strands/Major Concepts	- Reaction Kinetics - Dynamic Equilibrium - Solubility Equilibria - Acids, Bases, and Salts - Oxidation-Reduction	- Organic Chemistry - Energy Changes and Rates of Reaction - Chemical Systems and Equilibrium - Electrochemistry - Structure and Properties
Overall Comparison	There is a strong relationship between the two courses. Major topics Organic Chemistry and Structure and Properties are taught, in part, in Grade 11 Chemistry in British Columbia Overall Expectations SCH4U NOT in the British Columbia course (and not taught in Grade 11 Chemistry): Organic Chemistry • evaluate the impact of organic compounds on our standard of living and the environment. Energy Changes and Rates of Reactions • demonstrate an understanding of the dependence of chemical technologies and processes on the energetics of chemical reactions. Structure and Properties • demonstrate an understanding of quantum mechanical theory, and explain how types of chemical bonding account for the properties of ionic, molecular, covalent network, and metallic substances; • describe products and technologies whose development has depended on understanding molecular structure, and technologies that have advanced the knowledge of atomic and molecular theory.	

	British Columbia	Ontario
Course Name	Earth Science 11 (ESC 11)	Earth and Space Science, Grade 12, University Preparation SES4U
Date of Curriculum	2006	2000
Hours of Instruction	120	110
Additional Course Information	<i>Prerequisite:</i> Grade 10 science. Earth Science 11 is a course available for students to satisfy the Grade 11–12 Graduation Program science requirement.	<i>Prerequisite:</i> Grade 10 Science, Academic
Course Description	Earth Science 11 is a survey course designed to introduce students to the diverse aspects of earth and space science. Field and laboratory work are essential components of an earth science course.	This course focuses on the Earth as a planet, and on the basic concepts and theories of Earth science and their relevance to everyday life. Students will examine the Earth's place in the solar system and, after a general introduction to Earth science, will explore in more detail the materials of the Earth, its internal and surficial processes, and its history. The course draws on astronomy, biology, chemistry, mathematics, and physics in its consideration of geological processes that can be observed directly or inferred from other evidence.
Strands/Major Concepts	The prescribed learning outcomes for Earth Science 11 are grouped under six organizers: Introduction to Earth and Space Science Astronomy Earth Materials (Rocks and Minerals) Geological Time Internal Processes and Plate Tectonic Theory Surface Processes and the Hydrosphere	The Earth as a Planet Introduction to Earth Sciences Earth Materials Internal and Superficial Earth Processes Earth History
Overall Comparison	There is a strong relationship between the two courses. Some of the Astronomical and Atmospheric topics in the British Columbia course are treated in Ontario in the Grades 9 and 10 science courses. SES4U covers many of the expectations of the two British Columbia courses ESC 11 and GEOL 12. The main difference is the depth of the content in the geology concepts.	
Additional Comments	There is a planned revision of this course for 2008-09 in British Columbia. Ontario's course is undergoing revisions presently.	

	British Columbia	Ontario
Course Name	Physics 12 (PH 12)	Physics, Grade 12, University Preparation SPH4U
Date of Curriculum	1996 (Revised IRP implemented in Sept. '07.)	2000
Hours of Instruction	120	110
Additional Course Information	<i>Prerequisite:</i> Physics 11 PH 11 Physics 12 is one of the courses available for students to satisfy the Grade 11-12 Graduation Program science requirement.	<i>Prerequisite:</i> Physics, Grade 11, University Preparation SPH3U
Course Description	Physics 12 is the study of classical mechanics and electromagnetism, and is designed to help students develop analytical and problem-solving skills. It provides opportunities for students to understand and apply the principles and concepts of physics to practical situations. The learning outcomes for Physics 12 are grouped under 11 curriculum organizers listed in Strands/Major concepts below.	This course enables students to deepen their understanding of the concepts and theories of physics. Students explore further the laws of dynamics and energy transformations, and investigate electrical, gravitational, and magnetic fields; electromagnetic radiation; and the interface between energy and matter. They further develop inquiry skills, learning, for example, how the interpretation of experimental data can provide indirect evidence to support the development of a scientific model. Students also consider the impact on society and the environment of technological applications of physics.
Strands/Major Concepts	Vector Kinematics in Two Dimensions Dynamics Vector Dynamics Work, Energy, and Power Momentum Equilibrium Circular Motion Gravitation Electrostatics Electric Circuits	Forces and Motion: Dynamics Energy and Momentum Electric, Gravitational and Magnetic Fields The Wave Nature of Light Matter Energy Interface
Assessment/Evaluation	Physics 12 has an optional Graduation Program examination, worth 40% of the final course mark. Students are not required to take this exam to receive credit for the course, but should be advised that some post-secondary institutions require Grade 12 exams to meet entrance requirements	.
Overall Comparison	<p>There is a strong relationship between the two courses. The Wave Nature of Light is taught in Grade 11 in British Columbia. Matter - Energy Interface is taught, in part, in Grade 11 in British Columbia After completing Grades 11 and 12 physics, students will have worked with the concepts of Einstein's special theory of relativity, but not with models of matter based on early quantum mechanics that involve an interface between matter and energy.</p> <p>Overall Expectations SPH4U NOT in the British Columbia course and not taught in Physics 11: Electric, Gravitational, and Magnetic Fields</p> <ul style="list-style-type: none"> • identify and describe examples of domestic and industrial technologies that were developed on the basis of the scientific understanding of magnetic fields. 	

	British Columbia	Ontario
Course Name	Biology 12 (BI 12)	Biology, Grade 12, University Preparation SBI4U
Date of Curriculum	1996 (Revised IRP implemented in Sept. '07.)	2000
Hours of Instruction	120	110
Additional Course Information	<i>Prerequisite:</i> Biology 11 (BI 11) Biology 12 the Grade 11–12 Graduation Program science requirement.	<i>Prerequisite:</i> Biology, Grade 11, University Preparation SBI3U
Course Description	Biology 12 focuses on human biology, allowing students to develop an interest in and understanding of science by looking at themselves and seeing how the diverse body systems are integrated to maintain homeostasis. Laboratory skills are essential to students of Biology 12. The order of learning outcomes follows a sequence from cell structure and simple, biochemical processes to the organ systems themselves.	This course provides students with the opportunity for in-depth study of the concepts and processes associated with biological systems. Students will study theory and conduct investigations in the area of metabolic processes, molecular genetics, homeostasis, evolution and population dynamics. Emphasis will be placed on achievement of the detailed knowledge and refined skills needed for further study in various branches of the life sciences and related fields.
Strands/Major Concepts	Cell Biology Cell Processes and Applications Human Biology	Metabolic Processes Molecular Genetics Homeostasis Evolution Population Dynamics
Assessment/Evaluation	Biology 12 has an optional Graduation Program examination, worth 40% of the final course mark. Students are not required to take this exam to receive credit for the course, but should be advised that some post-secondary institutions require Grade 12 exams to meet entrance requirements.	
Overall Comparison	There is a strong relationship between the two courses. Although, major topics of Evolution and Population Dynamics are not taught in Grade 12 in British Columbia, both topics are taught in Biology 11 (BI 11), the prerequisite.	
Additional Comments	BI 12 is not a match for SBI3U, Biology, Grade 11, University Preparation.	

	British Columbia	Ontario
Course Name	Introduction to Forests 12 (FOR 12)	Science, Grade 12, Workplace Preparation SNC4E
Date of Curriculum	1997 (Revision available in '07 with optional implementation in 2008/09.)	2000
Hours of Instruction	120	110
Additional Course Information	<i>Prerequisite:</i> Grade 11 Forests course. This course counts towards the British Columbia Graduation Diploma.	<i>Prerequisite:</i> Grade 11 Science, Workplace.
Course Description	Forests 12 is an in-depth study of forests that builds on and applies the concepts and ideas introduced in Forests 11. An increased emphasis is placed on the actual planning, production, and harvesting of forest products. Forests 12 reflects local and provincial contexts while encouraging a global perspective.	This course provides students with the science-related knowledge and skills they need to help them make informed decisions in the workplace and in their personal lives. Students will explore a range of topics, including chemistry at home and at work; communications technology; medical technology; gardening, horticulture, landscaping, and forestry; and alternative life-sustaining environments. Emphasis is placed on relating these topics directly to students' experiences both in the world of work and in daily life.
Strands/Major Concepts	The prescribed learning outcomes for Forests 12 are grouped under ten curriculum organizers: Management Perspectives Forest Ecology Soils Resource Inventory Harvest Planning Harvesting Operations and Site Preparation Reforestation Stand-Tending Insects and Diseases Fire Management	Chemistry at Home and Work Communications: Sounds and Pictures Medical Technology Gardening, Horticulture, Landscaping, and Forestry Alternative Environments
Overall Comparison	<p>There is a very limited relationship between the two courses. In Forests 11 and 12, students develop the knowledge, skills, and attitudes necessary for scientific literacy through four processes: working scientifically, communicating scientifically, using science, and acting responsibly.</p> <p>The basic science skills taught in British Columbia are the same as the skills presented in Ontario. The content of this course only matches parts of the Ontario science curriculum but some of the topics are an extension of concepts introduced in the Grade 9 and 10 Biology strands in Ontario.</p> <p>The Ontario curriculum does not consider the details about forestry covered in British Columbia but the ideas about safety, micro-organisms and the environment have some similarity in content.</p> <p>Forests 11 and 12 components of the Resource Sciences 11 and 12 curriculum reflect the common rationale for all science education:</p> <ul style="list-style-type: none"> • describe the science knowledge and processes used to investigate the various natural resources in the province • provide students with hands-on opportunities to gain understanding of how this science is applied in the everyday management of natural resources. 	
Additional Comments	SNC3E has some topics that may be covered in British Columbia. Most of the topics are different from the Ontario course but the science skills are similar.	

Credit Equivalency Resource Package

Course Comparisons International Languages Alberta

**Chinese
Punjabi
Spanish**



Introduction

Organizing Framework

The Common Curriculum Framework for International Languages, Kindergarten to Grade 12 is a project of the Western Canadian Protocol for Collaboration in Basic Education. This *Framework* was developed through the cooperative efforts of the provinces of Alberta, Manitoba and Saskatchewan. The *Framework* is intended to be used for languages other than English, French and Aboriginal languages.

International language study is usually optional, e.g., taking the form of an elective in junior high and senior high schools. The *Framework* provides outcomes for a 13-level program that would be entered at Kindergarten and would continue until Grade 12. Other entry points are as follows:

- In a nine-year program, a student would be entered at Grade 4 and would continue until Grade 12
- In a six-year program, a student would be entered at Grade 7 and would continue until Grade 12
- In a three-year program, a student would be entered at Grade 10 and would continue until Grade 12

These courses are distinct from bilingual or immersion programming, in which the language is not only a subject but is also used as the language of instruction for other school subjects during a significant part of the day.

Bilingual Programming

The Common Curriculum Framework for Bilingual Programming in International Languages, Kindergarten to Grade 12 provides a common foundation for bilingual programming across the Western Canadian provinces for students in Kindergarten to Grade 12. The *Framework* is not intended for the development of curricula for French immersion or bilingual programs in Native languages.

The term *bilingual programming* is used to describe a partial immersion program where English and a second language are both languages of instruction. In bilingual programming, language arts is taught using both languages of instruction. Other subjects are taught either in English or the specific international language. Cultural knowledge, skills, and attitudes are often taught using an integrated approach. The instructional time spent in the specific international language varies from province to province and, sometimes, from program to program. The *Framework* presupposes that the following portions of the instructional day are allocated to instruction in the international language:

- Kindergarten to Grade 6 – 50%
- Grade 7 to Grade 9 – 30%
- Grade 10 to Grade 12 – 20%

Assessment and Evaluation

There are no provincial examinations for International Language courses. The schools/boards are responsible for the testing in these courses

Note: The following rubric may be useful in guiding decisions for granting a credit:

Very Limited Relationship – many overall expectations missing, student may be very challenged in subsequent courses that build from this course.

Considerable Relationship – several overall expectations are not met, but a generally thorough coverage of expectations is evident in course or in its prerequisite courses,...

Strong Relationship – all or almost all overall expectations are met, thorough coverage of expectations is evident in course or its prerequisite courses,...

Alberta	Ontario
Introduction	
Chinese	
Chinese Language and Culture, Grade 9 (6 th year of nine-year program)	International Languages, Open, Level 1 (LBADO – LYXDO)
Chinese Language and Culture 10-3Y (Three-year program)	International Languages, Open, Level 2 (LBABO – LYXBO)
Chinese Language and Culture 20-3Y (Three-year program)	International Languages, Open, Level 3 (LBACO – LYXCO)
Chinese Language and Culture 30-3Y (Three-year program)	International Languages, Open, Level 4 (LBADO – LYXDO)
Chinese Language and Culture 10-6Y (Six-year program)	International Languages, Open, Level 2 (LBABO – LYXBO)
Chinese Language and Culture 20-6Y (Six-year program)	International Languages, Open, Level 3 (LBACO – LYXCO)
Chinese Language and Culture 30-6Y (Six-year program)	International Languages, Open, Level 4 (LBADO – LYXDO)
Chinese Language and Culture, Grade 9 (3 rd year of Six-year program)	International Languages, Open, Level 1 (LBAAO – LYXAO)
Chinese Language Arts, Grade 9 (Bilingual Program)	International Languages, Open, Level 1 (LBAAO – LYXAO)
Chinese Language Arts 10 (Bilingual Program)	International Languages, Open, Level 2 (LBABO – LYXBO)
Chinese Language Arts 20 (Bilingual Program)	International Languages, Open, Level 3 (LBACO – LYXCO)
Chinese Language Arts 30 (Bilingual Program)	International Languages, Open, Level 4 (LBADO – LYXDO)
Punjabi	
Punjabi Language and Cultures, Grade 9 (6 th year of nine-year program)	International Languages, Open, Level 1 (LBAAO – LYXAO)
Spanish	
Spanish Language and Culture, Grade 9 (6 th year of nine-year program)	International Languages, Open, Level 1 (LBAAO – LYXAO)
Spanish Language and Culture 10-3Y (Three-year program)	International Languages, Open, Level 2 (LBABO – LYXBO)
Spanish Language and Culture 20-3Y (Three-year program)	International Languages, Open, Level 3 (LBACO – LYXCO)
Spanish Language and Culture 30-3Y (Three-year program)	International Languages, Open, Level 4 (LBADO – LYXDO)
Spanish Language and Culture, Grade 9 (3 rd year of six-year program)	International Languages, Open, Level 1 (LBAAO – LYXAO)
Spanish Language and Culture 10-6Y (Six-Year Program)	International Languages, Open, Level 2 (LBABO – LYXBO)
Spanish Language and Culture 20-6Y (Six-Year Program)	International Languages, Open, Level 3 (LBACO – LYXCO)
Spanish Language and Culture 30-6Y (Six-year program)	International Languages, Open, Level 4 (LBADO – LYXDO)
Spanish Language Arts, Grade 9 (Bilingual Program)	International Languages, Open, Level 1 (LBAAO – LYXAO)

	Alberta	Ontario
Course Name	Chinese Language and Culture, Grade 9 (6th year of Nine-year program)	International Languages, Open, Level 1 (LBAO – LYXAO)
Date of curriculum	2007 Field Validation Draft	1999
Hours of Instruction	120	110
Additional Course Information	Grade 8 Chinese Language and Culture (5 th year of Nine-year program) Students completing Grade 9 of the nine-year program have been studying Chinese for six years.	No prerequisite stated. Prerequisites will be determined by school boards, depending on the structure of their international languages program.
Course Description	<p>Students will share simple facts about events in past or future, will express emotions and feelings in a variety of familiar contexts; give and respond to compliments; give reasons for actions; use information collected from various sources to solve problems, and provide reasons for their position on an issue.</p> <p>They will approximate the pronunciation using all consonants and vowels in the Pinyin system, and use a repertoire of words and phrases in familiar contexts within a variety of lexical fields.</p> <p>Students will understand and produce a variety of short texts on unfamiliar topics in guided and unguided situations, using a variety of conventions to structure texts in writing. Students will explore and identify some elements of Chinese culture, and will identify different perspectives on diverse elements of Chinese culture and speculate on their origins. They will identify some of the past and present relationships between Chinese culture and their own. Students will select and use a variety of cognitive, metacognitive, social, affective, interactive, and interpretive strategies to enhance language learning in Chinese.</p>	<p>This course introduces students to language elements they will need to communicate with native speakers. Students will participate in practical activities in which they can apply their knowledge and skills, and will begin to explore careers that require knowledge of the language of study. They will explore aspects of the culture of countries where the language under study is spoken, including social customs, music, and food, by participating in cultural events and activities involving both print and technological resources.</p>
Strands/Major Concepts	<p>Applications</p> <ul style="list-style-type: none"> - to receive and impart information - to express emotions and personal perspectives - to get things done - to form, maintain and change interpersonal relationships - to extend their knowledge of the world - to pursue imaginative purposes and personal enjoyment <p>Language Competence</p> <ul style="list-style-type: none"> - attend to form - interpret and produce oral texts - interpret and produce written and visual texts - apply knowledge of the sociocultural context - apply knowledge of how discourse is organized, structured and sequenced <p>Global Citizenship</p> <ul style="list-style-type: none"> - historical and contemporary elements of Chinese culture - appreciating diversity - personal and career opportunities <p>Strategies</p> <ul style="list-style-type: none"> - language learning - language use - general learning 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening - Speaking <p>Reading</p> <p>Writing</p> <p>Grammar and Language Knowledge</p>
Overall Comparison	<p>There is a very limited relationship between the two courses. The Alberta Grade 9 course of the nine-year program requires that the student has taken the elementary school sequence of Chinese from Grade 4 through Grade 8, for a total of six years of study, and has thus developed speaking, reading and writing skills in Chinese. The Ontario course does not require any previous study of Chinese.</p> <p>The Alberta course has explicit outcomes relating to media works as well as to the development of language learning strategies.</p>	
Additional Comments	<p>This course is more comparable to Ontario International Languages, Level 3, University Preparation or Open.</p>	

	Alberta	Ontario
Course Name	Chinese Language and Culture 10-3Y (Three-year program)	International Languages, Open, Level 2 (LBABO – LYXBO)
Date of curriculum	2005	1999
Hours of Instruction	125	110
Additional Course Information	No prerequisite necessary. This is the first in a series of three high school courses for students who begin studying Chinese in Grade 10.	No prerequisite necessary.
Course Description	<p>Students will identify people, places and things, ask for and provide basic information and respond to simple, predictable questions. They will respond to and express emotions and feelings, to simple oral instructions or commands, and to invitations. They will also use the language for fun, e.g., to learn simple riddles, jingles and songs.</p> <p>Students will recognize some basic characters and produce short, simple written texts, using familiar structures, in a variety of guided situations.</p> <p>They will distinguish and produce sounds and tones of Chinese in guided situations, using the Pinyin system.</p> <p>Students will apply knowledge of the sociocultural context to recognize formal and informal situations and understand and use some simple idiomatic expressions as set phrases.</p> <p>At this level, students will use simple cognitive, metacognitive, social, affective, interactive, interpretive and productive strategies to maximize the effectiveness of language learning and communication.</p>	<p>This course provides students with opportunities to further develop their oral communication skills in the language of study, increase their confidence in using the language in practical situations and continue to investigate related career opportunities. Students will be involved in activities that promote the use of the language in real-life situations. They will also continue their exploration of the culture of countries where the language under study is spoken.</p> <p>Although students will continue to expand their vocabulary and repertoire of language structures, the language they will use at this level will still be simple.</p>
Strands/Major Concepts	<p>Applications</p> <ul style="list-style-type: none"> - to receive and impart information - to express emotions and personal perspectives - to get things done - to form, maintain and change interpersonal relationships - to extend their knowledge of the world - to pursue imaginative purposes and personal enjoyment <p>Language Competence</p> <ul style="list-style-type: none"> - interpret and produce texts - attend to form - apply knowledge of the sociocultural/sociolinguistic context - apply knowledge of how discourse is organized, structured and sequenced <p>Global Citizenship</p> <ul style="list-style-type: none"> - historical and contemporary elements of Chinese culture - affirming and valuing diversity - personal and career opportunities <p>Strategies</p> <ul style="list-style-type: none"> - language learning - language use - general learning 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening - Speaking <p>Reading</p> <p>Writing</p> <p>Grammar and Language Knowledge</p>
Overall Comparison	There is a considerable relationship between the two courses. However, Chinese Language and Culture 10-3Y is a beginning course, while International Languages, Level 2 is not. A more comparable course to Chinese Language and Culture in Ontario would be International Languages, Level 1, Open.	
Additional Comments	Chinese Language and Culture 10-3Y is also comparable to International Languages, Level 1, Academic.	

	Alberta	Ontario
Course Name	Chinese Language and Culture 20-3Y (Three-year program)	International Languages, Open, Level 3 (LBACO – LYXCO)
Date of curriculum	2005	2000
Hours of Instruction	125	110
Additional Course Information	Chinese Language and Culture 20-3Y is the second in a series of three high school courses for students who begin the study of Chinese in Grade 10. Chinese Language and Culture 10-3Y is a prerequisite.	Prerequisite: International Languages, Level 2, Academic or Open
Course Description	<p>At this level, students will ask for and receive information on a range of familiar topics in Chinese. They will inquire about, express and respond to a variety of feelings and emotions. They will make and respond to a variety of simple requests and invitations; and participate independently in small-group activities. Student will make and talk about personal observations, identify a problem and pose solutions, and compare and contrast items in simple ways in Chinese. They will express personal views on a variety of topics within their direct experience. They will use the language for fun and to interpret humour at a simple level by reading simple, amusing texts. Students will understand the meaning and some supporting details of short, simple oral texts on familiar topics, in guided situations, and will produce simple written texts on familiar topics in a variety of guided situations. Students will identify and produce the sounds and tones of Chinese, using the Pinyin system and apply general rules of stroke order in producing Chinese characters. Students will apply knowledge of the sociocultural context to recognize and use formal and informal language in familiar situations. They will identify and use cognitive, metacognitive, social, affective, interactive, interpretive, and productive strategies to maximize the effectiveness of language learning and communication.</p>	<p>This course provides students with opportunities to further develop their communication skills in the international language and to increase their confidence in applying them in a variety of practical situations, including contexts related to future employment. Students will engage in a variety of activities and use resources that will allow them to use the language in various real-life situations. They will also continue to explore aspects of the culture of countries where the language is spoken, and investigate careers that require facility in the language.</p>
Strands/Major Concepts	<p>Applications</p> <ul style="list-style-type: none"> - to receive and impart information - to express emotions and personal perspectives - to get things done - to form, maintain and change interpersonal relationships - to extend their knowledge of the world - to pursue imaginative purposes and personal enjoyment <p>Language Competence</p> <ul style="list-style-type: none"> - interpret and produce texts - attend to form - apply knowledge of the sociocultural/sociolinguistic context - apply knowledge of how discourse is organized, structured and sequenced <p>Global Citizenship</p> <ul style="list-style-type: none"> - historical and contemporary elements of Chinese culture - affirming and valuing diversity - personal and career opportunities <p>Strategies</p> <ul style="list-style-type: none"> - language learning - language use - general learning 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening - Speaking <p>Reading</p> <p>Writing</p> <p>Grammar and Language Knowledge</p>
Overall Comparison	There is a considerable relationship between the two courses. This course is more directly comparable to International Languages, Level 2, Open. Most of the concepts in Level 2 are covered in Chinese 20-3Y, although 20-3Y covers expectations relating to the use of language learning strategies and the study of media works which are not covered in International Languages Level 2.	
Additional Comments	Chinese Language and Culture 20-3Y is also comparable to International Languages, Level 2, Academic.	

	Alberta	Ontario
Course Name	Chinese Language and Culture 30-3Y (Three-year program)	International Languages, Open, Level 4 (LBADO – LYXDO)
Date of curriculum	2005	1999
Hours of Instruction	125	110
Additional Course Information	Chinese Language and Culture 30-3Y is the third in a series of three courses for students who begin studying Chinese in Grade 10. Prerequisite: Chinese Language and Culture, 20-3Y	Prerequisite: International Languages, Level 3, University Preparation or Open
Course Description	<p>At this level, students will provide information on several aspects of a topic in Chinese, for example, by giving a simple report. They will inquire about and express feelings and emotions in a variety of familiar contexts. They will make and respond to suggestions in a variety of situations and express agreement or disagreement, giving reasons. Students will describe a problem and pose solutions, and organize and manipulate information in Chinese. They will express personal views on a variety of topics within their direct experience. They will use the language for fun and to interpret humour and express humour in simple ways.</p> <p>Students will understand the main point and specific details of oral texts on familiar topics, in guided and unguided situations, and will produce a variety of written texts on familiar topics in a variety of guided and unguided situations.</p> <p>Students will produce the sounds and tones of Chinese consistently, using the Pinyin system and apply rules of stroke order consistently in producing Chinese characters.</p> <p>Students will apply knowledge of the sociocultural context to identify and use socially appropriate language in specific situations.</p> <p>They will select and use cognitive, metacognitive, social, affective, interactive, interpretive, and productive strategies to maximize the effectiveness of language learning and communication.</p>	<p>This course provides students with opportunities to consolidate the language skills required for effective communication in business and personal contexts. Students will use a variety of print and technological resources that will promote their ability to apply the language in practical situations, and will engage in activities such as writing memos, reading articles, and applying conversational skills in business contexts. They will also add to their knowledge of the culture of countries where the language is spoken by using resources from the local and international community.</p>
Strands/Major Concepts	<p>Applications</p> <ul style="list-style-type: none"> - to receive and impart information - to express emotions and personal perspectives - to get things done - to form, maintain and change interpersonal relationships - to extend their knowledge of the world - to pursue imaginative purposes and personal enjoyment <p>Language Competence</p> <ul style="list-style-type: none"> - interpret and produce texts - attend to form - apply knowledge of the sociocultural/sociolinguistic context - apply knowledge of how discourse is organized, structured and sequenced <p>Global Citizenship</p> <ul style="list-style-type: none"> - historical and contemporary elements of Chinese culture - affirming and valuing diversity - personal and career opportunities <p>Strategies</p> <ul style="list-style-type: none"> - language learning - language use - general learning 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening - Speaking <p>Reading</p> <p>Writing</p> <p>Grammar and Language Knowledge</p>
Overall Comparison	There is a considerable relationship between the two courses. The stronger comparison would be to International Languages, Level 3, Open.	
Additional Comments	Chinese Language and Culture 30-3Y is also comparable to International Languages, Level 3, University Preparation.	

	Alberta	Ontario
Course Name	Chinese Language and Culture 10-6Y (Six-year Program)	International Languages, Open, Level 2 (LBABO – LYXBO)
Date of curriculum	2005	1999
Hours of Instruction	125	110
Additional Course Information	This is the fourth in a series of six junior and senior high school courses for students who begin studying Chinese language and culture in Grade 7. Prerequisite: Chinese Language and Culture Grade 9, six-year program.	No prerequisite necessary.
Course Description	<p>Students will be able to share detailed information on a familiar topic, for example, in a simple report. They will state personal actions in the past, present and future and will initiate and participate in casual exchanges with classmates. They will identify a problem and propose solutions and express their own position and give reasons for it.</p> <p>Students will understand the main point and some specific details of oral and written texts on familiar topics, in guided situations. They will produce short, simple written texts in guided and unguided situations, using the simplified version of Chinese characters.</p> <p>Students will produce the essential sounds and tones of Chinese, using the Pinyin system.</p> <p>Students will explore and identify some social aspects of Chinese life and some elements of Chinese culture and apply this knowledge to their interactions with Chinese people.</p> <p>At this level, students will select and use cognitive, metacognitive, social, affective, interactive, interpretive, and productive strategies to enhance language use.</p>	<p>This course provides students with opportunities to further develop their oral communication skills in the language of study, increase their confidence in using the language in practical situations and continue to investigate related career opportunities. Students will be involved in activities that promote the use of the language in real-life situations. They will also continue their exploration of the culture of countries where the language under study is spoken.</p> <p>Although students will continue to expand their vocabulary and repertoire of language structures, the language they will use at this level will still be simple.</p>
Strands/Major Concepts	<p>Applications</p> <ul style="list-style-type: none"> - to receive and impart information - to express emotions and personal perspectives - to get things done - to extend their knowledge of the world - to pursue imaginative purposes and personal enjoyment - to form, maintain and change interpersonal relationships <p>Language Competence</p> <ul style="list-style-type: none"> - attend to form - interpret and produce texts - apply knowledge of the sociocultural/sociolinguistic context - apply knowledge of the how text is organized, structured and sequenced <p>Global Citizenship</p> <ul style="list-style-type: none"> - historical and contemporary elements of Chinese culture - affirming and valuing diversity - personal and career opportunities <p>Strategies</p> <ul style="list-style-type: none"> - language learning - language use - general learning 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening - Speaking <p>Reading</p> <p>Writing</p> <p>Grammar and Language Knowledge</p>
Overall Comparison	<p>There is a considerable relationship between the two courses. The Alberta Chinese Language and Culture 10-6Y course requires that the student has taken Chinese Language and Culture Grade 9 and has been studying Chinese for four years. The Ontario course does not have any prerequisite. The expectations in the Alberta course are more complex and more extended.</p> <p>The Alberta course also has explicit outcomes in media works and a well-developed list of expectations in the development of language learning strategies.</p>	
Additional Comments	This course is more comparable to International Languages Level 3, University Preparation or Open.	

	Alberta	Ontario
Course Name	Chinese Language and Culture 20-6Y (Six-year Program)	International Languages, Open, Level 3 (LBACO – LYXCO)
Date of curriculum	2005	2000
Hours of Instruction	125	110
Additional Course Information	Chinese Language and Culture 20-6Y is the fifth in a series of six junior and senior high school courses for students who begin the study of the Chinese language and culture in Grade 7. Chinese Language and Culture 10-6Y is a prerequisite.	Prerequisite: International Languages, Level 2, Academic or Open
Course Description	<p>Students will ask and answer questions about an informative oral or written text. They will inquire about and express emotions and feelings in a variety of contexts and make and respond to simple requests in various situations. Students will describe and analyze and problem, and then propose solutions and will express their own position, with supporting reasons, on a variety of topics.</p> <p>Students will produce the essential sounds and tones of Chinese consistently, using the Pinyin system.</p> <p>Students will understand the main point and specific details of oral and written texts on familiar topics, in guided situations. They will produce a variety of short, simple written texts, in guided and unguided situations, using simplified forms of Chinese characters.</p> <p>Students will analyze assumptions about Chinese culture, and identify and use a variety of sources of information to find out about elements of Chinese culture.</p> <p>At this level, students will select and use a variety of cognitive, metacognitive, social, affective, interactive, interpretive and productive strategies to maximize the effectiveness of language learning and communication.</p>	<p>This course provides students with opportunities to further develop their communication skills in the international language and to increase their confidence in applying them in a variety of practical situations, including contexts related to future employment. Students will engage in a variety of activities and use resources that will allow them to use the language in various real-life situations. They will also continue to explore aspects of the culture of countries where the language is spoken, and investigate careers that require facility in the language.</p>
Strands/Major Concepts	<p>Applications</p> <ul style="list-style-type: none"> - to receive and impart information - to express emotions and personal perspectives - to get things done - to extend their knowledge of the world - to pursue imaginative purposes and personal enjoyment - to form, maintain and change interpersonal relationships <p>Language Competence</p> <ul style="list-style-type: none"> - attend to form - interpret and produce texts - apply knowledge of the sociocultural/sociolinguistic context - apply knowledge of the how text is organized, structured and sequenced <p>Global Citizenship</p> <ul style="list-style-type: none"> - historical and contemporary elements of Chinese culture - affirming and valuing diversity - personal and career opportunities <p>Strategies</p> <ul style="list-style-type: none"> - language learning - language use - general learning 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening - Speaking <p>Reading</p> <p>Writing</p> <p>Grammar and Language Knowledge</p>
Overall Comparison	There is a considerable relationship between the two courses.	
Additional Comments	Due to the complexity of expectations which extend beyond those of the Ontario Level 3 course, Chinese Language and Culture 20-6Y is more comparable to International Languages, Level 4, University Preparation or Open.	

	Alberta	Ontario
Course Name	Chinese Language and Culture 30-6Y (Six-year program)	International Languages, Open, Level 4 (LBADO – LYXDO)
Date of curriculum	2005	1999
Hours of Instruction	125	110
Additional Course Information	Chinese Language and Culture 30-6Y is the sixth in a series of six junior and senior high school courses for students who begin studying the Chinese language and culture in Grade 7. Prerequisite: Chinese Language and Culture, 20-6Y	Prerequisite: International Languages, Level 3, University Preparation or Open
Course Description	<p>At this level, students will provide detailed information on a specific topic in Chinese, for example, by writing a biography. They will express and support their own opinions with some details, and will express emotions and feelings in formal situations.</p> <p>They will offer and respond to congratulations, and express regret, and will make and respond to requests in a variety of situations. Students will use the Chinese language for fun and to interpret and express humour in a variety of situations.</p> <p>Students will understand the main point and specific details of oral and written texts on familiar topics. They will produce oral texts on familiar topics independently, and will produce short written texts on familiar topics using the simplified version of Chinese characters.</p> <p>Students will produce the sounds and tones of Chinese consistently, using the Pinyin system.</p> <p>Students will apply knowledge of the sociocultural/ sociolinguistic context to use the appropriate level of formality to suit the situation and purpose in familiar contexts.</p> <p>They will apply knowledge of elements of Chinese culture, derived from a variety of sources, to interpret behaviours and texts.</p> <p>They will select and use appropriate cognitive, metacognitive, social, affective, interactive, interpretive, and productive strategies to enhance language learning in a variety of situations.</p>	<p>This course provides students with opportunities to consolidate the language skills required for effective communication in business and personal contexts. Students will use a variety of print and technological resources that will promote their ability to apply the language in practical situations, and will engage in activities such as writing memos, reading articles, and applying conversational skills in business contexts. They will also add to their knowledge of the culture of countries where the language is spoken by using resources from the local and international community.</p>
Strands/Major Concepts	<p>Applications</p> <ul style="list-style-type: none"> - to receive and impart information - to express emotions and personal perspectives - to get things done - to extend their knowledge of the world - to pursue imaginative purposes and personal enjoyment - to form, maintain and change interpersonal relationships <p>Language Competence</p> <ul style="list-style-type: none"> - attend to form - interpret and produce texts - apply knowledge of the sociocultural/sociolinguistic context - apply knowledge of the how text is organized, structured and sequenced <p>Global Citizenship</p> <ul style="list-style-type: none"> - historical and contemporary elements of Chinese culture - affirming and valuing diversity - personal and career opportunities <p>Strategies</p> <ul style="list-style-type: none"> - language learning - language use - general learning 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening - Speaking <p>Reading</p> <p>Writing</p> <p>Grammar and Language Knowledge</p>
Overall Comparison	There is a considerable relationship between the two courses.	
Additional Comments	Chinese Language and Culture 30-6Y is also comparable with International Languages, Level 4, University Preparation.	

	Alberta	Ontario
Course Name	Chinese Language and Culture, Grade 9 (3rd year of Six-year program)	International Languages, Open, Level 1 (LBAAO – LYXAO)
Date of curriculum	2005	1999
Hours of Instruction	120	110
Additional Course Information	This course is the third in a series of six junior and senior high school courses in Chinese Language and Culture. It leads to Chinese Language and Culture 10-6Y. Prerequisite: Grade 8 Chinese Language and Culture (2 nd year of six-year program)	No prerequisite stated. Prerequisites will be determined by school boards, depending on the structure of their international languages program.
Course Description	Students will ask for and provide information on a range of familiar topics and will inquire about, express and respond to basic emotions and feelings; compare and contrast items in simple ways; identify a problem and choose between alternative solutions. They will identify and reproduce critical sound distinctions that are important for meaning and use Pinyin independently to produce new simplified Chinese characters. Students will use a range of vocabulary and expressions in familiar contexts within a variety of lexical fields including leisure activities, dwelling, social life and shopping. Students will the meaning of short, simple oral texts in a variety of guided situations and will produce a variety of short, simple written texts, using familiar structures in guided situations, using the simplified version of Chinese characters using common conventions to link sentences in short texts. Students will compare and make connections between some elements of Chinese culture and their own culture, and will identify commonalities and differences among diverse groups within Chinese culture. Students will identify and use a variety of cognitive, metacognitive, social, affective, interactive, and interpretive strategies to enhance language learning in Chinese.	This course introduces students to language elements they will need to communicate with native speakers. Students will participate in practical activities in which they can apply their knowledge and skills, and will begin to explore careers that require knowledge of the language of study. They will explore aspects of the culture of countries where the language under study is spoken, including social customs, music, and food, by participating in cultural events and activities involving both print and technological resources.
Strands/Major Concepts	<p>Applications</p> <ul style="list-style-type: none"> - to receive and impart information - to express emotions and personal perspectives - to get things done - to form, maintain and change interpersonal relationships - to extend their knowledge of the world - to pursue imaginative purposes and personal enjoyment <p>Language Competence</p> <ul style="list-style-type: none"> - attend to form - interpret and produce texts - apply knowledge of the sociocultural/sociolinguistic context - apply knowledge of how discourse is organized, structured and sequenced <p>Global Citizenship</p> <ul style="list-style-type: none"> - historical and contemporary elements of Chinese culture - appreciating diversity - personal and career opportunities <p>Strategies</p> <ul style="list-style-type: none"> - language learning - language use - general learning 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening - Speaking <p>Reading</p> <p>Writing</p> <p>Grammar and Language Knowledge</p>
Overall Comparison	There is a very limited relationship between the two courses. The Alberta course has explicit outcomes relating to media works as well as to the development of language learning strategies. Chinese Grade 9 (Six-Year Program) would be more comparable to Ontario International Languages, Level 2, Open.	
Additional Comments	This course could also be comparable to Ontario International Languages, Level 2, Academic.	

	Alberta	Ontario
Course Name	Chinese Language Arts, Grade 9 (Bilingual Program)	International Languages, Open, Level 1 (LBAAO – LYXAO)
Date of curriculum	2006	1999
Hours of Instruction	Variable, up to 50% of school day depending on school board	110
Additional Course Information	The Chinese Bilingual Program provides a more intensive language learning experience for students, and begins in Kindergarten. The Bilingual Program provides a progression of specific outcomes in Chinese from Kindergarten to Grade 9. Instruction is delivered in Chinese for other areas of the curriculum such as social studies, music and art. Instruction in Chinese may comprise up to 50% of the school day, depending on the grade level and school district offerings. Grade 8 Chinese Arts in Bilingual Program is a prerequisite for this course.	No prerequisite stated. Prerequisites will be determined by school boards, depending on the structure of their international languages program.
Course Description	Students will expand self-expression in oral, print and visual forms, and will questions and reflect on personal responses and interpretations and apply personal viewpoints to diverse situations or circumstances in Chinese. Students will structure and restructure ideas and information in personally meaningful ways to clarify and extend understanding. Students will use comprehension strategies appropriate to the type of text will experience texts from a variety of genres and cultural traditions and explain their own interests and preferences. Students will make notes in point form, summarizing major ideas and supporting details, and reference sources. Students will apply Hanyu pinyin accurately when encountering unfamiliar words and will use basic discourse features of Chinese correctly and effectively, mainly independently. Students will produce coherent oral presentations on familiar and some unfamiliar topics and listen to and understand the main points of oral presentations containing simple and complex ideas. They will explore differences in register between spoken and written texts in Chinese. Students will explore how their past and present Chinese cultural experiences, understanding and knowledge may be assets in future opportunities.	This course introduces students to language elements they will need to communicate with native speakers. Students will participate in practical activities in which they can apply their knowledge and skills, and will begin to explore careers that require knowledge of the language of study. They will explore aspects of the culture of countries where the language under study is spoken, including social customs, music, and food, by participating in cultural events and activities involving both print and technological resources.
Strands/Major Concepts	<p>Language Arts</p> <ul style="list-style-type: none"> • General Language Component <ol style="list-style-type: none"> 1. Students will listen, speak read, write, view and represent in Chinese to explore thoughts, ideas, feelings and experiences. 2. Students will listen, speak, read, write, view and represent in Chinese to comprehend and respond personally and critically to oral, print, visual and multimedia texts. 3. Students will listen, speak, read, write, view and represent in Chinese to manage ideas and information. 4. Students will listen, speak, read, write, view and represent in Chinese to enhance the clarity and artistry of communication. 5. Students will listen, speak, read, write, view and represent in Chinese to celebrate and build community. • Specific Language Component <ol style="list-style-type: none"> 3. Students will acquire Chinese to understand and appreciate languages and use the Chinese language confidently and competently in a variety of situations for communication, personal satisfaction and further learning. • Culture <ol style="list-style-type: none"> 4. Students will explore, understand, appreciate and value Chinese culture in Canada and the world for personal growth, enrichment and satisfaction and for participating in, and contributing to, an interdependent and multicultural global society. 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening - Speaking <p>Reading Writing Grammar and Language Knowledge</p>
Overall Comparison	There is a very limited relationship between the two courses.	
Additional Comments	Chinese Language Arts, Grade 9 Bilingual program may be compared to International Languages Level 4, Open or University Preparation.	

	Alberta	Ontario
Course Name	Chinese Language Arts 10 (Bilingual Program)	International Languages, Open, Level 2 (LBABO – LYXBO)
Date of curriculum	2006	1999
Hours of Instruction	125	110
Additional Course Information	The Chinese Bilingual Program provides a more intensive language learning experience for students, and begins in Kindergarten. The Bilingual Program provides a progression of specific outcomes in Chinese from Kindergarten to Grade 12. Instruction is delivered in Chinese for other areas of the curriculum such as social studies, music and art. Grade 9 Chinese Language Arts in the Bilingual Program is a prerequisite for this course.	No prerequisite stated. Prerequisites will be determined by school boards, depending on the structure of their international languages program.
Course Description	Students will questions and reflect on their own and others' responses and interpretations and apply a variety of viewpoints to diverse situations and circumstances. They will expand self-expression in oral, print and visual forms, and will question and explore a variety of texts and genres by various writers, artists, storytellers and filmmakers. Students will apply comprehension strategies appropriate to the type of text and purpose and enhance understanding by rereading and discussing relevant passages. They will explain how plot, character and setting contribute to an overall theme and recognize the effectiveness of techniques used in oral, print, visual and multimedia texts. They will conduct research and organize their findings in a variety of ways. Students will know and apply conventions of character formations and monitor for correctness when editing and proofreading, using appropriate resources. They will plan and present class sessions on a variety of topics and will present group ideas and findings effectively. Students will understand the main points and supporting details of lengthy oral presentations on familiar topics in Chinese and will produce, in writing, main points and supporting ideas on familiar topics in a variety of structured and unstructured situations. Students will select and use appropriate learning strategies in a variety of situations to enhance learning.	This course provides students with opportunities to further develop their oral communication skills in the language of study, increase their confidence in using the language in practical situations and continue to investigate related career opportunities. Students will be involved in activities that promote the use of the language in real-life situations. They will also continue their exploration of the culture of countries where the language under study is spoken. Although students will continue to expand their vocabulary and repertoire of language structures, the language they will use at this level will still be simple.
Strands/Major Concepts	<p>Language Arts</p> <ul style="list-style-type: none"> • General Language Component <ol style="list-style-type: none"> 1. Students will listen, speak read, write, view and represent in Chinese to explore thoughts, ideas, feelings and experiences. 2. Students will listen, speak, read, write, view and represent in Chinese to comprehend and respond personally and critically to oral, print, visual and multimedia texts. 3. Students will listen, speak, read, write, view and represent in Chinese to manage ideas and information. 4. Students will listen, speak, read, write, view and represent in Chinese to enhance the clarity and artistry of communication. 5. Students will listen, speak, read, write, view and represent in Chinese to celebrate and build community. • Specific Language Component <ol style="list-style-type: none"> 6. Students will acquire Chinese to understand and appreciate languages and use the Chinese language confidently and competently in a variety of situations for communication, personal satisfaction and further learning. • Culture <ol style="list-style-type: none"> 7. Students will explore, understand, appreciate and value Chinese culture in Canada and the world for personal growth, enrichment and satisfaction and for participating in, and contributing to, an interdependent and multicultural global society. 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening - Speaking <p>Reading</p> <p>Writing</p> <p>Grammar and Language Knowledge</p>
Overall Comparison	There is a very limited relationship between the two courses.	
Additional Comments	A more comparable course would be International Languages, Level 4, University Preparation or Open due to 11 years spent in bilingual Chinese programs in Alberta.	

	Alberta	Ontario
Course Name	Chinese Language Arts 20 (Bilingual Program)	International Languages, Open, Level 3 (LBACO – LYXCO)
Date of curriculum	2006	1999
Hours of Instruction	125	110
Additional Course Information	The Chinese Bilingual Program provides a more intensive language learning experience for students, and begins in Kindergarten. The Bilingual Program provides a progression of specific outcomes in Chinese from Kindergarten to Grade 12. Instruction is delivered in Chinese for other areas of the curriculum such as social studies, music and art. Chinese Language Arts 10 in the Bilingual Program is a prerequisite for this course.	Prerequisite: International Languages, Level 2, Academic or Open
Course Description	<p>Students will summarize ideas, observations and opinions of themselves and others, and expand use of oral, print and visual forms for self-expression. They will explain personal preferences for a variety of texts and genres by various writers, artists, storytellers and filmmakers.</p> <p>Students will apply and adjust strategies for comprehending a variety of texts and use a personal repertoire of strategies to monitor understanding. They will analyze how plot, character, setting and mood enhance meaning and evaluate the effectiveness of techniques used in oral, print, visual and multimedia texts. They will prepare, use and revise an inquiry or research plan and locate, access and record relevant information from a variety of sources. Students will apply tones and knowledge of Hanyu pinyin accurately when encountering unfamiliar words in a variety of contexts.</p> <p>Students will know and apply conventions of character formations and monitor for correctness when editing and proofreading, using appropriate resources. They will plan and present class sessions on a variety of topics and will present group ideas and findings effectively. Students will understand the main points and supporting details of lengthy oral presentations on familiar topics and some unfamiliar topics in Chinese and will produce, in writing, a lengthy written text, including main points and supporting ideas on familiar topics and some unfamiliar topics.</p> <p>Students will examine how various forms of citizen action have affected public policy with regard to cultural diversity in Canada. Students will select and use appropriate learning strategies effectively in a variety of situations to enhance language learning.</p>	<p>This course provides students with opportunities to further develop their communication skills in the international language and to increase their confidence in applying them in a variety of practical situations, including contexts related to future employment. Students will engage in a variety of activities and use resources that will allow them to use the language in various real-life situations. They will also continue to explore aspects of the culture of countries where the language is spoken, and investigate careers that require facility in the language.</p>

(continued)

	Alberta	Ontario
Strands/Major Concepts	<p>Language Arts</p> <ul style="list-style-type: none"> • General Language Component <ol style="list-style-type: none"> 1. Students will listen, speak read, write, view and represent in Chinese to explore thoughts, ideas, feelings and experiences. 2. Students will listen, speak, read, write, view and represent in Chinese to comprehend and respond personally and critically to oral, print, visual and multimedia texts. 3. Students will listen, speak, read, write, view and represent in Chinese to manage ideas and information. 4. Students will listen, speak, read, write, view and represent in Chinese to enhance the clarity and artistry of communication. 5. Students will listen, speak, read, write, view and represent in Chinese to celebrate and build community. • Specific Language Component <ol style="list-style-type: none"> 6. Students will acquire Chinese to understand and appreciate languages and use the Chinese language confidently and competently in a variety of situations for communication, personal satisfaction and further learning. • Culture <ol style="list-style-type: none"> 7. Students will explore, understand, appreciate and value Chinese culture in Canada and the world for personal growth, enrichment and satisfaction and for participating in, and contributing to, an interdependent and multicultural global society. 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening - Speaking <p>Reading Writing Grammar and Language Knowledge</p>
Overall Comparison	There is a very limited relationship between the two courses.	
Additional Comments	Chinese Language Arts 20 Bilingual Chinese course in Alberta would be more comparable to International Languages Level 4, University Preparation or Open.	

	Alberta	Ontario
Course Name	Chinese Language Arts 30 (Bilingual Program)	International Languages, Open, Level 4 (LBADO – LYXDO)
Date of curriculum	2006	1999
Hours of Instruction	125	110
Additional Course Information	The Chinese Bilingual Program provides a more intensive language learning experience for students, and begins in Kindergarten. The Bilingual Program provides a progression of specific outcomes in Chinese from Kindergarten to Grade 12. Instruction is delivered in Chinese for other areas of the curriculum such as social studies, music and art. Chinese Language Arts 20 in the Bilingual Program is a prerequisite for this course.	Prerequisite: International Languages, Level 3, University Preparation or Open
Course Description	Students will speculate on the impact of various ideas, observations and opinions and discuss personal understandings and interpretations. Students will apply and adjust strategies for comprehending a variety of texts and determine the accuracy of understanding through paraphrasing and summarizing ideas. They will evaluate how elements and techniques are combined to achieve the author or artist's purpose and desired effect. They will create original texts, such as editorials, plays and displays. They will prepare, use and revise an inquiry or research plan and locate, access, evaluate and select relevant information from a variety of sources. Students will apply tones and knowledge of Hanyu pinyin accurately and effectively when encountering unfamiliar words in a variety of contexts. Students will understand the main points and relevant supporting details of lengthy oral presentations on familiar and unfamiliar topics in Chinese and will develop and present, in writing, cohesively and spontaneously, main and supporting ideas on familiar topics unfamiliar topics. Students will demonstrate the value of diverse ideas and viewpoints to deepen understanding of texts, others and themselves. Students will use appropriate language learning strategies effectively in a variety of contexts to enhance language learning.	This course provides students with opportunities to consolidate the language skills required for effective communication in business and personal contexts. Students will use a variety of print and technological resources that will promote their ability to apply the language in practical situations, and will engage in activities such as writing memos, reading articles, and applying conversational skills in business contexts. They will also add to their knowledge of the culture of countries where the language is spoken by using resources from the local and international community.
Strands/Major Concepts	<p>Language Arts</p> <ul style="list-style-type: none"> • General Language Component <ol style="list-style-type: none"> 1. Students will listen, speak read, write, view and represent in Chinese to explore thoughts, ideas, feelings and experiences. 2. Students will listen, speak, read, write, view and represent in Chinese to comprehend and respond personally and critically to oral, print, visual and multimedia texts. 3. Students will listen, speak, read, write, view and represent in Chinese to manage ideas and information. 4. Students will listen, speak, read, write, view and represent in Chinese to enhance the clarity and artistry of communication. 5. Students will listen, speak, read, write, view and represent in Chinese to celebrate and build community. • Specific Language Component <ol style="list-style-type: none"> 6. Students will acquire Chinese to understand and appreciate languages and use the Chinese language confidently and competently in a variety of situations for communication, personal satisfaction and further learning. • Culture <ol style="list-style-type: none"> 7. Students will explore, understand, appreciate and value Chinese culture in Canada and the world for personal growth, enrichment and satisfaction and for participating in, and contributing to, an interdependent and multicultural global society. 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening - Speaking <p>Reading</p> <p>Writing</p> <p>Grammar and Language Knowledge</p>
Overall Comparison	There is considerable relationship between the two courses.	
Additional Comments	Ontario International Languages Level 4, University Preparation, could also be comparable to Chinese Language Arts 30.	

	Alberta	Ontario
Course Name	Punjabi Language and Culture, Grade 9 (6th year of Nine-year program)	International Languages, Open, Level 1 (LBAAO – LYXAO)
Date of curriculum	2007 Field Validation Draft	1999
Hours of Instruction	120	110
Additional Course Information	Grade 8 Punjabi Language and Culture (5 th year of Nine-year program which begins in Grade 4 and goes to Grade 12. Currently, the published curriculum is only available up to Grade 9)	No prerequisite stated. Prerequisites will be determined by school boards, depending on the structure of their international languages program.
Course Description	Students will share facts about events in past or future; express emotions and feelings in formal situations; and make and respond to suggestions or requests in informal situations. They will provide reasons for their position on an issue. They will use Punjabi intonation, stress and rhythm appropriately in familiar situations, and use a range of words and phrases in familiar contexts within a variety of lexical fields, including travel, entertainment and social events. Students will understand short texts on unfamiliar topics in unguided situations, and will produce a variety of short, simple texts in unguided situations, using a variety of conventions to structure their written texts. Students will apply knowledge of the sociocultural context to use suitable, simple formal language in a variety of contexts. They will organize and represent information about elements of Punjabi culture in a variety of ways, and will identify different perspectives on diverse elements of Punjabi culture, and explore and reflect on their origins. Students will select and use a variety of cognitive, metacognitive, social, affective, interactive, interpretive and productive strategies to enhance language learning in Punjabi.	This course introduces students to language elements they will need to communicate with native speakers. Students will participate in practical activities in which they can apply their knowledge and skills, and will begin to explore careers that require knowledge of the language of study. They will explore aspects of the culture of countries where the language under study is spoken, including social customs, music, and food, by participating in cultural events and activities involving both print and technological resources.
Strands/Major Concepts	<p>Applications</p> <ul style="list-style-type: none"> - to impart and receive information - to express emotions and personal perspectives - to get things done - to form, maintain and change interpersonal relationships - to extend their knowledge of the world - for imaginative purposes and personal enjoyment <p>Language Competence</p> <ul style="list-style-type: none"> - attend to form - interpret and produce oral texts - interpret and produce written and visual texts - apply knowledge of the sociocultural context - apply knowledge of how discourse is organized, structured and sequenced <p>Global Citizenship</p> <ul style="list-style-type: none"> - historical and contemporary elements of Punjabi culture - appreciating diversity - personal and career opportunities <p>Strategies</p> <ul style="list-style-type: none"> - language learning - language use - general learning 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening - Speaking <p>Reading</p> <p>Writing</p> <p>Grammar and Language Knowledge</p>
Overall Comparison	There is a very limited relationship between the two courses. The Alberta course has explicit outcomes relating to media works as well as to the development of language learning strategies.	
Additional Comments	This course is more comparable to Ontario International Languages, Level 3, Open or University Preparation.	

	Alberta	Ontario
Course Name	Spanish Language and Culture, Grade 9 (6th year of nine-year program)	International Languages, Open, Level 1 (LBAAO – LYXAO)
Date of curriculum	2007 Field Validation Draft	1999
Hours of Instruction	120	110
Additional Course Information	Grade 8 Spanish Language and Culture (5 th year of nine-year program which begins in Grade 4 and goes to Grade 12)	No prerequisite stated. Prerequisites will be determined by school boards, depending on the structure of their international languages program.
Course Description	<p>Students will share facts about events in past or future; express emotions and feelings in formal situations; and make and respond to suggestions or requests in formal situations.</p> <p>They will use Spanish intonation, stress and rhythm appropriately in familiar situations, and use a repertoire of words and phrases in familiar contexts within a variety of lexical fields.</p> <p>Students will understand and produce a variety of short texts on unfamiliar topics in guided and unguided situations, using a variety of conventions to structure texts in writing.</p> <p>Students will apply knowledge of the sociocultural context to use suitable, simple formal language in a variety of contexts.</p> <p>They will organize and represent information about elements of the cultures of the Spanish-speaking world in a variety of ways, and will identify different perspectives on diverse elements of the cultures of the Spanish-speaking world.</p> <p>Students will select and use a variety of cognitive, metacognitive, social, affective, interactive, interpretive and productive strategies to enhance language learning in Spanish.</p>	<p>This course introduces students to language elements they will need to communicate with native speakers. Students will participate in practical activities in which they can apply their knowledge and skills, and will begin to explore careers that require knowledge of the language of study. They will explore aspects of the culture of countries where the language under study is spoken, including social customs, music, and food, by participating in cultural events and activities involving both print and technological resources.</p>
Strands/Major Concepts	<p>Applications</p> <ul style="list-style-type: none"> - to receive and impart information - to express emotions and personal perspectives - to get things done - to form, maintain and change interpersonal relationships - to extend their knowledge of the world - to pursue imaginative purposes and personal enjoyment <p>Language Competence</p> <ul style="list-style-type: none"> - attend to form - interpret and produce texts - apply knowledge of the sociocultural context - apply knowledge of how discourse is organized, structured and sequenced <p>Global Citizenship</p> <ul style="list-style-type: none"> - historical and contemporary elements of the cultures of the Spanish-speaking world - affirming diversity - personal and career opportunities <p>Strategies</p> <ul style="list-style-type: none"> - language learning - language use - general learning 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening - Speaking <p>Reading</p> <p>Writing</p> <p>Grammar and Language Knowledge</p>
Overall Comparison	There is a very limited relationship between the two courses. The Alberta Grade 9 course of the nine-year program presumes that the student has either taken Grade 8 Spanish or has previous knowledge and experience and has thus developed speaking, reading and writing skills in Spanish. The Ontario course does not require any previous study of Spanish. The Alberta course has explicit outcomes relating to media works, as well as to the development of language learning strategies.	
Additional Comments	This course would be more comparable to Ontario International Languages, Level 3, Open or University Preparation.	

	Alberta	Ontario
Course Name	Spanish Language and Culture 10-3Y (Three-year program)	International Languages, Open, Level 2 (LBABO – LYXBO)
Date of curriculum	2005	1999
Hours of Instruction	125	110
Additional Course Information	No prerequisite necessary. This is the first in a series of three high school courses for students who begin studying Spanish language and culture in Grade 10.	No prerequisite necessary.
Course Description	<p>Students will identify people, places and things, ask for and provide basic information and respond to simple, predictable questions. They will respond to and express emotions and feelings in familiar contexts, to simple oral instructions or commands, and to invitations. They will also use the language for fun, e.g., to learn simple riddles, jingles and humorous songs.</p> <p>Students will understand a series of simple spoken sentences in guided situations, and orally produce simple words and phrases in guided situations. They will pronounce some Spanish words and phrases comprehensibly. Students will understand a series of simple written sentences in guided situations, and will write phrases and short, simple sentences in guided situations.</p> <p>Students will participate in activities and experiences that reflect elements of Spanish-speaking cultures, and will identify some elements that reflect diversity within Spanish-speaking cultures.</p> <p>At this level, students will use, with guidance, simple cognitive, metacognitive, social, affective, interactive, interpretive and productive strategies to maximize the effectiveness of language learning and communication.</p>	<p>This course provides students with opportunities to further develop their oral communication skills in the language of study, increase their confidence in using the language in practical situations and continue to investigate related career opportunities. Students will be involved in activities that promote the use of the language in real-life situations. They will also continue their exploration of the culture of countries where the language under study is spoken.</p> <p>Although students will continue to expand their vocabulary and repertoire of language structures, the language they will use at this level will still be simple.</p>
Strands/Major Concepts	<p>Applications</p> <ul style="list-style-type: none"> - to receive and impart information - to express emotions and personal perspectives - to get things done - to extend their knowledge of the world - for imaginative purposes and personal enjoyment - to form, maintain and change interpersonal relationships <p>Language Competence</p> <ul style="list-style-type: none"> - attend to form - interpret and produce oral texts - interpret and produce written texts - apply knowledge of the sociocultural context - apply knowledge of the how text is organized, structured and sequenced in Spanish <p>Global Citizenship</p> <ul style="list-style-type: none"> - historical and contemporary elements of Spanish-speaking cultures - affirming diversity - personal and career opportunities <p>Strategies</p> <ul style="list-style-type: none"> - language learning - language use - general learning 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening - Speaking <p>Reading</p> <p>Writing</p> <p>Grammar and Language Knowledge</p>
Overall Comparison	<p>There is a considerable relationship between the two courses. The Alberta Spanish Language and Culture 10-6Y course is an entry level course for the study of Spanish in high school. The Ontario Level 2 course contains more complex expectations and assumes some previous knowledge of Spanish.</p> <p>The Alberta course also has explicit outcomes in media works and a well-developed list of expectations in the development of language learning strategies.</p> <p>This course would be more comparable to Ontario International Languages, Level 1, Open, which is also an entry-level course.</p>	
Additional Comments	Spanish Language and Culture 10-3Y is also comparable to International Languages, Level 1, Academic.	

	Alberta	Ontario
Course Name	Spanish Language and Culture 20-3Y (Three-year program)	International Languages, Open, Level 3 (LBACO – LYXCO)
Date of curriculum	2005	2000
Hours of Instruction	125	110
Additional Course Information	Spanish Language and Culture 10-3Y is a prerequisite.	Prerequisite: International Languages, Level 2, Academic or Open
Course Description	<p>Students will ask for and provide information on a range of familiar topics in Spanish. They will inquire about, express and respond to feelings and emotions in a variety of familiar contexts. They will make and respond to a variety of simple requests and invitations; and suggest, initiate or direct action in group activities.</p> <p>Students will make and talk about personal observations, recognize and describe a problem and pose solutions, and gather opinions on a topic within their direct experience. They will use the language for fun and to interpret humour by reading simple, amusing texts.</p> <p>Students will understand short, simple oral texts in guided situations and unguided situations. They will understand the main point and some supporting details of written texts on familiar topics, and will produce simple written texts on familiar topics in guided situations.</p> <p>Students will use comprehensible pronunciation, stress and intonation when producing words or phrases in Spanish, and will recognize the role that accentuation plays in the Spanish language.</p> <p>Students will apply knowledge of the sociocultural context to use formal and informal language in familiar situations. They will identify some things they have in common with people their own age who live in Spanish-speaking cultures, and will identify and explore commonalities and differences between diverse groups within Spanish-speaking cultures. They will identify and use cognitive, metacognitive, social, affective, interactive, interpretive, and productive strategies to maximize the effectiveness of language learning and communication.</p>	<p>This course provides students with opportunities to further develop their communication skills in the international language and to increase their confidence in applying them in a variety of practical situations, including contexts related to future employment. Students will engage in a variety of activities and use resources that will allow them to use the language in various real-life situations. They will also continue to explore aspects of the culture of countries where the language is spoken, and investigate careers that require facility in the language.</p>
Strands/Major Concepts	<p>Applications</p> <ul style="list-style-type: none"> - to receive and impart information - to express emotions and personal perspectives - to get things done - to extend their knowledge of the world - for imaginative purposes and personal enjoyment - to form, maintain and change interpersonal relationships <p>Language Competence</p> <ul style="list-style-type: none"> - attend to form - interpret and produce oral texts - interpret and produce written texts - apply knowledge of the sociocultural context - apply knowledge of the how text is organized, structured and sequenced in Spanish <p>Global Citizenship</p> <ul style="list-style-type: none"> - historical and contemporary elements of Spanish-speaking cultures - affirming diversity - personal and career opportunities <p>Strategies</p> <ul style="list-style-type: none"> - language learning - language use - general learning 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening - Speaking <p>Reading</p> <p>Writing</p> <p>Grammar and Language Knowledge</p>
Overall Comparison	There is a considerable relationship between the two courses. The stronger relationship would be between this Alberta course and Ontario International Languages, Level 2, Open, as both courses comprise the second year of language study in Spanish.	
Additional Comments	Spanish Language and Culture 20-3Y is also comparable to International Languages, Level 2, Academic.	

	Alberta	Ontario
Course Name	Spanish Language and Culture 30-3Y (Three-year program)	International Languages, Open, Level 4 (LBADO – LYXDO)
Date of curriculum	2005	1999
Hours of Instruction	125	110
Additional Course Information	Prerequisite: Spanish Language and Culture, 20-3Y	Prerequisite: International Languages, Level 3, University Preparation or Open
Course Description	<p>Students will provide information on several aspects of a topic in Spanish, for example, by giving a simple report. They will inquire about, express and respond to a variety of feelings and emotions. They will make and respond to suggestions in a variety of situations and provide reasons for their position on an issue. Students will describe and analyze a problem and propose solutions in Spanish. They will express personal views on a variety of topics within their direct experience. They will use the language for fun and to interpret and express humour. Students will understand the main point and specific details of written texts on a variety of topics, in guided situations, and will produce short, simple texts on a variety of topics, providing some details to support the main point, in guided situations. Students will produce the sounds, stress, rhythm and intonation patterns of the Spanish language consistently and accurately, and will apply spelling rules and mechanical conventions consistently and accurately. Students will apply knowledge of the sociocultural context to explore formal and informal uses of language in a variety of contexts, and will adjust language to suit audience and purpose. They will explore and identify some elements of Spanish-speaking cultures, and participate in and contribute to activities and experiences that reflect Spanish-speaking cultures. They will select and use a variety of cognitive, metacognitive, social, affective, interactive, interpretive, and productive strategies to maximize the effectiveness of language learning and communication.</p>	<p>This course provides students with opportunities to consolidate the language skills required for effective communication in business and personal contexts. Students will use a variety of print and technological resources that will promote their ability to apply the language in practical situations, and will engage in activities such as writing memos, reading articles, and applying conversational skills in business contexts. They will also add to their knowledge of the culture of countries where the language is spoken by using resources from the local and international community.</p>
Strands/Major Concepts	<p>Applications</p> <ul style="list-style-type: none"> - to receive and impart information - to express emotions and personal perspectives - to get things done - to extend their knowledge of the world - for imaginative purposes and personal enjoyment - to form, maintain and change interpersonal relationships <p>Language Competence</p> <ul style="list-style-type: none"> - attend to form - interpret and produce oral texts - interpret and produce written texts - apply knowledge of the sociocultural context - apply knowledge of the how text is organized, structured and sequenced in Spanish <p>Global Citizenship</p> <ul style="list-style-type: none"> - historical and contemporary elements of Spanish-speaking cultures - affirming diversity - personal and career opportunities <p>Strategies</p> <ul style="list-style-type: none"> - language learning - language use - general learning 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening - Speaking <p>Reading</p> <p>Writing</p> <p>Grammar and Language Knowledge</p>
Overall Comparison	There is a considerable relationship between the two courses. The stronger comparison would be to International Languages, Level 3, Open, as both the Alberta course and the Ontario Level 3 course comprise the third year of Spanish language study.	
Additional Comments	Spanish 30-3Y would also be comparable to International Languages, Level 3, University Preparation.	

	Alberta	Ontario
Course Name	Spanish Language and Culture, Grade 9 (3rd year of Six-year program)	International Languages, Open, Level 1 (LBAAO – LYXAO)
Date of curriculum	2006	1999
Hours of Instruction	120	110
Additional Course Information	This course is the third in a series of six junior and senior high school courses in Spanish Language and Culture. It leads to Spanish Language and Culture 10-6Y. Prerequisite: Grade 8 Spanish Language and Culture (2 nd year of six-year program)	No prerequisite stated. Prerequisites will be determined by school boards, depending on the structure of their international languages program.
Course Description	Students will ask for and provide information on a range of familiar topics and will inquire about and express emotions and feelings; assume a variety of roles and responsibilities as group members; and express their views on a variety of topics within their direct experience. They will recognize some critical sound distinctions that are important for meaning. Students will use a repertoire of words and phrases in familiar contexts within a variety of lexical fields including travel, social life, health and safety and occupations and professions. Students will understand the meaning of short, simple oral texts in guided and unguided situations and will produce short, simple written texts in guided situations using simple conventions and linking several sentences coherently. Students will identify commonalities and differences between Spanish-speaking cultures being studied and their own, and will identify commonalities and differences among diverse Spanish-speaking groups. Students will identify and use a variety of cognitive, metacognitive, social, affective, interactive, and interpretive strategies to enhance language learning in Spanish.	This course introduces students to language elements they will need to communicate with native speakers. Students will participate in practical activities in which they can apply their knowledge and skills, and will begin to explore careers that require knowledge of the language of study. They will explore aspects of the culture of countries where the language under study is spoken, including social customs, music, and food, by participating in cultural events and activities involving both print and technological resources.
Strands/Major Concepts	<p>Applications</p> <ul style="list-style-type: none"> - to receive and impart information - to express emotions and personal perspectives - to get things done - to form, maintain and change interpersonal relationships - to extend their knowledge of the world - to pursue imaginative purposes and personal enjoyment <p>Language Competence</p> <ul style="list-style-type: none"> - attend to form - interpret and produce texts - apply knowledge of the sociocultural context - apply knowledge of how discourse is organized, structured and sequenced <p>Global Citizenship</p> <ul style="list-style-type: none"> - historical and contemporary elements of Spanish-speaking cultures - appreciating diversity - personal and career opportunities <p>Strategies</p> <ul style="list-style-type: none"> - language learning - language use - general learning 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening - Speaking <p>Reading</p> <p>Writing</p> <p>Grammar and Language Knowledge</p>
Overall Comparison	There is a very limited relationship between the two courses. The Alberta Grade 9 course of the six-year program presumes that the student has either taken Grade 8 Spanish Language and Culture, or has previous knowledge and experience and has thus developed speaking, reading and writing skills in Spanish through three years of Spanish study. The Ontario course does not require any previous study of Spanish. The Alberta course has explicit outcomes relating to media works as well as to the development of language learning strategies.	
Additional Comments	This course could be more comparable to Ontario International Languages, Level 2, Open or Academic.	

	Alberta	Ontario
Course Name	Spanish Language and Culture 10-6Y (Six-Year Program)	International Languages, Open, Level 2 (LBABO – LYXBO)
Date of curriculum	2006	1999
Hours of Instruction	125	110
Additional Course Information	This is the fourth in a series of six junior and senior high school courses for students who begin studying Spanish language and culture in Grade 7. Prerequisite: Spanish Grade 9, six-year program.	No prerequisite necessary.
Course Description	Students will provide information on several aspects of a topic, for example by giving a simple report. They will inquire about and express emotions and feelings in a variety of familiar contexts and state personal actions in the past, present and future. They will ask questions to gain knowledge and clarify understanding in Spanish. Students will identify and reproduce some critical sound distinctions that are important for meaning in Spanish. Students will understand short oral and written texts on unfamiliar topics in guided situations, and will produce and organize texts, using common patterns such as cause and effect, time sequence and steps in a procedure. Students will participate in and contribute to activities and experiences that reflect elements of Spanish-speaking cultures, and will explore and identify some elements of Spanish-speaking cultures. At this level, students will select and use a variety of cognitive, metacognitive, social, affective, interactive, interpretive and productive strategies to maximize the effectiveness of language learning and communication.	This course provides students with opportunities to further develop their oral communication skills in the language of study, increase their confidence in using the language in practical situations and continue to investigate related career opportunities. Students will be involved in activities that promote the use of the language in real-life situations. They will also continue their exploration of the culture of countries where the language under study is spoken. Although students will continue to expand their vocabulary and repertoire of language structures, the language they will use at this level will still be simple.
Strands/Major Concepts	<p>Applications</p> <ul style="list-style-type: none"> - to receive and impart information - to express emotions and personal perspectives - to get things done - to extend their knowledge of the world - for imaginative purposes and personal enjoyment - to form, maintain and change interpersonal relationships <p>Language Competence</p> <ul style="list-style-type: none"> - attend to form - interpret and produce texts - apply knowledge of the sociocultural context - apply knowledge of the how text is organized, structured and sequenced in Spanish <p>Global Citizenship</p> <ul style="list-style-type: none"> - historical and contemporary elements of Spanish-speaking cultures - affirming diversity - personal and career opportunities <p>Strategies</p> <ul style="list-style-type: none"> - language learning - language use - general learning 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening - Speaking <p>Reading</p> <p>Writing</p> <p>Grammar and Language Knowledge</p>
Overall Comparison	There is a very limited relationship between the two courses. The Alberta Spanish Language and Culture 10-6Y course requires that the student has taken Spanish Language and Culture Grade 9 and has been studying Spanish for four years. The Ontario course does not have any prerequisite. The expectations in the Alberta course are more complex and more extended. The Alberta course also has explicit outcomes in media works and a well-developed list of expectations in the development of language learning strategies.	
Additional Comments	This course is more comparable to International Languages Level 3, University Preparation or Open.	

	Alberta	Ontario
Course Name	Spanish Language and Culture 20-6Y (Six-year Program)	International Languages, Open, Level 3 (LBACO – LYXCO)
Date of curriculum	2006	2000
Hours of Instruction	125	110
Additional Course Information	Spanish Language and Culture 20-6Y is the fifth in a series of six junior and senior high school courses for students who begin the study of Spanish language and culture in Grade 7. Spanish Language and Culture 10-6Y is a prerequisite.	Prerequisite: International Languages, Level 2, Academic or Open
Course Description	At this level, students will share facts about events in the past or future in Spanish. They will inquire about and express probability and certainty, and will express feelings and emotions in formal situations. They will make and respond to suggestions or requests in formal situations, and use information collected from various sources to solve a problem. Students will understand a variety of short oral texts on unfamiliar topics in guided situations. They will understand a variety of short written texts on unfamiliar topics in guided situations and will produce a variety of short, simple written texts in both guided and unguided situations. Students will use intonation, stress and rhythm appropriately in familiar situations and use basic mechanical conventions and basic spelling patterns in writing unfamiliar words and phrases. Students will explore and identify some elementary of Spanish-speaking cultures using a variety of sources of information. They will select and use appropriate cognitive, metacognitive, social, affective, interactive, interpretive, and productive strategies to maximize the effectiveness of language learning and communication in a variety of situations.	This course provides students with opportunities to further develop their communication skills in the international language and to increase their confidence in applying them in a variety of practical situations, including contexts related to future employment. Students will engage in a variety of activities and use resources that will allow them to use the language in various real-life situations. They will also continue to explore aspects of the culture of countries where the language is spoken, and investigate careers that require facility in the language.
Strands/Major Concepts	Applications <ul style="list-style-type: none"> - to receive and impart information - to express emotions and personal perspectives - to get things done - to extend their knowledge of the world - for imaginative purposes and personal enjoyment - to form, maintain and change interpersonal relationships Language Competence <ul style="list-style-type: none"> - attend to form - interpret and produce oral texts - interpret and produce written texts - apply knowledge of the sociocultural context - apply knowledge of the how text is organized, structured and sequenced in Spanish Global Citizenship <ul style="list-style-type: none"> - historical and contemporary elements of Spanish-speaking cultures - affirming diversity - personal and career opportunities Strategies <ul style="list-style-type: none"> - language learning - language use - general learning 	Oral Communication <ul style="list-style-type: none"> - Listening - Speaking Reading Writing Grammar and Language Knowledge
Overall Comparison	There is a considerable relationship between the two courses.	
Additional Comments	Due to the complexity of expectations in the Alberta course and the length of time that students have been studying Chinese in Alberta, Chinese Language and Culture 20-6Y is more comparable to International Languages, Level 4, University Preparation or Open.	

	Alberta	Ontario
Course Name	Spanish Language and Culture 30-6Y (Six-year program)	International Languages, Open, Level 4 (LBADO – LYXDO)
Date of curriculum	2006	1999
Hours of Instruction	125	110
Additional Course Information	Spanish Language and Culture 30-6Y is the sixth in a series of six junior and senior high school courses for students who begin studying Spanish language and culture in Grade 7. Prerequisite: Spanish Language and Culture, 20-6Y	Prerequisite: International Languages, Level 3, University Preparation or Open
Course Description	<p>At this level, students will share detailed information on a specific topic in Spanish, for example, by giving a report or writing a biography. They will express and support their own opinions, and will compare the expression of emotions and feelings in formal and informal situations. They will offer and respond to congratulations, and express sympathy and regret. They will be able to take on a leadership role in small-group projects. Students will identify key ideas, summarize and paraphrase and will use the Spanish language for fun and to interpret and express humour.</p> <p>Students will understand the main point and some supporting details of lengthy oral and written texts on familiar topics in guided situations. They will produce short written texts on unfamiliar topics in guided situations.</p> <p>Students will speak clearly and intelligibly in Spanish in a variety of situations.</p> <p>Students will apply knowledge of the sociocultural context to explore differences in register between spoken and written texts and will identify influences on idiomatic expressions such as region.</p> <p>They will explore and identify some elements of Spanish-speaking cultures, and apply this knowledge to interpret behaviours and texts.</p> <p>They will evaluate the success of their use of a variety of cognitive, metacognitive, social, affective, interactive, interpretive, and productive strategies to enhance language learning.</p>	<p>This course provides students with opportunities to consolidate the language skills required for effective communication in business and personal contexts. Students will use a variety of print and technological resources that will promote their ability to apply the language in practical situations, and will engage in activities such as writing memos, reading articles, and applying conversational skills in business contexts. They will also add to their knowledge of the culture of countries where the language is spoken by using resources from the local and international community.</p>
Strands/Major Concepts	<p>Applications</p> <ul style="list-style-type: none"> - to receive and impart information - to express emotions and personal perspectives - to get things done - to extend their knowledge of the world - for imaginative purposes and personal enjoyment - to form, maintain and change interpersonal relationships <p>Language Competence</p> <ul style="list-style-type: none"> - attend to form - interpret and produce oral texts - interpret and produce written texts - apply knowledge of the sociocultural context - apply knowledge of the how text is organized, structured and sequenced in Spanish <p>Global Citizenship</p> <ul style="list-style-type: none"> - historical and contemporary elements of Spanish-speaking cultures - affirming diversity - personal and career opportunities <p>Strategies</p> <ul style="list-style-type: none"> - language learning - language use - general learning 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening - Speaking <p>Reading</p> <p>Writing</p> <p>Grammar and Language Knowledge</p>
Overall Comparison	There is a strong relationship between the two courses.	
Additional Comments	Spanish Language and Culture 30-6Y is also comparable in expectations and surpasses the expectations of International Languages, Level 4, University Preparation.	

	Alberta	Ontario
Course Name	Spanish Language Arts, Grade 9 (Bilingual Program)	International Languages, Open, Level 1 (LBAAO – LYXAO)
Date of curriculum	2006	1999
Hours of Instruction	Variable, up to 50% of school day depending on school board	110
Additional Course Information	The Spanish Language Arts Bilingual Program provides a more intensive language learning experience for students, and begins in Kindergarten. The Bilingual Program provides a progression of specific outcomes in Spanish from Kindergarten to Grade 9. Instruction is delivered in Spanish for a number of other areas of the curriculum such as social studies, music and art. Instruction in Spanish may comprise up to 50% of the school day, depending on the grade level and school district offerings. Grade 8 Spanish Language Arts in the Bilingual Program is a prerequisite for this course.	No prerequisite stated. Prerequisites will be determined by school boards, depending on the structure of their international languages program.
Course Description	Students will expand self-expression in oral, print and visual forms, and will questions and reflect on personal responses and interpretations and apply personal viewpoints to diverse situations or circumstances in Spanish. Students will structure and restructure ideas and information in personally meaningful ways to clarify and extend understanding. Students will use comprehension strategies appropriate to the type of text will experience texts from a variety of genres and cultural traditions and explain their own interests and preferences. Students will make notes in point form, summarizing major ideas and supporting details, and reference sources. Students will produce coherent oral presentations on familiar and some unfamiliar topics and listen to and understand the main points of oral presentations containing simple and complex ideas. They will explore differences in register between spoken and written texts in Spanish. Students will explore how their past and present Spanish-speaking cultural experiences, understanding and knowledge may be assets in future opportunities.	This course introduces students to language elements they will need to communicate with native speakers. Students will participate in practical activities in which they can apply their knowledge and skills, and will begin to explore careers that require knowledge of the language of study. They will explore aspects of the culture of countries where the language under study is spoken, including social customs, music, and food, by participating in cultural events and activities involving both print and technological resources.
Strands/Major Concepts	<p>Language Arts</p> <ul style="list-style-type: none"> • General Language Component <ol style="list-style-type: none"> 1. Students will listen, speak read, write, view and represent in Spanish to explore thoughts, ideas, feelings and experiences. 2. Students will listen, speak, read, write, view and represent in Spanish to comprehend and respond personally and critically to oral, print, visual and multimedia texts. 3. Students will listen, speak, read, write, view and represent in Spanish to manage ideas and information. 4. Students will listen, speak, read, write, view and represent in Spanish to enhance the clarity and artistry of communication. 5. Students will listen, speak, read, write, view and represent in Spanish to celebrate and build community. • Specific Language Component <ol style="list-style-type: none"> 6. Students will acquire Spanish to understand and appreciate languages and use the Spanish language confidently and competently in a variety of situations for communication, personal satisfaction and further learning. • Culture <ol style="list-style-type: none"> 7. Students will explore, understand and appreciate the cultures of the Spanish-speaking world for personal growth and satisfaction and for participating in, and contributing to, our multicultural Canadian society and the world. 	<p>Oral Communication</p> <ul style="list-style-type: none"> - Listening - Speaking <p>Reading Writing Grammar and Language Knowledge</p>
Overall Comparison	There is a very limited relationship between the two courses.	
Additional Comments	Spanish Language Arts, Grade 9 is more comparable with International Languages, Level 3, Academic or Open. Some grammatical elements which are part of the outcomes of Spanish Language Grade 9 are comparable with those of International Languages, Level 4.	

Credit Equivalency Resource Package

Course Comparisons International Languages British Columbia

**Chinese
Punjabi
Spanish**



Introduction

Organizing Framework

Curriculum documents, Integrated Resource Packages (IRPs), contain Prescribed Learning Outcomes, Suggested Instructional Strategies, Suggested Assessment Strategies, and Recommended Learning Resources.

The prescribed learning outcomes set the learning standards for the provincial K-12 education system and form the prescribed curriculum for British Columbia. They are statements of what students are expected to know and do at the end of an indicated grade or course.

Assessment and Evaluation

Prescribed learning outcomes, expressed in measurable terms, provide the basis for the development of learning activities, and assessment and evaluation strategies. Schools have the responsibility to ensure that all prescribed learning outcomes in each IRP are met. It is expected that student achievement will vary in relation to the prescribed learning outcomes. Evaluation, reporting, and student placement with respect to these outcomes are dependent on the professional judgment and experience of teachers.

The British Columbia Performance Standards describe and illustrate four levels of student performance in terms of prescribed learning outcomes relevant to the key areas. The standards focus exclusively on performance assessment. In performance assessment, students are asked to apply the skills and concepts they have learned to complete complex, realistic tasks. This type of assessment supports a criterion-referenced approach to evaluation and enables teachers, students, and parents to compare student performance to provincial standards. Each set of assessment strategies begins with a context statement that suggests an overall approach for the assessment of content, processes, and procedures. Teachers use a variety of strategies to assess students' levels of understanding in relation to outcomes. Possible strategies include performance assessment, oral and written reports, and student self-assessment.

There are provincial examinations for International Language courses. They are optional for graduating students. The exams are available in electronic format. Past exams and answer keys are available to students online.

Equivalency

For the purpose of determining Equivalency, comparison of courses may be based on factors such as:

- comparison of learning outcomes
- comparison of general subject matter
- comparison of depth or breadth of coverage of subject matter
- comparison of assessment methods, instruments, and standards

To be deemed equivalent, there should be a match of approximately 80% or more of the learning outcomes to either a Ministry-developed or board-authorized Grade 10, 11, or 12 course.

In order to receive credits through Equivalency, students must provide the appropriate documentation as proof of successful completion of the course.

Note: The following rubric may be useful in guiding decisions for granting a credit:

Very Limited Relationship - many overall expectations missing, student may be very challenged in subsequent courses that build from this course.

Considerable Relationship - several overall expectations are not met, but a generally thorough coverage of expectations is evident in course or in its prerequisite courses, ...

Strong Relationship - all or almost all overall expectations are met, thorough coverage of expectations is evident in course or in its prerequisite courses, ...

British Columbia	Ontario
Introduction	
Mandarin Chinese	
Mandarin Chinese, Grade 9	International Languages, Open, Level 1 (LBAAO – LYXAO)
Mandarin Chinese, Grade 10	International Languages, Open, Level 2 (LBABO – LYXBO)
Mandarin Chinese, Grade 11	International Languages, Open, Level 3 (LBACO – LYXCO)
Mandarin Chinese, Grade 12	International Languages, Open, Level 4 (LBADO – LYXDO)
Introductory Mandarin Chinese, Grade 11	International Languages, Open, Level 1 (LBAAO – LYXAO)
Punjabi	
Punjabi, Grade 9	International Languages, Open, Level 1 (LBAAO – LYXAO)
Punjabi, Grade 10	International Languages, Open, Level 1 (LBAAO – LYXAO)
Punjabi, Grade 11	International Languages, Open, Level 3 (LBACO – LYXCO)
Punjabi, Grade 12	International Languages, Open, Level 4 (LBADO – LYXDO)
Introductory Punjabi, Grade 11	International Languages, Open, Level 1 (LBAAO – LYXAO)
Spanish	
Spanish, Grade 9	International Languages, Open, Level 1 (LBAAO – LYXAO)
Spanish, Grade 10	International Languages, Open, Level 2 (LBABO – LYXBO)
Spanish, Grade 11	International Languages, Open, Level 3 (LBACO – LYXCO)
Spanish, Grade 12	International Languages, Open, Level 4 (LBADO – LYXDO)
Spanish, Entry 9	International Languages, Open, Level 1 (LBAAO – LYXAO)
Spanish Introductory 11	International Languages, Open, Level 1 (LBAAO – LYXAO)

	British Columbia	Ontario
Course Name	Mandarin Chinese, Grade 9	International Languages, Open, Level 1 (LBAAO – LYXAO)
Date of curriculum	1998	1999
Hours of Instruction	120	110
Additional Course Information	The course requires previous knowledge and skills in Mandarin Chinese, either from Mandarin Chinese Grade 8, or from previous knowledge and experience. The program in British Columbia for Mandarin Chinese begins in Grade 5.	No prerequisite stated. Prerequisites will be determined by school boards, depending on the structure of their international languages program.
Course Description	<p>Students should be encouraged to consolidate and expand the communication skills they have acquired in the elementary grades. Communication patterns and expressions should be reinforced. While the focus continues to be on the development of oral language, the inclusion of simple written tasks, such as writing short messages or postcards, should be enhanced.</p> <p>Students should be encouraged to acquire specific information from different media in Chinese (e.g., radio, television, newspapers, magazines) as directed by the teacher. The information required will vary according to the task. In addition, a variety of resources should be available in the classroom for students to access.</p> <p>Students should now be cultivating a greater appreciation of Chinese creative works. In addition to experiencing videos, stories, games, songs, music, dance, drama, and cultural events, they should be introduced to different literary genres (e.g., plays, short stories, novels) and some aspects of Chinese art forms (e.g., painting, calligraphy). Whenever the opportunity arises, students should be encouraged to create their own works such as short stories, poetry, and paintings.</p> <p>Students at this level should demonstrate understanding of their cultural roots, their Canadian identities, and important aspects of Chinese cultures (e.g., festivals and holidays).</p>	This course introduces students to language elements they will need to communicate with native speakers. Students will participate in practical activities in which they can apply their knowledge and skills, and will begin to explore careers that require knowledge of the language of study. They will explore aspects of the culture of countries where the language under study is spoken, including social customs, music, and food, by participating in cultural events and activities involving both print and technological resources.
Strands/Major Concepts	Communicating Language Learning Strategies Acquiring Information Experiencing Creative Works Understanding Culture and Society	Oral Communication - Listening - Speaking Reading Writing Grammar and Language Knowledge
Overall Comparison	<p>There is a very limited relationship between the two courses. The British Columbia Grade 9 course requires that the student has either been taking Mandarin Chinese courses in elementary school, or has equivalent previous experience, and has thus developed speaking, reading and writing skills in Mandarin. The Ontario course does not require any previous study of Mandarin.</p> <p>The British Columbia course includes advanced expectations relating to the reading of various literary genres such as plays, short stories and novels, while in the Ontario course the students are reading simpler texts such as menus, schedules and dialogues. The British Columbia course has explicit outcomes relating to media works, and to the development of specific language learning strategies, while the Ontario course does not include these expectations.</p>	
Additional Comments	Mandarin Chinese, Grade 9 may be more comparable to Ontario International Languages, Level 2, Open or University Preparation.	

	British Columbia	Ontario
Course Name	Mandarin Chinese, Grade 10	International Languages, Open, Level 2 (LBABO – LYXBO)
Date of curriculum	1998	1999
Hours of Instruction	120	110
Additional Course Information	Prerequisite of Mandarin Chinese, Grade 9 The Mandarin Chinese program in British Columbia schools begins in Grade 5, so students completing the Grade 10 level have been studying the language for 6 years.	No prerequisite necessary.
Course Description	<p>At this level, many students are willing to take more risks with language. Students should be encouraged to consolidate and expand the communication skills they have acquired in earlier grades. While the focus continues to be on the development of oral language, students should also be encouraged to expand their repertoire of and fluency in using Pinyin and Chinese characters. Whenever possible, include simple written tasks such as writing short messages or postcards.</p> <p>Students should be encouraged to access simple information on given topics (e.g., sports, travel, weather) using various Chinese-language media (e.g., radio, television, newspapers, pamphlets). In addition, a variety of resources should be available in the classroom for students to access.</p> <p>Students should be encouraged to cultivate an appreciation of Chinese creative works. In addition to experiencing videos, stories, games, songs, music, dance, drama, and cultural events, students should be introduced to various literary genres (e.g., plays, short stories, novels) and some aspects of Chinese art forms (e.g., painting, calligraphy). Whenever the opportunity arises, students should be encouraged to create their own works, such as short stories, poetry, and paintings.</p> <p>Students at this level should demonstrate understanding of their own cultural roots, their Canadian identity, and some important aspects of Chinese cultures (e.g., festivals and holidays). As they broaden their understanding of the Canadian cultural context, students should be given opportunities to develop sensitivity in their everyday interactions with people from diverse cultural backgrounds.</p>	<p>This course provides students with opportunities to further develop their oral communication skills in the language of study, increase their confidence in using the language in practical situations and continue to investigate related career opportunities. Students will be involved in activities that promote the use of the language in real-life situations. They will also continue their exploration of the culture of countries where the language under study is spoken.</p> <p>Although students will continue to expand their vocabulary and repertoire of language structures, the language they will use at this level will still be simple.</p>
Strands/Major Concepts	Communicating Language Learning Strategies Acquiring Information Experiencing Creative Works Understanding Culture and Society	Oral Communication - Listening - Speaking Reading Writing Grammar and Language Knowledge
Overall Comparison	<p>There is a very limited relationship between the two courses. The British Columbia Grade 10 course requires that the student has taken Mandarin Chinese, Grade 9, however, the Ontario course does not have any stated prerequisite.</p> <p>Students in the British Columbia course are expected to read novels, plays and short stories, while students in the Ontario course are reading simpler materials such as magazine articles, brochures and travelogues.</p> <p>The British Columbia course has explicit outcomes in media works which and a well-developed list of expectations in the development of language learning strategies for enhancing learning of Chinese.</p>	
Additional Comments	Mandarin Chinese, Grade 10 would seem to be more comparable to Ontario International Languages, Level 3, Open or University Preparation.	

	British Columbia	Ontario
Course Name	Mandarin Chinese, Grade 11	International Languages, Open, Level 3 (LBACO – LYXCO)
Date of Curriculum	1998	2000
Hours of Instruction	120	110
Additional Course Information	Mandarin Chinese Grade 10 is a prerequisite The program in British Columbia for Mandarin Chinese begins in Grade 5, so students who have completed Grade 11 have been studying Chinese for 7 years.	Prerequisite: International Languages, Level 2, Academic or Open
Course Description	<p>In Grades 11 and 12, students should be able to show greater confidence and sophistication in their use of both written and spoken Chinese. Instructional strategies should include relevant topics about, and interactions with, friends and family at home, at school, and in the community.</p> <p>It is important that students in Grades 11 and 12 are able to access information from various local and global media (e.g., radio, television, newspapers, CD-ROMs, the Internet). They should be encouraged to use such resources at school, at home, and in their communities.</p> <p>In Grades 11 and 12, students should be encouraged to demonstrate their understanding and appreciation of creative works in different ways and with increasing depth. They should be expected to interpret and critique simple literary works such as adapted short stories and poetry. They should also now produce their own creative works (e.g., videos, journal entries, cartoons, short stories) with clear messages and a range of vocabulary and detail. Written work should be mostly in Chinese characters, but some Pinyin for less frequently encountered vocabulary is still acceptable.</p> <p>In Grades 11 and 12, instructional strategies should include opportunities for students to broaden their understanding of their own cultural identities as well as focus on intercultural and global perspectives. Students should be encouraged to explore Canada's past and the history of Chinese immigration in British Columbia. Increasingly, they should be expected to compare various cultures, religions, and artistic expressions.</p>	<p>This course provides students with opportunities to further develop their communication skills in the international language and to increase their confidence in applying them in a variety of practical situations, including contexts related to future employment. Students will engage in a variety of activities and use resources that will allow them to use the language in various real-life situations. They will also continue to explore aspects of the culture of countries where the language is spoken, and investigate careers that require facility in the language.</p>
Strands/Major Concepts	Communicating Language Learning Strategies Acquiring Information Experiencing Creative Works Understanding Culture and Society	Oral Communication <ul style="list-style-type: none"> - Listening - Speaking Reading Writing Grammar and Language Knowledge
Overall Comparison	<p>There is a considerable relationship between the two courses. Students in British Columbia, Grade 11 are expected to view, listen to and respond to creative media works, while expectations relating to media works are not explicitly mentioned in the Ontario Level 3 curriculum. There is a strong focus on the development of language learning strategies in the British Columbia curriculum.</p> <p>Students in British Columbia are required to read more complex texts and to produce more complex pieces of writing in Grade 11.</p>	
Additional Comments	Mandarin Chinese, Grade 11 would seem to be a stronger match with International Languages, Level 4, University Preparation or Open.	

	British Columbia	Ontario
Course Name	Mandarin Chinese, Grade 12	International Languages, Open, Level 4 (LBADO – LYXDO)
Date of curriculum	1998	1999
Hours of Instruction	120	110
Additional Course Information	Prerequisite: Mandarin Chinese, Grade 11	Prerequisite: International Languages, Level 3, University Preparation or Open
Course Description	<p>By Grade 12, students should be able to demonstrate greater confidence and sophistication in their use of Chinese in daily interactions at home, at school, and in the community. In addition to listening and speaking activities, written tasks (e.g., letters, reports, journal entries) are a regular expectation.</p> <p>It is important that students in Grades 11 and 12 are able to access information from different global media (e.g., radio, television, newspapers, pamphlets, telecommunications, the Internet). They need to be encouraged to use such resources at school, at home, and in their communities. Students should also have opportunities to share acquired information with the class.</p> <p>In Grade 12, students can produce creative works in various formats by drawing on their knowledge of the language and the works they have experienced. They should be encouraged to respond using multimedia performances, videos, and so on. They should also produce creative works with some degree of proficiency and sophistication.</p> <p>By Grade 12, instructional strategies should include opportunities for students to broaden their understanding of their own cultural identities, as well as focus on intercultural and global perspectives. Increasingly, they are expected to compare different cultures, religions, and artistic expression.</p>	<p>This course provides students with opportunities to consolidate the language skills required for effective communication in business and personal contexts. Students will use a variety of print and technological resources that will promote their ability to apply the language in practical situations, and will engage in activities such as writing memos, reading articles, and applying conversational skills in business contexts. They will also add to their knowledge of the culture of countries where the language is spoken by using resources from the local and international community.</p>
Strands/Major Concepts	Communicating Acquiring Information Experiencing Creative Works Understanding Culture and Society	Oral Communication <ul style="list-style-type: none"> - Listening - Speaking Reading Writing Grammar and Language Knowledge
Overall Comparison	There is a strong relationship between the two courses. Students in the Ontario course, Level 4 are now reading novels, plays and short stories and are responding to these texts in increasingly complex ways, as are their counterparts in British Columbia.	
Additional Comments	Mandarin Chinese, Grade 12 could also be comparable to International Languages, Level 4, University Preparation.	

	British Columbia	Ontario
Course Name	Introductory Mandarin Chinese, Grade 11	International Languages, Open, Level 1 (LBAAO – LYXAO)
Date of curriculum	1998	1999
Hours of Instruction	120	110
Additional Course Information	No prerequisite for this course. Introductory Mandarin Chinese 11 is a provincially prescribed curriculum designed for students who may not have taken Mandarin Chinese 5 to 10. Successful completion of this course should provide students with a level of competence that will allow them to successfully participate in Mandarin Chinese 11 and 12 courses. Introductory Mandarin Chinese 11 is a four-credit Grade 11 course. It can be offered at the Grade 10 level. To provide students with an equivalent preparation for Mandarin Chinese 11 and 12 courses, this course incorporates material from the prescribed learning outcomes, suggested instructional strategies, suggested assessment strategies, and recommended learning resources identified for Grades 5 to 10.	No prerequisite stated. Prerequisites will be determined by school boards, depending on the structure of their international languages program.
Course Description	<p>Students should initially be encouraged to communicate in Chinese in a supportive environment. As students acquire larger repertoires of communication skills, they should be provided with opportunities to apply their competencies in everyday situations. Whenever possible, students should undertake simple written tasks such as writing short notes and letters in Pinyin and/or Chinese characters.</p> <p>Students should be encouraged to access simple information from the Chinese resources around them (e.g., at home, school). As they become more proficient in their communication skills, they should be provided with opportunities to access more complex information from a variety of resources in their homes, school, communities, and the world.</p> <p>In this course, students should be exposed to a variety of creative works in different genres (e.g., short stories, plays, songs, dance, and videos). Careful attention should be paid to selecting resource materials that are age appropriate but do not require a high level of language skills. The focus should be on fostering in students a lifelong interest in creative art.</p> <p>Students should initially be encouraged to explore their own cultural roots by studying their family backgrounds. As well, students should be introduced to some aspects of Chinese cultures (e.g., names, festivals, traditional values) and to the diversity of the Canadian cultural mosaic. As they broaden their understanding of the Canadian cultural context, students should have many opportunities to develop sensitivity in everyday interactions with people from diverse cultural backgrounds.</p>	This course introduces students to language elements they will need to communicate with native speakers. Students will participate in practical activities in which they can apply their knowledge and skills, and will begin to explore careers that require knowledge of the language of study. They will explore aspects of the culture of countries where the language under study is spoken, including social customs, music, and food, by participating in cultural events and activities involving both print and technological resources.
Strands/Major Concepts	Communicating Language Learning Strategies Acquiring Information Experiencing Creative Works Understanding Culture and Society	Oral Communication - Listening - Speaking Reading Writing Grammar and Language Knowledge
Overall Comparison	There is a considerable relationship between the two courses. The British Columbia course covers an extra number of credits in order to prepare students to enter Grade 11 Mandarin Chinese, thus giving the students the content of Mandarin Chinese Grade 9 and Grade 10 in one course. The British Columbia course has expectations in the understanding and creation of media works, as well as in the use of language learning strategies. The completion of this course is more comparable to the completion of International Languages, Level 2, Open.	
Additional Comments	Introductory Mandarin 11 could also be comparable to International Languages, Level 2, University Preparation.	

	British Columbia	Ontario
Course Name	Punjabi, Grade 9	International Languages, Open, Level 1 (LBAAO – LYXAO)
Date of curriculum	1995	1999
Hours of Instruction	120	110
Additional Course Information	Punjabi Grade 8 or equivalent knowledge and skills are required. The program in Punjabi in British Columbia begins in Grade 5, so students who have completed Grade 9 have been studying Punjabi for 5 years.	No prerequisite necessary.
Course Description	<p>In this course students will express opinions and preferences, giving reasons; exchange information related to activities, people, and things; ask for and give assistance and information; use Punjabi in a variety of authentic situations; and use vocabulary related to needs and emotions.</p> <p>In Punjabi 9, many students are able to acquire more detailed information from practical material and represent it in a variety of both written and oral forms.</p> <p>In creative works, students will respond in a personal way to creative works that they listen to, view, or read, and will produce a variety of visual, oral, and simple written creative works based on Punjabi resources.</p> <p>They will apply knowledge of characteristic Punjabi games, sports, crafts, customs, or celebrations to plan and implement a cultural event; identify ways that knowledge of Punjabi language and culture has affected their daily lives; demonstrate an appreciation of Punjabi language and culture and its place in local and global communities; and demonstrate an understanding of the significance of particular Punjabi customs, celebrations, and festivals.</p>	<p>This course introduces students to language elements they will need to communicate with native speakers. Students will participate in practical activities in which they can apply their knowledge and skills, and will begin to explore careers that require knowledge of the language of study. They will explore aspects of the culture of countries where the language under study is spoken, including social customs, music, and food, by participating in cultural events and activities involving both print and technological resources.</p>
Strands/Major Concepts	Interpersonal Communication Informational Communication Creative Works Cultural Contexts	Oral Communication - Listening - Speaking Reading Writing Grammar and Language Knowledge
Overall Comparison	<p>There is a very limited relationship between the two courses. The British Columbia Grade 9 course presumes that the student has either been taking Punjabi courses in elementary school, or has equivalent previous experience, and has thus developed speaking, reading and writing skills in Punjabi. The Ontario course does not require any previous study of Punjabi.</p> <p>This course would be more comparable to International Languages, Level 2, Open.</p>	
Additional Comments	Punjabi, Grade 9 could also be comparable to International Languages, Level 2, Academic.	

	British Columbia	Ontario
Course Name	Punjabi, Grade 10	International Languages, Open, Level 1 (LBAAO – LYXAO)
Date of curriculum	1995	1999
Hours of Instruction	120	110
Additional Course Information	Prerequisite: Punjabi Grade 9	No prerequisite necessary.
Course Description	<p>Students will communicate needs, desires, and emotions appropriately; describe events and experiences sequentially; explain how to do an everyday activity or procedure; recognize and use simple idiomatic expressions; and use Punjabi in a variety of authentic situations.</p> <p>At this level, students obtain pertinent information from Punjabi materials. Writing skills show an ability to create a narrative in logical sequence. Student will extract and process information from a variety of sources to complete authentic tasks.</p> <p>Students will respond in a personal way to creative works that they listen to, view, or read from a variety of sources, and produce a variety of creative works based on Punjabi resources, with increased emphasis on writing.</p> <p>It is expected that students will apply knowledge of characteristic Punjabi games, sports, crafts, customs, or celebrations to plan and implement a cultural event; examine the effect that knowledge of Punjabi language and culture has on various aspects of their lives; demonstrate an appreciation of Punjabi language and culture and its place in local and global communities; and explain the significance of particular Punjabi customs, celebrations, and festivals.</p>	<p>This course introduces students to language elements they will need to communicate with native speakers. Students will participate in practical activities in which they can apply their knowledge and skills, and will begin to explore careers that require knowledge of the language of study. They will explore aspects of the culture of countries where the language under study is spoken, including social customs, music, and food, by participating in cultural events and activities involving both print and technological resources.</p>
Strands/Major Concepts	Interpersonal Communication Informational Communication Creative Works Cultural Contexts	Oral Communication <ul style="list-style-type: none"> - Listening - Speaking Reading Writing Grammar and Language Knowledge
Overall Comparison	There is a considerable relationship between the two courses. The expectations in British Columbia Punjabi Grade 10 would be more comparable in expectations to International Languages, Level 3, Open.	
Additional Comments	Punjabi Grade 10 could also be comparable to International Languages, Level 3, University Preparation.	

	British Columbia	Ontario
Course Name	Punjabi, Grade 11	International Languages, Open, Level 3 (LBACO – LYXCO)
Date of curriculum	1995	2000
Hours of Instruction	120	110
Additional Course Information	Prerequisite: Punjabi Grade 10	
Course Description	<p>In Grade 11, students will exchange opinions on topics of interest; with some supportive detail, describe or narrate an event, situation, or experience; identify and use common idiomatic expressions; and interact with increased independence in familiar life situations.</p> <p>Students will research and use relevant information from a variety of sources to complete authentic tasks. They will respond in a personal way with a range of forms of expression to creative works from a variety of sources; and produce a variety of written, oral, and visual creative works based on Punjabi resources. Students will apply knowledge of characteristic Punjabi games, sports, crafts, customs, or celebrations to plan and implement a cultural event; analyse the effects that knowing about Punjabi language and culture might have on various aspects of their lives; demonstrate an appreciation of Punjabi language and culture and its place in local and global communities; and analyse the significance of particular Punjabi customs, celebrations, and festivals.</p>	<p>This course provides students with opportunities to further develop their communication skills in the international language and to increase their confidence in applying them in a variety of practical situations, including contexts related to future employment. Students will engage in a variety of activities and use resources that will allow them to use the language in various real-life situations. They will also continue to explore aspects of the culture of countries where the language is spoken, and investigate careers that require facility in the language.</p>
Strands/Major Concepts	Interpersonal Communication Informational Communication Creative Works Cultural Contexts	Oral Communication <ul style="list-style-type: none"> - Listening - Speaking Reading Writing Grammar and Language Knowledge
Overall Comparison	<p>There is a considerable relationship between the two courses. Students in British Columbia, Punjabi Grade 11 are expected to view, listen to and respond to creative media works, while expectations relating to media works are not explicitly mentioned in the Ontario Level 3 curriculum. There is a strong focus on the development of language learning strategies in the British Columbia curriculum and students are required to read more complex texts, and to produce more complex pieces of writing in Grade 11.</p> <p>The expectations of British Columbia Punjabi Grade 11 would be comparable to those of Ontario International Languages, Level 4, Open.</p>	
Additional Comments	Punjabi Grade 11 could also be comparable to International Languages, Level 4, University Preparation.	

	British Columbia	Ontario
Course Name	Punjabi, Grade 12	International Languages, Open, Level 4 (LBADO – LYXDO)
Date of curriculum	1995	1999
Hours of Instruction	120	110
Additional Course Information	Prerequisite: Punjabi, Grade 11	Prerequisite: International Languages, Level 3, University Preparation or Open
Course Description	<p>By Grade 12, students should be able to demonstrate greater confidence and sophistication in their use of Punjabi in daily interactions at home, at school, and in the community. In addition to listening and speaking activities, written tasks (e.g., letters, reports, journal entries) are a regular expectation. Students at this level are expected to demonstrate ease and control in a variety of situations when they communicate orally and in writing.</p> <p>During Punjabi 12, students should use a wide variety of resources (print, media, and people) to deal with formal research assignments and their day-to-day information needs. Most students should be able to convey clear and detailed information both orally and in writing.</p> <p>In Grade 12, students can produce creative works in various formats by drawing on their knowledge of the language and the works they have experienced. They should be encouraged to respond using multimedia performances, videos, and so on. They should also produce creative works with some degree of proficiency and sophistication.</p> <p>By Grade 12, instructional strategies should include opportunities for students to broaden their understanding of their own cultural identities, as well as focus on intercultural and global perspectives. Increasingly, they are expected to compare different cultures, religions, and artistic expression.</p>	<p>This course provides students with opportunities to consolidate the language skills required for effective communication in business and personal contexts. Students will use a variety of print and technological resources that will promote their ability to apply the language in practical situations, and will engage in activities such as writing memos, reading articles, and applying conversational skills in business contexts. They will also add to their knowledge of the culture of countries where the language is spoken by using resources from the local and international community.</p>
Strands/Major Concepts	Interpersonal Communication Informational Communication Creative Works Cultural Contexts	Oral Communication <ul style="list-style-type: none"> - Listening - Speaking Reading Writing Grammar and Language Knowledge
Overall Comparison	There is a strong relationship between the two courses. The expectations of Punjabi Grade 12 are greater in complexity and extent. They include expectations relating to the study of media works and to the acquisition of language learning strategies.	
Additional Comments	Punjabi Grade 12 could also be comparable to International Languages, Level 4, University Preparation.	

	British Columbia	Ontario
Course Name	Introductory Punjabi, Grade 11	International Languages, Open, Level 1 (LBAAO – LYXAO)
Date of curriculum	1995	1999
Hours of Instruction	120	110
Additional Course Information	Introductory Punjabi 11 is a provincially prescribed curriculum that serves as a prerequisite to Punjabi 11 for students who may not have taken Punjabi 5 to 10. Successful completion of Introductory Punjabi 11 will provide students with a level of competence to successfully participate in Punjabi 11 and Punjabi 12 courses. Introductory Punjabi 11 is a four-credit Grade 11 course. However, to alleviate scheduling pressure on students during their final two years, it can be offered at the Grade 10 level.	No prerequisite necessary.
Course Description		This course introduces students to language elements they will need to communicate with native speakers. Students will participate in practical activities in which they can apply their knowledge and skills, and will begin to explore careers that require knowledge of the language of study. They will explore aspects of the culture of countries where the language under study is spoken, including social customs, music, and food, by participating in cultural events and activities involving both print and technological resources.
Strands/Major Concepts	Interpersonal Communication Informational Communication Creative Works Cultural Contexts	Oral Communication - Listening - Speaking Reading Writing Grammar and Language Knowledge
Overall Comparison	There is a considerable relationship between the two courses. The British Columbia Grade 11 Introductory course does not presume that the student has developed knowledge and skills in Punjabi. The Ontario course also does not require any previous study of Punjabi. However, the British Columbia course covers an extra number of credits in order to prepare students to enter Grade 11 Punjabi, thus giving the students the content of Punjabi Grade 9 and Grade 10 in one course. The British Columbia course has expectations in the understanding and creation of media works, as well as in the use of language learning strategies. The completion of this course is more comparable to the completion of International Languages, Level 2, Open.	
Additional Comments	This course could also be comparable to International Languages, Level 2, Academic.	

	British Columbia	Ontario
Course Name	Spanish, Grade 9	International Languages, Open, Level 1 (LBAAO – LYXAO)
Date of curriculum	2005	1999
Hours of Instruction	120	110
Additional Course Information	Although prerequisite not explicitly stated, the course assumes previous knowledge and skills in Spanish, either from Spanish Grade 8, or from previous knowledge and experience.	No prerequisite stated. Prerequisites will be determined by school boards, depending on the structure of their international languages program.
Course Description	The focus of learning in oral communication is to convey and understand meaning in situations that are relevant to Grade 9 students, such as ordering a meal or buying a gift. Students will describe and exchange information about people, places, things and activities and will ask for and give assistance and detailed information. They will also share opinions, giving reasons. Students will extract, retrieve and process information from Spanish language resources to complete meaningful tasks. They will reflect and respond to authentic creative works from the Hispanic world. Students will demonstrate and awareness of contemporary and traditional aspects of Hispanic culture and will determine similarities between aspects of Hispanic culture and other cultures. They will also describe ways in which Spanish has influenced other languages.	This course introduces students to language elements they will need to communicate with native speakers. Students will participate in practical activities in which they can apply their knowledge and skills, and will begin to explore careers that require knowledge of the language of study. They will explore aspects of the culture of countries where the language under study is spoken, including social customs, music, and food, by participating in cultural events and activities involving both print and technological resources.
Strands/Major Concepts	Communicating Language Learning Strategies Acquiring Information Experiencing Creative Works Understanding Cultural Influences	Oral Communication - Listening - Speaking Reading Writing Grammar and Language Knowledge
Overall Comparison	There is a very limited relationship between the two courses. The British Columbia Grade 9 course presumes that the student has either been taking Spanish courses in elementary school or has equivalent previous experience and has thus developed speaking, reading and writing skills in Spanish. The Ontario course does not require any previous study of Spanish. The British Columbia course has explicit outcomes relating to media works, the development of language learning strategies, and includes outcomes relating to influences of the Hispanic world on other cultures. This course would be more comparable to Ontario International Languages, Level 2.	
Additional Comments	This course could also be comparable to Ontario International Languages, Level 2, Academic.	

	British Columbia	Ontario
Course Name	Spanish Grade 10	International Languages, Open, Level 2 (LBABO – LYXBO)
Date of curriculum	2005	1999
Hours of Instruction	120	110
Additional Course Information	Prerequisite: Spanish, Grade 9	No prerequisite necessary.
Course Description	Students will communicate needs, desires and emotions, giving reasons, and will describe events and experiences. Students will communicate in the past, present and future. While emphasis remains on the practical and everyday use of oral language, students' descriptive abilities at this level will include linking and sequencing of narrative. Students will use many strategies to identify key information in authentic Spanish language documents. They will explain in detail acquired information in oral, visual and written forms. They will discuss and respond to a range of creative works from the Hispanic world. Students will identify the contributions of Hispanic peoples to the world, compare and contrast their own customs to those of Hispanic cultures, and will identify language, expressions and behaviours that reflect cultural context.	This course provides students with opportunities to further develop their oral communication skills in the language of study, increase their confidence in using the language in practical situations and continue to investigate related career opportunities. Students will be involved in activities that promote the use of the language in real-life situations. They will also continue their exploration of the culture of countries where the language under study is spoken. Although students will continue to expand their vocabulary and repertoire of language structures, the language they will use at this level will still be simple.
Strands/Major Concepts	Communicating Language Learning Strategies Acquiring Information Experiencing Creative Works Understanding Cultural Influences	Oral Communication - Listening - Speaking Reading Writing Grammar and Language Knowledge
Overall Comparison	There is a considerable relationship between the two courses. The British Columbia Grade 10 course requires that the student has taken Spanish, Grade 10. The Ontario course does not have any prerequisite. The British Columbia course has explicit outcomes in media works and a well-developed list of expectations in the development of language learning strategies.	
Additional Comments	This course could be more comparable to International Languages, Level 3, Open or University Preparation.	

	British Columbia	Ontario
Course Name	Spanish, Grade 11	International Languages, Open, Level 3 (LBACO – LYXCO)
Date of curriculum	2005	2000
Hours of Instruction	120	110
Additional Course Information	Spanish Grade 10 is a prerequisite	Prerequisite: International Languages, Level 2, Academic or Open
Course Description	Students will describe or narrate events, situations, and experiences and use a range of vocabulary and expressions in past, present and future tenses. They will exchange opinions on topics of interest, giving their reasons and reactions. Students will retrieve, research and use relevant information from Spanish-language resources to complete meaningful tasks. They will summarize acquired information in oral, visual and written forms. Students will compare, contrast and respond to authentic creative works from the Hispanic world. They will identify contemporary issues in the Hispanic world, and demonstrate an understanding of the similarities and differences among Hispanic cultures. Students will also identify and compare language, expressions and behaviours that reflect cultural context.	This course provides students with opportunities to further develop their communication skills in the international language and to increase their confidence in applying them in a variety of practical situations, including contexts related to future employment. Students will engage in a variety of activities and use resources that will allow them to use the language in various real-life situations. They will also continue to explore aspects of the culture of countries where the language is spoken, and investigate careers that require facility in the language.
Strands/Major Concepts	Communicating Language Learning Strategies Acquiring Information Experiencing Creative Works Understanding Cultural Influences	Oral Communication - Listening - Speaking Reading Writing Grammar and Language Knowledge
Overall Comparison	There is a considerable relationship between the two courses. Students in British Columbia, Grade 11 are expected to view, listen to and respond to creative media works, while expectations relating to media works are not explicitly mentioned in the Ontario Level 3 curriculum. There is a strong focus on the development of language learning strategies in the British Columbia curriculum. Students in British Columbia are required to read more complex texts and to produce more complex pieces of writing in Grade 11. The British Columbia Grade 11 Spanish course would be more comparable to International Languages, Level 4, Open.	
Additional Comments	This course could also be comparable to International Languages, Level 4, University Preparation.	

	British Columbia	Ontario
Course Name	Spanish, Grade 12	International Languages, Open, Level 4 (LBADO – LYXDO)
Date of curriculum	2005	1999
Hours of Instruction	120	110
Additional Course Information	Prerequisite: Spanish, Grade 11	Prerequisite: International Languages, Level 3, University Preparation or Open
Course Description	Students will express short- and long-term plans, goals and intentions and use a wide range of vocabulary and complexity of expressions in past, present and future. They will exchange ideas, thoughts and points of view, giving their reasons and reactions. Students at this level will interact spontaneously in a variety of meaningful, real-life situations in Spanish. Students will retrieve, research and use relevant information from Spanish-language resources to complete meaningful tasks. They will synthesize the acquired information in oral, visual and written forms. Students will analyze and respond to authentic creative works from the Hispanic world. They will analyze and discuss contemporary issues in the Hispanic world, as well as analyze and discuss how behaviour affects attitudes. Students will also use language, expressions and behaviours to reflect cultural context.	This course provides students with opportunities to consolidate the language skills required for effective communication in business and personal contexts. Students will use a variety of print and technological resources that will promote their ability to apply the language in practical situations, and will engage in activities such as writing memos, reading articles, and applying conversational skills in business contexts. They will also add to their knowledge of the culture of countries where the language is spoken by using resources from the local and international community.
Strands/Major Concepts	Communicating Acquiring Information Experiencing Creative Works Understanding Cultural Influences	Oral Communication - Listening - Speaking Reading Writing Grammar and Language Knowledge
Overall Comparison	There is a strong relationship between the two courses.	
Additional Comments	This course could also be comparable to International Languages, Level 4, University Preparation.	

	British Columbia	Ontario
Course Name	Spanish, Entry 9	International Languages, Open, Level 1 (LBAAO – LYXAO)
Date of curriculum	2005	1999
Hours of Instruction	120	110
Additional Course Information	No prerequisite for this course. This course will prepare student for Spanish, Grade 10.	No prerequisite stated. Prerequisites will be determined by school boards, depending on the structure of their international languages program.
Course Description	<p>For many students, this is the first time they have had the opportunity to study Spanish. Students hear, repeat and “play” in Spanish. Teachers give instructions in Spanish. Students use drawings and other visual aids as well as non-verbal gestures to assist in communication. Students identify strategies used to acquire information from English resources and learn to transfer these strategies to simple Spanish language resources. They are able to present the information in pictorial form and simple sentences and paragraphs.</p> <p>Students are exposed to Spanish songs, rhymes, simple stories, dance, etc. They respond to these works through drawing, acting, singing, dancing, and simple language, both oral and written.</p> <p>Students describe a variety of cultural customs based on their own heritage, as well as those of Hispanic cultures, using a variety of formats.</p>	<p>This course introduces students to language elements they will need to communicate with native speakers. Students will participate in practical activities in which they can apply their knowledge and skills, and will begin to explore careers that require knowledge of the language of study. They will explore aspects of the culture of countries where the language under study is spoken, including social customs, music, and food, by participating in cultural events and activities involving both print and technological resources.</p>
Strands/Major Concepts	Communicating Language Learning Strategies Acquiring Information Experiencing Creative Works Understanding Cultural Influences	Oral Communication - Listening - Speaking Reading Writing Grammar and Language Knowledge
Overall Comparison	There is a strong relationship between the two courses. The British Columbia Grade 9 Entry Spanish course does not presume that the student has developed any knowledge and skills in Spanish. The Ontario course also does not require any previous study of Spanish.	
Additional Comments	This course could also be comparable to International Languages, Level 1, Academic.	

	British Columbia	Ontario
Course Name	Spanish Introductory 11	International Languages, Open, Level 1 (LBAAO – LYXAO)
Date of curriculum	2005	1999
Hours of Instruction	120	110
Additional Course Information	Introductory Spanish 11 is a provincially prescribed curriculum that serves as a prerequisite to Spanish 11 for students who may not have taken Spanish 5 to 10. Successful completion of Introductory Spanish 11 will provide students with a level of competence to successfully participate in Spanish 11 and Spanish 12 courses. Introductory Spanish 11 is a four-credit Grade 11 course. However, to alleviate scheduling pressure on students during their final two years, it can be offered at the Grade 10 level.	No prerequisite necessary.
Course Description	<p>For many students, this is their first opportunity to study Spanish. Students hear, repeat and “play” in Spanish. Teachers give instructions in Spanish. Students use drawings and other visual aids as well as non-verbal gestures to assist in communication.</p> <p>Students identify strategies used to acquire information from English resources and learn to transfer these strategies to simple Spanish language resources. As the course progresses, they are able to present information in simple sentence and paragraph formats.</p> <p>Students are exposed to Spanish songs, rhymes, simple stories, art, dance, etc. They respond to these works through drawing, acting, singing, dancing, and simple language, both oral and written.</p> <p>Students actively compare a variety of cultural experiences based on their own heritage to those of Hispanic cultures, using a variety of formats.</p>	This course introduces students to language elements they will need to communicate with native speakers. Students will participate in practical activities in which they can apply their knowledge and skills, and will begin to explore careers that require knowledge of the language of study. They will explore aspects of the culture of countries where the language under study is spoken, including social customs, music, and food, by participating in cultural events and activities involving both print and technological resources.
Strands/Major Concepts	Communicating Language Learning Strategies Acquiring Information Experiencing Creative Works Understanding Cultural Influences	Oral Communication - Listening - Speaking Reading Writing Grammar and Language Knowledge
Overall Comparison	<p>There is a considerable relationship between the two courses. The British Columbia course prepares students to enter Spanish 11, and the Ontario course prepares students to study Spanish at Level 3. However, the British Columbia course is more intensive and prepares students to enter Grade 11 Spanish with an increased number of credits. The British Columbia course has a greater focus on the development of language learning strategies.</p> <p>The British Columbia course would be more comparable to International Languages, Level 2, Open.</p>	
Additional Comments	Introductory Spanish 11 could also be comparable to International Languages, Level 2, Academic.	

Credit Equivalency Resource Package

Course Comparisons Quebec

**English
Math
Science**



reach every student



Introduction

Organizing Framework

Secondary school offers five years of general education, divided into two cycles. Cycle One, which lasts three years, enables students to consolidate the learning acquired in elementary school and to begin to think about their career options. From the third year on, optional subjects are added to the general curriculum, giving students the opportunity to explore various subject areas. At the end of the fifth year of secondary education, students are awarded a Secondary School Diploma (SSD) that provides access to college, but does not lead directly to university.

College education constitutes an intermediary level between compulsory secondary education and university education. Colleges (CEGEPs) offer two-year pre-university programs and three-year technical programs leading to a Diploma of College Studies (DCS) as well as shorter technical programs leading to an Attestation of College Studies (ACS). A Diploma of College Studies (DCS) is required for admission to university.

The programs of study are defined in terms of competencies/outcomes that correspond to the educational aims and essential knowledge for each subject.

Assessment and Evaluation

Formative evaluation is used as part of the overall learning process to support students in their process of learning. Evaluation is also used for summative purposes to determine the degree of development of the competencies/outcomes and record it in a progress report.

Evaluation Criteria are the observable standards for supporting and judging the development of the competency. The pass mark is 60%. Courses in Years 4 and 5 count toward graduation. Students require at least 54 units (credits), including 20 required units in secondary year 5 to graduate. One unit usually equals 25 hours. Criteria for marking examinations are available to teachers and students.

The Quebec Ministry of Education, Sports and Leisure (MELS) awards the Diploma of Secondary Studies to students who have accumulated 54 units from Secondary IV and V (20 must be from Secondary V.) The last digit in each course code indicates the number of units of credit that course is worth.

Note:

The following rubric may be useful in guiding decisions for granting a credit:

Very Limited Relationship – many overall expectations missing, student may be very challenged in subsequent courses that build from this course.

Considerable Relationship – several overall expectations are not met, but a generally thorough coverage of expectations is evident in course or in its prerequisite courses,...

Strong Relationship – all or almost all overall expectations are met, thorough coverage of expectations is evident in course or its prerequisite courses,...

Courses Compared

Quebec	Ontario
Introduction	
English	
Secondary Year 4 English or SELA IV, 630-416 or ENG-4061-3 and ENG-4062-3 (two term courses)	English, Grade 11, College Preparation ENG3C
Secondary Year 4 English or SELA IV, 630-416 or ENG-4061-3 and ENG-4062-3 (two term courses)	English, Grade 11, Workplace Preparation ENG3E
Secondary Year 4 English or SELA IV, 630-416 or ENG-4061-3 and ENG-4062-3 (two term courses)	English, Grade 11, University Preparation ENG3U
Secondary Year 5 English or SELA V (English as a First Language) 630-516 or as two parts ENG-5061-3 and ENG-5062-3	English, Grade 12, College Preparation ENG4C
Secondary Year 5 English or SELA V (English as a First Language) 630-516 or as two parts ENG-5061-3 and ENG-5062-3	English, Grade 12, Workplace Preparation ENG4E
Secondary Year 5 English or SELA V (English as a First Language) 630-516 or as two parts ENG-5061-3 and ENG-5062-3	English, Grade 12, University Preparation ENG4U
Mathematics	
Mathematics 514	Mathematics for Work and Everyday Life, Grade 12, Workplace Preparation MEL3E
Mathematics 536	Advanced Functions, Grade 12, University Preparation MHF4U
Mathematics 536	Functions, Grade 11, University Preparation MCR3U
Mathematics 526	Foundations for College Mathematics, Grade 11, College Preparation MBF3C
Mathematics 526	Mathematics for College Technology, Grade 12, College Preparation MCT4C
Science	
Chemistry 534 (CHE-5041-2, CHE-5042-2, CHE-5043-2)	Chemistry, Grade 12, University Preparation SCH4U
Physics 534 (PHS-5041-2, PHS-5042-2, PHS-5043-2)	Physics, Grade 11, University Preparation SPH3U
General Biology 534	Biology, Grade 12, University Preparation SBI4U
Geology 552 – 534 Cycle Two (Grade 10 & 11)	Earth and Space Science, Grade 12, University Preparation SES4U
Physical Science 416 (Cycle Two – Grade 10, 11)	Science, Grade 11, Workplace Preparation SNC3E
Physical Science 416 (Cycle Two – Grade 10, 11)	Science, Grade 11, University/College Preparation SNC3M
Tools and Methods of Science 532 TMS 532 (Cycle Two – Grade 10, 11)	Science, Grade 11, University/College Preparation SNC3M

	Quebec	Ontario
Course Name	Secondary Year 4 English or SELA IV, 630-416 or ENG-4061-3 and ENG-4062-3 (two term courses)	English, Grade 11, College Preparation ENG3C
Date of Curriculum	1981	2007 (draft)
Hours of Instruction	150	110
Additional Course Information	English language arts (for English as first language students) is required in secondary year 4.	ENG2P is a prerequisite for ENG3C.
Course Description	This course provides opportunities to develop students' abilities to effectively speak, listen, read, write and view in a variety of contexts. Students will develop an understanding of language and language processes. They will analyse print and non-print texts, including works of literature, informational texts and media. They will produce oral, written and visual texts using appropriate contexts, processes, strategies, and forms. Students will also use communication processes in effective ways to share and respond to viewpoints, and work collaboratively.	This course emphasizes the development of literacy, critical thinking, and communication skills. Students will study the content, form and style of informational texts and literary works from Canada and other countries; write reports, correspondence, and persuasive essays; and analyse media forms, audiences, and media industry practices. An important focus will be on establishing appropriate voice and using business and technical language with precision and clarity.
Strands/Major Concepts	<p>The student will show</p> <ul style="list-style-type: none"> • an understanding of the communication process • an understanding of the nature and function of language • an understanding of the types of discourse • the ability to understand an aural, written, or visual discourse • the ability to follow an appropriate process in composing an oral, written, or visual discourse • to develop his/her own viewpoint through participation in the communication process 	<p>Oral Communication</p> <ul style="list-style-type: none"> • Listening to Understand • Speaking to Communicate • Reflecting on Skills and Strategies <p>Reading</p> <ul style="list-style-type: none"> • Reading for Meaning • Understanding Form and Style • Reading with Fluency • Reflecting on Skills and Strategies <p>Writing</p> <ul style="list-style-type: none"> • Developing and Organizing Content • Using Knowledge of Form and Style • Applying Knowledge of Conventions • Reflecting on Skills and Strategies <p>Media Literacy</p> <ul style="list-style-type: none"> • Understanding Media Texts • Understanding Forms and Conventions • Creating Media Texts • Reflecting on Skills and Strategies
Assessment/Evaluation	<p>Assessment is both criterion referenced and norm referenced; formative assessments are strictly criterion referenced while summative assessments provide opportunities for both types.</p> <p>There are several End of Cycle Two (the last two years of secondary school) minimum expectation contexts. These include explaining orally a topic of interest, taking part in group discussion and arriving at consensus to a shared problem, listening to or viewing a newscast, reading informational text, reading and responding to a literary text, composing for a variety of purposes and audiences.</p>	<p>Assessment is criterion-referenced.</p> <p>Level 1 (50-59%) indicates the minimally acceptable performance in relation to the prescribed course expectations.</p> <p>ENG3C counts as one of the compulsory courses required for graduation.</p>
Overall Comparison	<p>There is a considerable relationship between the two courses. Most of the major concepts in ENG3C are addressed in SELA IV, including those related to oral communication, reading and writing, and using and understanding media forms and texts.</p> <p>The Quebec course does not include expectations which specifically address metacognition. The course also does not explicitly address the creation of media works.</p>	
Additional Comments	<p>In Quebec, secondary school begins after Grade 6.</p> <p>Secondary school offers five years of general education, divided into two cycles. Cycle One, which lasts three years, enables students to consolidate the learning acquired in elementary school and to begin to think about their career options. From the third year on, optional subjects are added to the general curriculum, giving students the opportunity to explore various subject areas (sciences, arts, etc.). At the end of the fifth year of secondary education, students are awarded a Secondary School Diploma (SSD) that provides access to college, but does not lead directly to university.</p>	

	Quebec	Ontario
Course Name	Secondary Year 4 English or SELA IV, 630-416 or ENG-4061-3 and ENG-4062-3 (two term courses)	English, Grade 11, Workplace Preparation ENG3E
Date of Curriculum	1981	2007 (draft)
Hours of Instruction	150	110
Additional Course Information	English language arts (for English as first language students) is required in Secondary Year 4.	ENG2L or ENG2P are pre-requisites
Course Description	This course provides opportunities to develop students' abilities to effectively speak, listen, read, write and view in a variety of contexts. Students will develop an understanding of language and language processes. They will analyse print and non-print texts, including works of literature, informational texts and media. They will produce oral, written and visual texts using appropriate contexts, processes, strategies, and forms. Students will also use communication processes in effective ways to share and respond to viewpoints, and work collaboratively.	This course emphasizes the development of literacy, critical thinking, and communication skills. Students will study the content, form and style of informational texts and literary works; write explanations, letters, and reports; and investigate the connections among media forms, audiences, and media industry practices. An important focus will be on using language clearly, accurately, and effectively in a variety of contexts.
Strands/Major Concepts	<p>The student will show</p> <ul style="list-style-type: none"> • an understanding of the communication process • an understanding of the nature and function of language • an understanding of the types of discourse • the ability to understand an aural, written, or visual discourse • the ability to follow an appropriate process in composing an oral, written, or visual discourse • to develop his/her own viewpoint through participation in the communication process 	<p>Oral Communication</p> <ul style="list-style-type: none"> • Listening to Understand • Speaking to Communicate • Reflecting on Skills and Strategies <p>Reading</p> <ul style="list-style-type: none"> • Reading for Meaning • Understanding Form and Style • Reading with Fluency • Reflecting on Skills and Strategies <p>Writing</p> <ul style="list-style-type: none"> • Developing and Organizing Content • Using Knowledge of Form and Style • Applying Knowledge of Conventions • Reflecting on Skills and Strategies <p>Media Literacy</p> <ul style="list-style-type: none"> • Understanding Media Texts • Understanding Forms and Conventions • Creating Media Texts • Reflecting on Skills and Strategies
Assessment/Evaluation	<p>Assessment is both criterion referenced and norm referenced; formative assessments are strictly criterion referenced while summative assessments provide opportunities for both types.</p> <p>There are several End of Cycle Two (the last two years of secondary school) minimum expectation contexts. These include explaining orally a topic of interest, taking part in group discussion and arriving at consensus to a shared problem, listening to or viewing a newscast, reading informational text, reading and responding to a literary text, and composing for a variety of purposes and audiences.</p>	<p>Assessment is criterion-referenced.</p> <p>Level 1 (50-59%) indicates the minimally acceptable performance in relation to the prescribed course expectations.</p> <p>ENG3E counts as one of the compulsory courses required for graduation.</p>
Overall Comparison	<p>There is a considerable relationship between the two courses. Most of the major concepts in ENG3E are addressed in SELA IV, including those related to oral communication, reading and writing, and using and understanding media forms and texts.</p> <p>The Quebec course does not include expectations which specifically address metacognition. The course also does not explicitly address the creation of media works, and the knowledge and skills specific to the workplace and other contexts outside the classroom.</p>	

	Quebec	Ontario
Course Name	Secondary Year 4 English or SELA IV, 630-416 or ENG-4061-3 and ENG-4062-3 (two-term courses)	English, Grade 11, University Preparation ENG3U
Date of Curriculum	1981	2007 (draft)
Hours of Instruction	150	110
Additional Course Information	English language arts (for English as first language students) is required in secondary year 4.	ENG2D is a prerequisite for ENG3U.
Course Description	This course provides opportunities to develop students' abilities to effectively speak, listen, read, write and view in a variety of contexts. Students will develop an understanding of language and language processes. They will analyse print and non-print texts, including works of literature, informational texts and media. They will produce oral, written and visual texts using appropriate contexts, processes, strategies, and forms. Students will also use communication processes in effective ways to share and respond to viewpoints, and work collaboratively.	This course emphasizes the development of literacy, critical thinking, and communication skills. Students will analyse challenging texts from various periods; conduct research and analyse the information gathered; write persuasive and literary essays; and analyse the relationship among media forms, audiences, and media industry practices. An important focus will be on understanding the development of the English language.
Strands/Major Concepts	<p>The student will show</p> <ul style="list-style-type: none"> • an understanding of the communication process • an understanding of the nature and function of language • an understanding of the types of discourse • the ability to understand an aural, written, or visual discourse • the ability to follow an appropriate process in composing an oral, written, or visual discourse • to develop his/her own viewpoint through participation in the communication process 	<p>Oral Communication</p> <ul style="list-style-type: none"> • Listening to Understand • Speaking to Communicate • Reflecting on Skills and Strategies <p>Reading</p> <ul style="list-style-type: none"> • Reading for Meaning • Understanding Form and Style • Reading with Fluency • Reflecting on Skills and Strategies <p>Writing</p> <ul style="list-style-type: none"> • Developing and Organizing Content • Using Knowledge of Form and Style • Applying Knowledge of Conventions • Reflecting on Skills and Strategies <p>Media Literacy</p> <ul style="list-style-type: none"> • Understanding Media Texts • Understanding Forms and Conventions • Creating Media Texts • Reflecting on Skills and Strategies
Assessment/Evaluation	<p>Assessment is both criterion referenced and norm referenced; formative assessments are strictly criterion referenced while summative assessments provide opportunities for both types.</p> <p>There are several End of Cycle Two (the last two years of secondary school) minimum expectation contexts. These include explaining orally a topic of interest, taking part in group discussion and arriving at consensus to a shared problem, listening to or viewing a newscast, reading informational text, reading and responding to a literary text, and composing for a variety of purposes and audiences.</p>	<p>Assessment is criterion-referenced.</p> <p>Level 1 (50-59%) indicates the minimally acceptable performance in relation to the prescribed course expectations.</p> <p>ENG3U counts as one of the compulsory courses required for graduation.</p>
Overall Comparison	<p>There is a considerable relationship between the two courses. Most of the major concepts in ENG3U are addressed in the Quebec course, including those related to oral communication, reading and writing, and using and understanding media forms and texts.</p> <p>The Quebec course does not include expectations which specifically address metacognition (reflecting on skills and strategies) and the creation of media works.</p>	

	Quebec	Ontario
Course Name	Secondary Year 5 English or SELA V (English as a First Language) 630-516 (or as two parts ENG-5061-3 and ENG-5062-3)	English, Grade 12, College Preparation ENG4C
Date of Curriculum	1981	2007 (draft)
Hours of Instruction	150	110
Additional Course Information	English language arts (for English as first language students) is required in secondary year 5. Secondary V English is a required course for admission into college education, which includes technical education and pre-university education.	ENG3C is a prerequisite for ENG4C.
Course Description	This course provides opportunities to develop students' abilities to effectively speak, listen, read, write and view in a variety of contexts. Students will develop an understanding of language and language processes. They will analyse print and non-print texts, including works of literature, informational texts and media. They will produce oral, written and visual texts using appropriate contexts, processes, strategies, and forms. Students will also use communication processes in effective ways to share and respond to viewpoints, and work collaboratively.	This course emphasizes the development of literacy, critical thinking, and communication skills. Students will analyse information texts and literary works from various time periods, countries, and cultures: write research reports, summaries, and short analytical essays; complete an independent study project; and analyse interactions among media forms, audiences, and media industry practices. An important focus will be on establishing appropriate style and using business and technical language effectively.
Strands/Major Concepts	<p>The student will show</p> <ul style="list-style-type: none"> • an understanding of the communication process • an understanding of the nature and function of language • an understanding of the types of discourse • the ability to understand an aural, written, or visual discourse • the ability to follow an appropriate process in composing an oral, written, or visual discourse • to develop his/her own viewpoint through participation in the communication process 	<p>Oral Communication</p> <ul style="list-style-type: none"> • Listening to Understand • Speaking to Communicate • Reflecting on Skills and Strategies <p>Reading</p> <ul style="list-style-type: none"> • Reading for Meaning • Understanding Form and Style • Reading with Fluency • Reflecting on Skills and Strategies <p>Writing</p> <ul style="list-style-type: none"> • Developing and Organizing Content • Using Knowledge of Form and Style • Applying Knowledge of Conventions • Reflecting on Skills and Strategies <p>Media Literacy</p> <ul style="list-style-type: none"> • Understanding Media Texts • Understanding Forms and Conventions • Creating Media Texts • Reflecting on Skills and Strategies
Assessment/Evaluation	<p>Assessment is both criterion referenced and norm referenced; formative assessments are strictly criterion referenced while summative assessments provide opportunities for both types.</p> <p>There is a provincial examination at the end of the course. It consists of three parts: Reading: responding to literature, Writing: writing to inform, and Writing: writing to engage.</p> <p>There are several End of Cycle Two (the last two years of secondary school) minimum expectation contexts. These include explaining orally a topic of interest, taking part in group discussion and arriving at consensus to a shared problem, listening to or viewing a newscast, reading informational text, reading and responding to a literary text, and composing for a variety of purposes and audiences.</p>	<p>Assessment is criterion-referenced.</p> <p>Level 1 (50-59%) indicates the minimally acceptable performance in relation to the prescribed course expectations.</p> <p>ENG4C counts as one of the compulsory courses required for graduation.</p>
Overall Comparison	<p>There is a considerable relationship between the two courses. Most of the major concepts in ENG4C are addressed in SELA V, including those related to oral communication, reading and writing, and using and understanding media forms and texts.</p> <p>The Quebec course does not specifically address metacognition (reflecting on skills and strategies). The course also does not explicitly include the creation of media works.</p>	

	Quebec	Ontario
Course Name	Secondary Year 5 English or SELA V (English as a First Language) 630-516 (or as two parts ENG-5061-3 and ENG-5062-3)	English, Grade 12, Workplace Preparation ENG4E
Date of Curriculum	1981	2007 (draft)
Hours of Instruction	150	110
Additional Course Information	English language arts (for English as first language students) is required in secondary year 5. Secondary V English is a required course for admission into college education, which includes technical education and pre-university education.	ENG3E
Course Description	This course provides opportunities to develop students' abilities to effectively speak, listen, read, write and view in a variety of contexts. Students will develop an understanding of language and language processes. They will analyse print and non-print texts, including works of literature, informational texts and media. They will produce oral, written and visual texts using appropriate contexts, processes, strategies, and forms. Students will also use communication processes in effective ways to share and respond to viewpoints, and work collaboratively.	This course emphasizes consolidation of literacy, critical thinking, and communication skills. Students will study information texts and literature from various countries and cultures; write summaries, reports, résumés, and short essays; complete an independent research project; and explain the connections among media forms, audiences and media industry practices. An important focus will be on using specialized language related to the workplace accurately and coherently in appropriate contexts.
Strands/Major Concepts	The student will show <ul style="list-style-type: none"> • an understanding of the communication process • an understanding of the nature and function of language • an understanding of the types of discourse • the ability to understand an aural, written, or visual discourse • the ability to follow an appropriate process in composing an oral, written, or visual discourse • to develop his/her own viewpoint through participation in the communication process 	<p>Oral Communication</p> <ul style="list-style-type: none"> • Listening to Understand • Speaking to Communicate • Reflecting on Skills and Strategies <p>Reading</p> <ul style="list-style-type: none"> • Reading for Meaning • Understanding Form and Style • Reading with Fluency • Reflecting on Skills and Strategies <p>Writing</p> <ul style="list-style-type: none"> • Developing and Organizing Content • Using Knowledge of Form and Style • Applying Knowledge of Conventions • Reflecting on Skills and Strategies <p>Media Literacy</p> <ul style="list-style-type: none"> • Understanding Media Texts • Understanding Forms and Conventions • Creating Media Texts • Reflecting on Skills and Strategies
Assessment/Evaluation	Assessment is both criterion referenced and norm referenced; formative assessments are strictly criterion referenced while summative assessments provide opportunities for both types. There is a provincial examination at the end of the course. It consists of three parts: Reading: responding to literature, Writing: writing to inform, and Writing: writing to engage. There are several End of Cycle Two (the last two years of secondary school) minimum expectation contexts. These include explaining orally a topic of interest, taking part in group discussion and arriving at consensus to a shared problem, listening to or viewing a newscast, reading informational text, reading and responding to a literary text, and composing for a variety of purposes and audiences.	Assessment is criterion-referenced. Level 1 (50-59%) indicates the minimally acceptable performance in relation to the prescribed course expectations. ENG4E counts as one of the compulsory courses required for graduation.
Overall Comparison	There is a considerable relationship between the two courses. Most of the major concepts in ENG4E are addressed in SELA V, including those related to oral communication, reading and writing, and using and understanding media forms and texts. The Quebec course does not include expectations which specifically address metacognition. The course also does not explicitly address the creation of media works, and to the knowledge and skills specific to the workplace and other contexts outside the classroom.	

	Quebec	Ontario
Course Name	Secondary Year 5 English or SELA V (English as a First Language) 630-516 (or as two parts ENG-5061-3 and ENG-5062-3)	English, Grade 12, University Preparation ENG4U
Date of Curriculum	1981	2007 (draft)
Hours of Instruction	150	110
Additional Course Information	English language arts (for English as first language students) is required in secondary year 5. Secondary V English is a required course for admission into college education, which includes technical education and pre-university education.	ENG3U is a prerequisite for ENG4U.
Course Description	This course provides opportunities to develop students' abilities to effectively speak, listen, read, write and view in a variety of contexts. Students will develop an understanding of language and language processes. They will analyse print and non-print texts, including works of literature, informational texts and media. They will produce oral, written and visual texts using appropriate contexts, processes, strategies, and forms. Students will also use communication processes in effective ways to share and respond to viewpoints, and work collaboratively.	This course emphasizes consolidation of literacy, critical thinking, and communication skills. Students will analyse a range of challenging texts from various time periods, countries, and cultures, write analytical and argumentative essays and a major paper for an independent literary research project, and apply key concepts to analyse media works. An important focus will be on understanding academic language and using it coherently and confidently in discussion and argument.
Strands/Major Concepts	<p>The student will show</p> <ul style="list-style-type: none"> • an understanding of the communication process • an understanding of the nature and function of language • an understanding of the types of discourse • the ability to understand an aural, written, or visual discourse • the ability to follow an appropriate process in composing an oral, written, or visual discourse • to develop his/her own viewpoint through participation in the communication process 	<p>Oral Communication</p> <ul style="list-style-type: none"> • Listening to Understand • Speaking to Communicate • Reflecting on Skills and Strategies <p>Reading</p> <ul style="list-style-type: none"> • Reading for Meaning • Understanding Form and Style • Reading with Fluency • Reflecting on Skills and Strategies <p>Writing</p> <ul style="list-style-type: none"> • Developing and Organizing Content • Using Knowledge of Form and Style • Applying Knowledge of Conventions • Reflecting on Skills and Strategies <p>Media Literacy</p> <ul style="list-style-type: none"> • Understanding Media Texts • Understanding Forms and Conventions • Creating Media Texts • Reflecting on Skills and Strategies
Assessment/Evaluation	<p>Assessment is both criterion referenced and norm referenced; formative assessments are strictly criterion referenced while summative assessments provide opportunities for both types.</p> <p>There is a provincial examination at the end of the course. It consists of three parts: Reading: responding to literature, Writing: writing to inform, and Writing: writing to engage.</p> <p>There are several End of Cycle Two (the last two years of secondary school) minimum expectation contexts. These include explaining orally a topic of interest, taking part in group discussion and arriving at consensus to a shared problem, listening to or viewing a newscast, reading informational text, reading and responding to a literary text, and composing for a variety of purposes and audiences.</p>	<p>Assessment is criterion-referenced.</p> <p>Level 1 (50-59%) indicates the minimally acceptable performance in relation to the prescribed course expectations.</p> <p>ENG4U counts as one of the compulsory courses required for graduation.</p>
Overall Comparison	<p>There is a considerable relationship between the two courses. Most of the major concepts in ENG4U are addressed in SELA V, including those related to oral communication, reading and writing, and using and understanding media forms and texts.</p> <p>The Quebec course does not specifically address metacognition (reflecting on skills and strategies). The course also does not explicitly include the creation of media works.</p>	

	Quebec	Ontario						
Course Name	Mathematics 514	Mathematics for Work and Everyday Life, Grade 11, Workplace Preparation MEL3E						
Date of Curriculum	1997	2007						
Hours of Instruction	100	110						
Additional Course Information	Mathematics 416	Prerequisite: Principles of Mathematics, Grade 9, Academic, or Foundations of Mathematics, Grade 9, Applied, or a ministry-approved locally developed Grade 10 mathematics course						
Course Description	Mathematics 514 is part of the basic secondary school curriculum and provides the students with the skills required by every citizen to function productively in society. The course is designed to have students apply optimization techniques, analyze statistical data, and analyze geometric situations.	This course enables students to broaden their understanding of mathematics as it is applied in the workplace and daily life. Students will solve problems associated with earning money, paying taxes, and making purchases; apply calculations of simple and compound interest in saving, investing, and borrowing; and calculate the costs of transportation and travel in a variety of situations. Students will consolidate their mathematical skills as they solve problems and communicate their thinking.						
Strands/Major Concepts	<p>Optimization</p> <ul style="list-style-type: none"> • solve problems using graphs (digraphs, Euler paths, ...) • solve systems of linear inequalities <p>Statistics</p> <ul style="list-style-type: none"> • Scatter plots, correlation • Simple probabilities <p>Geometry</p> <ul style="list-style-type: none"> • Distance between 2 points • Geometric probability 	<p>Earning and Purchasing</p> <p>Saving, Investing, and Borrowing</p> <p>Transportation and Travel</p>						
Assessment/Evaluation	<p>There are no pre-defined requirements for assessment of student achievement within the current curriculum policy document. Policy does identify a mix of criterion-referenced and norm-referenced grading. Guidelines are provided for the weighting of content:</p> <table style="margin-left: 20px;"> <tr> <td>Optimization</td> <td>50%</td> </tr> <tr> <td>Geometry</td> <td>20%</td> </tr> <tr> <td>Statistics</td> <td>30%</td> </tr> </table> <p>There is a common provincial exam for Math 514.</p>	Optimization	50%	Geometry	20%	Statistics	30%	<p>Assessment is criterion-referenced.</p> <p>Level 1 (50-59%) indicates the minimally acceptable performance in relation to the prescribed course expectations.</p>
Optimization	50%							
Geometry	20%							
Statistics	30%							
Overall Comparisons	<p>There is a very limited relationship between the two courses.</p> <p>Math 514 is intended as basic math but has content that is very different from similar workplace math programs in Ontario and across Canada.</p> <p>Math 514 does not have the application focus evident in Workplace preparation courses in Ontario, nor does it have the algebraic content to align with any College preparation courses in Ontario.</p> <p>Math 514 has expectations that do not align with workplace math programs in Ontario or other provinces outside of Quebec.</p> <p>There are NO Overall Expectations in Mathematics for Work and Everyday Life (MEL3E) that are explicitly found in the current Quebec Mathematics 514 provincial curriculum.</p>							

	Quebec	Ontario						
Course Name	Mathematics 536	Advanced Functions, Grade 12, University Preparation MHF4U						
Date of Curriculum	1997	2007						
Hours of Instruction	100	110						
Additional Course Information	Prerequisite: Mathematics 436. (Math 436 and Math 536 are described as the advanced sequence of math courses in Grades 10 and 11 in Quebec)	Prerequisite: Functions, Grade 11, University Preparation, or Mathematics for College Technology, Grade 12, College Preparation						
Course Description	Students will work with inequalities and systems of inequalities involving real variables and then use them to solve optimization problems. They will then analyze different types of functions involving real variables; absolute value functions, step functions, square root functions, rational functions, exponential functions, and logarithmic and trigonometric functions. They will also study the composition of functions and operations involving functions as well as inverse of a function, and they will solve problems using these functions as models for different situations.	This course extends students' experience with functions. Students will investigate the properties of polynomial, rational, logarithmic, and trigonometric functions; develop techniques for combining functions; broaden their understanding of rates of change; and develop facility in applying these concepts and skills. Students will also refine their use of the mathematical processes necessary for success in senior mathematics. This course is intended both for students taking the Calculus and Vectors course as a prerequisite for a university program and for those wishing to consolidate their understanding of mathematics before proceeding to any one of a variety of university programs.						
Strands/Major Concepts	<p>Algebra</p> <ul style="list-style-type: none"> Systems of inequalities Graph and solve problems using functions (square root, rational, exponential, log, trig) Inverse functions, composition of functions Solve problems using geometric loci of first and second degree relations (including conics) <p>Geometry</p> <ul style="list-style-type: none"> Solve geometric problems (including work with vectors) <p>Statistics</p> <ul style="list-style-type: none"> One and Two variable statistics (measures of dispersion, normal distribution, regression line and correlation coefficient) 	<p>Exponential and Logarithmic Functions</p> <p>Trigonometric Functions</p> <p>Polynomial and Rational Functions</p> <p>Characteristics of Functions</p>						
Assessment/Evaluation	<p>There are no pre-defined requirements for assessment of student achievement within the current curriculum policy document. Policy does identify a mix of criterion-referenced and norm-referenced grading. Guidelines are provided for the weighting of content:</p> <table> <tr> <td>Algebra</td> <td>67%</td> </tr> <tr> <td>Geometry</td> <td>23%</td> </tr> <tr> <td>Statistics</td> <td>10%</td> </tr> </table> <p>There are common provincial exams in the prerequisite course, Math 436, but not in Math 536.</p>	Algebra	67%	Geometry	23%	Statistics	10%	
Algebra	67%							
Geometry	23%							
Statistics	10%							
Overall Comparisons	<p>There is a very limited relationship between the two courses. Mathematics 536 covers several of the overall expectations of MHF4U but not always to the same depth or requiring the same level of application. Students in Mathematics 536 do not work with polynomial functions nor with rates of change. Students in Mathematics 536 do work with topics such as conics, statistical distributions, and vectors that are not included in MHF4U or its prerequisites.</p> <p>Overall Expectations in Advanced Functions, Grade 12, (MHF4U) that are NOT found in the Quebec course Math 536 or its prerequisites:</p> <p>Polynomial and Rational Functions</p> <ul style="list-style-type: none"> identify and describe some key features of polynomial functions, and make connections between the numeric, graphical, and algebraic representations of polynomial functions; solve problems involving polynomial and simple rational equations graphically and algebraically; demonstrate an understanding of solving polynomial and simple rational inequalities <p>Exponential and Logarithmic Functions</p> <ul style="list-style-type: none"> Identify and describe some key features of the graphs of logarithmic functions, make connections among the numeric, graphical and algebraic representations of logarithmic functions, and solve related problems graphically; (partial match, less emphasis on applications in Math 536) <p>Characteristics of Functions</p> <ul style="list-style-type: none"> demonstrate an understanding and instantaneous rate of change, and determine, numerically and graphically, and interpret the average rate of change of a function over a given interval and the instantaneous rate of change for a given function at a given point; 							

	Quebec	Ontario
Course Name	Mathematics 536	Functions, Grade 11, University Preparation MCR3U
Date of Curriculum	1997	2007
Hours of Instruction	100	110
Additional Course Information	Prerequisite: Mathematics 436. (Math 436 and Math 536 are described as the advanced sequence of math courses in Grades 10 and 11 in Quebec)	Prerequisite: Principles of Mathematics, Grade 10, Academic
Course Description	Students will work with inequalities and systems of inequalities involving real variables and then use them to solve optimization problems. They will then analyze different types of functions involving real variables; absolute value functions, step functions, square root functions, rational functions, exponential functions, and logarithmic and trigonometric functions. They will also study the composition of functions and operations involving functions as well as inverse of a function, and they will solve problems using these functions as models for different situations.	This course introduces the mathematical concept of the function by extending students' experiences with linear and quadratic relations. Students will investigate properties of discrete and continuous functions, including trigonometric and exponential functions; represent functions numerically, algebraically, and graphically; solve problems involving applications of functions; investigate inverse functions; and develop facility in determining equivalent algebraic expressions. Students will reason mathematically and communicate their thinking as they solve multi-step problems.
Strands/Major Concepts	Algebra <ul style="list-style-type: none"> • Systems of inequalities • Graph and solve problems using functions (square root, rational, exponential, log, trig) • Inverse functions, composition of functions • Solve problems using geometric loci of first and second degree relations (including conics) Geometry <ul style="list-style-type: none"> • Solve geometric problems (including work with vectors) Statistics <ul style="list-style-type: none"> • One and Two variable statistics (measures of dispersion, normal distribution, regression line and correlation coefficient) 	Characteristics of Functions Exponential Functions Discrete Functions Trigonometric Functions
Assessment/Evaluation	There are no pre-defined requirements for assessment of student achievement within the current curriculum policy document. Guidelines are provided for the weighting of content: Algebra 67% Geometry 23% Statistics 10% There are common provincial exams in the prerequisite course, Math 426, but not in Math 526.	
Overall Comparisons	There is a considerable relationship between the two courses. Mathematics 536 covers many of the overall expectations of MCR3U but not always requiring the same level of application. Students in Mathematics 536 do work with topics such as conics, statistical distributions, logarithms, composition of functions, and vectors that are not included in MCR3U or its prerequisites. Overall Expectations in Functions (MCR3U) that are NOT found in the Quebec course Math 536 or its prerequisites: Discrete Functions <ul style="list-style-type: none"> • demonstrate an understanding of recursive sequences, represent recursive sequences in a variety of ways, and make connections to Pascal's triangle; • demonstrate an understanding of the relationships involved in arithmetic and geometric sequences and series, and solve related problems; • make connections between sequences, series, and financial applications, and solve problems involving compound interest and ordinary annuities. 	
Additional Comments	Note: Math 536 includes several expectations of Advanced Functions, Grade 12, University Preparation (MHF4U). See the report on MHF4U. The secondary program in Quebec is from grade 7 to grade 11. Mathematics 400 series courses are at the grade 10 level in Quebec. Mathematics 500 series courses are at the grade 11 level in Quebec, which is the final year of secondary school.	

	Quebec	Ontario
Course Name	Mathematics 526	Foundations for College Mathematics, Grade 11, College Preparation MBF3C
Date of Curriculum	2000	2007
Hours of Instruction	100	110
Additional Course Information	Mathematics 426	Prerequisite: Foundations of Mathematics, Grade 10, Applied
Course Description	Mathematics 526 is the second course in the sequence of mathematics courses, which falls between the basic sequence (i.e. Math 416-Math 514) and the advanced sequence (i.e. Math 436-Math 536) in terms of the amount of material covered, the detail involved and the complexity of the situations, problems and applications studied. The course is designed to have students use algebra, analyze geometric situations, and analyze statistical data.	This course enables students to broaden their understanding of mathematics as a problem solving tool in the real world. Students will extend their understanding of quadratic relations; investigate situations involving exponential growth; solve problems involving compound interest; solve financial problems connected with vehicle ownership; develop their ability to reason by collecting, analysing, and evaluating data involving one variable; connect probability and statistics; and solve problems in geometry and trigonometry. Students will consolidate their mathematical skills as they solve problems and communicate their thinking.
Strands/Major Concepts	Algebra <ul style="list-style-type: none"> • Systems of 1st-degree inequalities • Graph and solve problems using functions (square root, rational, exponential, log, trig) • Solve trig, exponential and log equations • Solve problems using geometric loci of first and second degree relations (including conics) Geometry <ul style="list-style-type: none"> • Solve geometric problems Statistics <ul style="list-style-type: none"> • One and Two variable statistics (measures of dispersion, normal distribution, and correlation coefficient) 	Mathematical Models Personal Finance Geometry And Trigonometry Data Management
Assessment/Evaluation	There are no pre-defined requirements for assessment of student achievement within the current curriculum policy document. Guidelines are provided for the weighting of content: Algebra 68% Geometry 20% Statistics 12% There are common provincial exams in the prerequisite course, Math 426, but not in Math 526.	
Overall Comparisons	There is a considerable relationship between the two courses. Students who have successfully completed Mathematics 526 have a generally thorough knowledge of the expectations of MBF3C. The reverse would not be true. Quebec's course requires students to work with logarithms, rational functions, inequalities, conics, and statistical distributions that are not included in the expectations in MBF3C and its prerequisite courses. Several of the expectations (e.g., sine and cosine law) were taught in the prerequisite course to Math 526. Overall Expectations in Foundations of College Mathematics (MBF3C) that are NOT found in Math 526 or its prerequisites: Personal Finance <ul style="list-style-type: none"> • compare simple and compound interest, relate compound interest to exponential growth, and solve problems involving compound interest; • compare services available from financial institutions, and solve problems involving the cost of making purchases on credit; • interpret information about owning and operating a vehicle, and solve problems involving the associated costs. 	
Additional Comments	Note: Math 526 includes several expectations of Mathematics for College Technology, Grade 12, College Preparation (MCT4C). See the report on MCT4C. The secondary program in Quebec is from grade 7 to grade 11. Mathematics 400 series courses are at the grade 10 level in Quebec. Mathematics 500 series courses are at the grade 11 level in Quebec, which is the final year of secondary school.	

	Quebec	Ontario						
Course Name	Mathematics 526	Mathematics for College Technology, Grade 12, College Preparation MCT4C						
Date of Curriculum	2000	2007						
Hours of Instruction	100	110						
Additional Course Information	Mathematics 426	Prerequisite: Functions and Applications, Grade 11, University/College Preparation or Functions, Grade 11, University Preparation						
Course Description	Mathematics 526 is the second course in the sequence of mathematics courses, which falls between the basic sequence (i.e. Math 416-Math 514) and the advanced sequence (i.e. Math 436-Math 536) in terms of the amount of material covered, the detail involved and the complexity of the situations, problems and applications studied. The course is designed to have students use algebra, analyze geometric situations, and analyze statistical data.	This course enables students to extend their knowledge of functions. Students will investigate and apply properties of polynomial, exponential, and trigonometric functions; continue to represent functions numerically, graphically, and algebraically; develop facility in simplifying expressions and solving equations; and solve problems that address applications of algebra, trigonometry, vectors, and geometry. Students will reason mathematically and communicate their thinking as they solve multi-step problems. This course prepares students for a variety of college technology programs.						
Strands/Major Concepts	<p>Algebra</p> <ul style="list-style-type: none"> • Systems of 1st-degree inequalities • Graph and solve problems using functions (square root, rational, exponential, log, trig) • Solve trig, exponential and log equations • Solve problems using geometric loci of first and second degree relations (including conics) <p>Geometry</p> <ul style="list-style-type: none"> • Solve geometric problems <p>Statistics</p> <ul style="list-style-type: none"> • One and Two variable statistics (measures of dispersion, normal distribution, and correlation coefficient) 	<p>Exponential Functions</p> <p>Polynomial Functions</p> <p>Trigonometric Functions</p> <p>Applications of Geometry</p>						
Assessment/Evaluation	<p>There are no pre-defined requirements for assessment of student achievement within the current curriculum policy document. Guidelines are provided for the weighting of content:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 70%;">Algebra</td> <td style="text-align: right;">68%</td> </tr> <tr> <td>Geometry</td> <td style="text-align: right;">20%</td> </tr> <tr> <td>Statistics</td> <td style="text-align: right;">12%</td> </tr> </table> <p>There are common provincial exams in the prerequisite course, Math 426, but not in Math 526.</p>	Algebra	68%	Geometry	20%	Statistics	12%	
Algebra	68%							
Geometry	20%							
Statistics	12%							
Overall Comparisons	<p>There is a very limited relationship between the two courses. Math 526 covers many of the overall expectations of MCT4C but not always to the same depth or requiring the same level of application. Students in Mathematics 526 do not work with polynomial functions, with vectors, and do limited work with trigonometric functions. Students in Mathematics 526 do work with topics such as conics, and statistical distributions that are not included in MCT4C or its prerequisites.</p> <p>Overall Expectations in Mathematics for College Technology, Grade 12 (MCT4C) that are NOT found in the Quebec course or its prerequisites.</p> <p>Polynomial Functions</p> <ul style="list-style-type: none"> • recognize and evaluate polynomial functions, describe key features of their graphs, and solve problems using graphs of polynomial functions; • make connections between the numeric, graphical, and algebraic representations of polynomial functions; • solve polynomial equations by factoring, make connections between functions and formulas, and solve problems involving polynomial expressions arising from a variety of applications. <p>Applications of Geometry</p> <ul style="list-style-type: none"> • represent vectors, add and subtract vectors, and solve problems using vector models, including those arising from real-world applications. <p>Trigonometric Functions</p> <ul style="list-style-type: none"> • demonstrate an understanding that sinusoidal functions can be used to model some periodic phenomena, and solve related problems, including those arising from real-world applications. 							

	Quebec	Ontario
Course Name	Chemistry 534 (CHE-5041-2, CHE-5042-2, CHE-5043-2)	Chemistry, Grade 12, University Preparation SCH4U
Date of Curriculum	1992. Revised curriculum for implementation in 2009.	2000
Hours of Instruction	100	110
Additional Course Information	Prerequisite: Physical Sciences 436 or its equivalent. Credits awarded for Chemistry 534 can be applied toward a Secondary School Diploma (SSD). Chemistry 534 is a prerequisite for admission to certain general and technical education programs at the CEGEP-level. Students must complete a ministry prepared exam worth 50% of their final mark. The exam consists of classroom and laboratory work. The partial summative evaluation carried out by the teacher accounts for the remaining 50% of the mark. Students must achieve an average mark of 60% to pass the course.	Prerequisite: Chemistry, Grade 11, University Preparation SCH3U
Course Description	By learning about the scientific method, students will gain a better understanding of the behaviour of gases; chemical dynamics and energy transfers involved in chemical reactions; chemical equilibrium and oxidation-reduction and establish links with related technical phenomena, social changes, and environmental consequences.	This course enables students to deepen their understanding of chemistry through the study of organic chemistry, energy changes and rates of reaction, chemical systems and equilibrium, electrochemistry, and atomic and molecular structure. Students will further develop problem-solving and laboratory skills as they investigate chemical processes, at the same time refining their ability to communicate scientific information. Emphasis will be placed on the importance of chemistry in daily life, and on evaluating the impact of chemical technology on the environment.
Strands/Major Concepts	Research Gases and their Applications Chemical Reactions: Energy Chemical Reactions: Dynamics Chemical Reactions: Equilibrium and Oxidation Reduction	Organic Chemistry Energy Changes and Rates of Reaction Chemical Systems and Equilibrium Electrochemistry Structure and Properties
Overall Comparison	There is a considerable relationship between the two courses. Two major topics in Ontario Organic Chemistry and Structure and Properties are not taught in Chemistry 534 in Quebec. Overall Expectations in Chemistry, Grade 12 (SCH4U) NOT found in the Quebec course: Organic Chemistry <ul style="list-style-type: none"> demonstrate an understanding of the structure of various organic compounds, and of chemical reactions involving these compounds; investigate various organic compounds through research and experimentation, predict the products of organic reactions, and name and represent the structures of organic compounds using the IUPAC system and molecular models; evaluate the impact of organic compounds on our standard of living and the environment. Structure and Properties <ul style="list-style-type: none"> demonstrate an understanding of quantum mechanical theory, and explain how types of chemical bonding account for the properties of ionic, molecular, covalent network, and metallic substances; describe products and technologies whose development has depended on understanding molecular structure, and technologies that have advanced the knowledge of atomic and molecular theory. 	
Additional Comments	In Quebec, secondary school offers five years of general education, divided into two cycles. Cycle One, which lasts three years, enables students to consolidate the learning acquired in elementary school and to begin to think about their career options. From the third year on, optional subjects are added to the general curriculum, giving students the opportunity to explore various subject areas (sciences, arts, etc.). At the end of the fifth year of secondary education, students are awarded a Secondary School Diploma (SSD) that provides access to college, but does not lead directly to university. College education constitutes an intermediary level between compulsory secondary education and university education. Colleges (CEGEPs) offer two-year pre-university programs and three-year technical programs leading to a Diploma of College Studies (DCS) as well as shorter technical programs leading to an Attestation of College Studies (ACS). A Diploma of College Studies (DCS) is required for admission to university.	
Opportunity for Additional Credits	The Tools and Methods in Science (TMS 532) program was primarily developed to be integrated into learning situations developed for other Secondary IV and V science programs, especially Physics 534 and Chemistry 534. In this two credit (50 hour) optional program, students become familiar with the tools and methods of science as they investigate various phenomena in their environment and gain additional preparation for CEGEP – level science courses.	

	Quebec	Ontario
Course Name	Physics 534 (PHS-5041-2, PHS-5042-2, PHS-5043-2)	Physics, Grade 11, University Preparation SPH3U
Date of Curriculum	1992. Revised curriculum for implementation in 2009.	2000
Hours of Instruction	100	110
Additional Course Information	Prerequisite: Physical Sciences 436 Credits awarded for Physics 534 can be applied toward a Secondary School Diploma (SSD). Intended to prepare students for CEGEP-level Pure and Applied or Health Sciences concentrations. Students must complete a ministry prepared exam worth 50% of their final mark. The exam consists of classroom and laboratory work. The partial summative evaluation carried out by the teacher accounts for the remaining 50% of the mark. Students must achieve an average mark of 60% to pass the course.	Prerequisite: Grade 10 Science, Academic
Course Description	The Discovery of Matter and Energy contains three compulsory modules, the second of which requires students to carry out a research project. Investigating optical phenomena has become a modern technological challenge. The invention of the laser in the 1950s captured the interests of scientists, industry, and the medical field. In addition, every area of human activity has felt the influence of fibre-optic technology. The ability to understand methods of investigating the nature of light will enable both future professional scientists and ordinary citizens to develop a more critical attitude towards technological developments. Designing, constructing, and using optical devices to measure phenomena such as forces, masses, energy transformations and the motion of objects or organisms calls for imagination and creativity, qualities necessary for the inventive scientists and technicians of tomorrow. The empirical approach to Mechanics emphasized in this program gives students the opportunity to examine mechanical phenomena and feel the effects of various forces (e.g. acceleration, thrust, pressure, heat energy), observe changes in the motion of objects, and relate their own experiences to what they have observed in the laboratory. As scientists, technicians and engineers, they will have to refine and use the very models that they will begin to construct in this module.	This course develops students' understanding of the basic concepts of physics. Students study the laws of dynamics and explore different kinds of forces, the quantification and forms of energy (mechanical, sound, light, thermal, and electrical), and the way energy is transformed and transmitted. They develop scientific-inquiry skills as they verify accepted laws and solve both assigned problems and those emerging from their investigations. Students analyse the interrelationships between physics and technology, and consider the impact of technological applications of physics on society and the environment.
Strands/Major Concepts	The Nature of Light Optical Devices Mechanics	Forces and Motion Energy, Work and Power Waves and Sound Light and Geometric Optics Electricity and Magnetism
Overall Comparison	There is a considerable relationship between the two courses. Overall Expectations in Physics, Grade 11 (SPH3U) NOT found in the Quebec course: Electricity and Magnetism <ul style="list-style-type: none"> • Demonstrate an understanding of the properties, physical quantities, principles, and laws related to electricity, magnetic fields, and electromagnetic induction; • Carry out experiments or simulations, and construct a prototype device, to demonstrate characteristic properties of magnetic fields and electromagnetic induction • Identify and describe examples of domestic and industrial technologies that were developed on the basis of scientific understanding of magnetic fields. Waves and Sound <ul style="list-style-type: none"> • demonstrate an understanding of the properties of mechanical waves and sound and the principles underlying the production, transmission, interaction, and reception of mechanical waves and sound; • investigate the properties of mechanical waves and sound through experiments or simulations, and compare predicted results with actual results; • describe and explain ways in which mechanical waves and sound are produced in nature, and evaluate the contributions to entertainment, health, and safety of technologies that make use of mechanical waves and sound. 	
Opportunity for Additional Credits	The Tools and Methods in Science (TMS 532) program was primarily developed to be integrated into learning situations developed for other Secondary IV and V science programs, especially Physics 534 and Chemistry 534. In this two credit (50 hour) optional program, students become familiar with the tools and methods of science as they investigate various phenomena in their environment and gain additional preparation for CEGEP-level science courses.	

	Quebec	Ontario
Course Name	General Biology 534	Biology, Grade 12, University Preparation SBI4U
Date of Curriculum	1988. Revised curriculum for implementation in 2009.	2000
Hours of Instruction	100	110
Additional Course Information	Prerequisite: Physical Sciences 436 Credits awarded for Biology 534 can be applied toward a Secondary School Diploma (SSD). General Biology 534 prepares students for compulsory and/or optional CEGEP-level courses such as Biology 301 or 401. Students must achieve an average mark of 60% to pass the course.	Prerequisite: Biology, Grade 11, University Preparation SBI3U
Course Description	The General Biology program, which revolves around a unifying theme (i.e. Life: A Matter of Balance), focuses on the basic structures and mechanisms which ensure maintenance in living things. This program is intended to help Secondary IV or V students increase their knowledge of science by studying biological phenomena as well as their effects on society. Students examine topics using an approach which enables them to increase their knowledge of science by: <ul style="list-style-type: none"> • developing knowledge of biological facts; • discovering the ways in which this knowledge has evolved throughout history (successes, stumbling blocks, mistakes, setbacks, gaps); • discovering the relationships that exist among knowledge, technology and society; • perfecting their work methods and their ability to reason. 	This course provides students with the opportunity for in-depth study of the concepts and processes associated with biological systems. Students will study theory and conduct investigations in the area of metabolic processes, molecular genetics, homeostasis, evolution, and population dynamics. Emphasis will be placed on achievement of the detailed knowledge and refined skills needed for further study in various branches of the life sciences and related fields.
Strands/Major Concepts	What is Life <ul style="list-style-type: none"> • A Matter of Organization • A Matter of Continuity • A Matter of Energy • A Matter of Adaptation Balance in Nature <ul style="list-style-type: none"> • A Balanced Organism • A Stable Ecosystem Research Topics Skills and Attitudes	Metabolic Processes Molecular Genetics Homeostasis Evolution Population Dynamics
Overall Comparison	There is a strong relationship between the two courses. A major concept in Ontario of Molecular Genetics is not taught in General Biology 534 in Quebec. Overall Expectations in Biology, Grade 12 (SBI4U) NOT found in the Quebec course: Metabolic Processes <ul style="list-style-type: none"> • describe the structure and function of the macromolecules necessary for the normal metabolic functions of all living things, and the role of enzymes in maintaining normal metabolic functions; Molecular Genetics <ul style="list-style-type: none"> • explain the concepts of gene and gene expression and the roles of DNA, RNA, and chromosomes in cellular metabolism, growth, and division, and demonstrate an awareness of the universality of the genetic code; • explain, through laboratory activities and conceptual models, processes within the cell nucleus; • describe some of the theoretical issues surrounding scientific research into genetic continuity; • the general impact and philosophical implications of the knowledge gained; and some of the issues raised by related technological applications 	

	Quebec	Ontario
Course Name	Geology 552 – 534 Cycle Two (Grade 10 & 11)	Earth and Space Science, Grade 12, University Preparation SES4U
Date of Curriculum	1987	2000
Hours of Instruction	100	110
Additional Course Information	Prerequisite: Not specified. It is an optional course for students who are interested in Geology. Counts as credit for a Secondary School Diploma. (to be replaced in 2008-09) This course provides additional background for college level science courses.	Prerequisite: Grade 10 Science, Academic
Course Description	Geology plays an increasingly important role in today's world and economy. Consequently, the intention of this optional course is to enrich the students' scientific knowledge by helping them to develop an awareness of certain geological phenomena related to their immediate environment, using a method which is similar to that applied by geologists. The purpose of this course, in line with the afore-mentioned objective, is to provide the type of learning content that will help students: <ul style="list-style-type: none"> • to acquire the basic concepts related to geomorphology, petrology, stratigraphy, global tectonics and the natural resources found in their immediate environment; • to gradually acquire a work approach by applying the geological method to explore the various natural phenomena encountered in their geological environment; • to develop a sense of responsibility and a critical spirit regarding the use of geological resources for their personal benefit and for the benefit of humankind. 	This course focuses on the Earth as a planet, and on the basic concepts and theories of Earth science and their relevance to everyday life. Students will examine the Earth's place in the solar system and, after a general introduction to Earth science, will explore in more detail the materials of the Earth, its internal and surficial processes, and its history. The course draws on astronomy, biology, chemistry, mathematics, and physics in its consideration of geological processes that can be observed directly or inferred from other evidence.
Strands/Major Concepts	Geology 552-534 consists of five modules: Geomorphology Petrology Stratigraphy Global Tectonics Natural Resources	The Earth as a Planet Introduction to Earth Sciences Earth Materials Internal and Superficial Earth Processes Earth History
Overall Comparison	There is a strong relationship between these two courses. The geology information is very similar to the Ontario course but there is no mention of aspects of the Earth as a planet in the solar system or other planet's geology in the Quebec curriculum.	

	Quebec	Ontario
Course Name	Physical Science 416 (Cycle Two – Grade 10, 11)	Science, Grade 11, Workplace Preparation SNC3E
Date of Curriculum	1990	2000
Hours of Instruction	150	110
Additional Course Information	Prerequisite: Not specified (revision to be implemented in 2008-09). A core course required for a Secondary School Diploma.	
Course Description	<p>Physics and chemistry programs should help students develop scientific and technological abilities for a world in which these skills are synonymous with development. These disciplines have had a significant effect on different aspects of our existence, as evidenced by the role they have played in the fight against acid precipitation, in the development of energy sources, recycling techniques, and superconductive materials, and in the use of isotopes. Thus, there is no doubt that they should become part of a student's basic education, since this will be the last time that most students will ever study these subjects.</p> <p>It is also important to help students acquire basic scientific knowledge so that they can better understand the issues arising from the interrelationship of science, technology, society and the environment. Through the study of chemical and physical phenomena, students should become familiar with the practical implications of scientific work.</p> <p>If students are afforded the opportunity to develop genuine scientific attitudes and the skills related to scientific inquiry, they will not only acquire a greater understanding of various types of physical phenomena in their environment, but also be able to live in greater harmony with that environment. The teacher should encourage students to develop a better understanding of their place in the world and to question a whole range of prejudices with a view to making them aware of the importance to environmental protection and resource conservation.</p>	<p>This course provides students with the science-related knowledge and skills they need to help them make informed decisions in the workplace and in their personal lives. Students will explore a range of topics, including materials and safety; electrical circuits; micro-organisms; the human immune system and defences against disease; and the impact of humans on the environment. Emphasis is placed on relating these topics directly to students' experiences both in the world of work and in daily life.</p>
Strands/Major Concepts	<p>The Science course focuses on The Discovery of Matter and Energy and consists of 3 compulsory modules:</p> <ul style="list-style-type: none"> • Properties and Structure • Electrical Phenomena • Ionic Phenomena <p>Other enrichment and optional objectives are determined by the school.</p>	<p>Materials and Safety Electrical Circuits Micro-organisms The Immune System and Human Health Human Impact on the Environment</p>
Assessment/Evaluation	<p>Science 416 leads to a Secondary School Diploma the pass mark is 60%. A Laboratory Examination is 15% of the final mark. Schools may create their own Lab Exam or use the Ministry version. Either 2 or 3 lab exams are used over the year to address the 3 key strands in Physical Science 416-436. Students must write a 2-hour examination set by the Minister of Education.</p>	
Overall Comparison	<p>There is a very limited relationship between these two courses. The Immune System and Human Health and Human Impact on the Environment are not treated in the Quebec courses. Materials and Safety and Electrical Circuits are only partially covered under the sections on Properties and Structure and Ionic Phenomena. The aspects of the nature of science, the scientific method and the nature of science are treated thoroughly.</p>	

	Quebec	Ontario
Course Name	Physical Science 416 (Cycle Two – Grade 10, 11)	Science, Grade 11, University/College Preparation SNC3M
Date of Curriculum	1990	2000
Hours of Instruction	150	110
Additional Course Information	Prerequisite: Not specified. (revision to be implemented in 2008-09) A core course required for a Secondary School Diploma.	Prerequisite Grade 10 Science, Academic or Applied.
Course Description	<p>Physics and chemistry programs should help students develop scientific and technological abilities for a world in which these skills are synonymous with development. These disciplines have had a significant effect on different aspects of our existence, as evidenced by the role they have played in the fight against acid precipitation, in the development of energy sources, recycling techniques, and superconductive materials, and in the use of isotopes. Thus, there is no doubt that they should become part of a student's basic education, since this will be the last time that most students will ever study these subjects.</p> <p>It is also important to help students acquire basic scientific knowledge so that they can better understand the issues arising from the interrelationship of science, technology, society and the environment. Through the study of chemical and physical phenomena, students should become familiar with the practical implications of scientific work.</p> <p>If students are afforded the opportunity to develop genuine scientific attitudes and the skills related to scientific inquiry, they will not only acquire a greater understanding of various types of physical phenomena in their environment, but also be able to live in greater harmony with that environment. The teacher should encourage students to develop a better understanding of their place in the world and to question a whole range of prejudices with a view to making them aware of the importance to environmental protection and resource conservation.</p>	<p>This course enables students, including those who do not intend to pursue science-related programs at the postsecondary level, to increase their understanding of science and its technological applications. Students will explore a range of topics, including the safe use of everyday chemicals; the science of nutrition and body function; waste management; the application of scientific principles in space; and technologies in everyday life. Emphasis will be placed on the role of science and technology in daily life and in relation to social and environmental issues.</p>
Strands/Major Concepts	<p>The Science course focuses on The Discovery of Matter and Energy and consists of 3 compulsory modules:</p> <ul style="list-style-type: none"> • Properties and Structure • Electrical Phenomena • Ionic Phenomena <p>Other enrichment and optional objectives are determined by the school.</p>	<p>Everyday Chemicals and Safe Practices Body Input and Body Function Waste Management Science and Space Technologies in Everyday Life</p>
Assessment/Evaluation	<p>Science 416-436 leads to a Secondary School Diploma the pass mark is 60%.</p> <p>A Laboratory Examination is 15% of the final mark. Schools may create their own Lab Exam or use the Ministry version. Either 2 or 3 lab exams are used over the year to address the 3 key strands in Physical Science 416-436. Students must write a 2-hour examination set by the Minister of Education.</p>	
Overall Comparison	<p>There is a very limited relationship between these two courses. Body Input and Body Function, Waste Management, and Science and Space are not treated in the Quebec course. Everyday Chemicals and Safe Practice is only partially covered under the section on Ionic Phenomena and some aspects of Technologies in Everyday Life are treated throughout various components of the Quebec curriculum. The aspects of the nature of science, the scientific method and the nature of science are treated thoroughly.</p>	
Additional Comments	<p>Note: Science 416 is intended for non-science major students and there is also a Science 436 which is intended for science major students. The content is similar in that the core curriculum is the same but there is additional supplementary content in the 436 course that prepares students to take Chemistry and Physics courses.</p>	

	Quebec	Ontario
Course Name	Tools and Methods of Science 532 (TMS 532) (Cycle Two – Grade 10, 11)	Science, Grade 11, University/College Preparation SNC3M
Date of Curriculum	1992	2000
Hours of Instruction	50	110
Additional Course Information	Prerequisite: Not a stand alone course, intended to be integrated into other Secondary IV or V courses. Chemistry 534, Physics 534, General Biology 534, Geology 534 or Science 416-436 Provides additional background for CEGEP (college) or University level science courses. It is an optional course that may be counted towards a Secondary School Diploma (to be replaced in 2008-09).	Prerequisite Grade 10 Science, Academic or Applied.
Course Description	In this program, students become familiar with natural and technological phenomena through learning situations that they themselves propose or that are suggested by the teacher. This course was primarily designed to be integrated into learning situations developed for the other Secondary IV and V science programs. <i>TMS 532</i> helps students to: <ul style="list-style-type: none"> • learn how to make better use of tools and methods useful for scientific work • learn how to make better use of instruments and materials that help scientists and technologists do their work • learn about the concept of a model • learn about the nature of science itself The students should construct this learning content and develop their skills and attitudes through learning situations in which they can investigate their environment by means of the scientific method and examine the relationships between science, technology, and society.	This course enables students, including those who do not intend to pursue science-related programs at the postsecondary level, to increase their understanding of science and its technological applications. Students will explore a range of topics, including the safe use of everyday chemicals; the science of nutrition and body function; waste management; the application of scientific principles in space; and technologies in everyday life. Emphasis will be placed on the role of science and technology in daily life and in relation to social and environmental issues.
Strands/Major Concepts	The Science course consists of 2 modules: <ul style="list-style-type: none"> • Research Project • Tools and Methods Used in Research Work 	Everyday Chemicals and Safe Practices Body Input and Body Function Waste Management Science and Space Technologies in Everyday Life
Overall Comparison	There is a very limited relationship between these two courses. This Quebec course does not treat 4 of the Ontario strands at all. Everyday Chemicals and Safe Practices, Body Input and Body Function, Waste Management, and Science and Space are not treated at all. Some aspects of Technologies in Everyday Life are treated throughout various components of the Quebec curriculum and in more detail here. The aspects of the nature of science, the scientific method and the nature of science are treated thoroughly. This course provides a strong support for the STSE emphasis in the Ontario curriculum and for the scientific investigation skills that are highlighted at the start of all senior science courses.	