

# Learning

# Outcomes

# Framework

September 18, 2012

*Grades 10–12*

Due to the nature of curriculum development, this document is regularly under revision. For the most up-to-date content, please refer to the Nova Scotia Department of Education website at <http://www.ednet.ns.ca/psp-lof.shtml>.

  
NOVA SCOTIA



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**Nova Scotia Department of Education**

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# Introduction

The learning outcomes framework comprises a series of curriculum outcomes statements describing what knowledge, skills, and attitudes students are expected to demonstrate a result of their cumulative learning experiences in the primary–graduation continuum. Through an ongoing process, the Department of Education is developing a learning outcomes framework for each area of the public school program.

This document provides an overview of the learning outcomes framework organized by grade level and subject area. It is intended to serve as a brief survey of expected learning outcomes and as a tool to assist teachers in program planning. The connections among learning outcomes reflect natural affinities among subject areas and facilitate the design of a balanced, integrated program.

In designing appropriate learning experiences that enable students to achieve the expected learning outcomes, teachers and administrators are expected to refer to foundation documents and related curriculum guides listed in *Public School Programs*. In planning the appropriate use of information technologies as tools for learning and teaching, teachers and administrators should also refer to *The Integration of Information and Communication Technology within the Curriculum* (2005). It is available online at <http://lrt.EDnet.ns.ca>.

Foundation documents provide the framework for general and key-stage curriculum outcomes, outline the focus and key features of the curriculum, and describe contexts for learning and teaching. Curriculum guides elaborate on specific curriculum outcomes and describe other aspects of curriculum, such as program design and components, assessment and instructional strategies, and resources.

General curriculum outcomes are statements that identify what students are expected to know and be able to do upon completion of study in a curriculum area. Key-stage curriculum outcomes are statements that identify what students are expected to know and be able to do by the end of grades 3, 6, 9, and 12 as a result of their cumulative learning experiences in a curriculum area. Specific curriculum outcomes are statements that identify what students are expected to know and be able to do at a particular grade level and/or course.

The following overview of the learning outcomes framework notes general curriculum outcomes, learning outcomes, unit outcomes, or unifying concepts and specific curriculum outcomes. For some subject areas, key-stage curriculum outcomes statements are also included. It should be noted that specific curriculum outcomes for some courses are not yet available and that other curriculum outcomes are **draft** statements. While implementation of new curriculum in these subjects is not yet required, teachers may wish to consider these draft statements and the key-stage curriculum outcomes in planning their instructional programs.



**Grade 10**



# Career Development 10

## Specific Curriculum Outcomes

Students will be expected to

### Module 1: Personal Development

- 1.1 continue to develop independent decision-making skills
- 1.2 develop effective communication and teamwork skills
- 1.3 effectively manage personal relationships and conflicts
- 1.4 describe strategies to deal with personal and community health issues
- 1.5 demonstrate respect and appreciation for a diversity of cultural values
- 1.6 demonstrate an understanding of the impact of different attitudes and beliefs

### Module 2: Career Awareness

- 2.1 articulate personal interests, attributes, skills, learning styles, and preferences
- 2.2 access, interpret, and evaluate career information
- 2.3 engage in life and work planning and goal setting
- 2.4 apply the knowledge and skills needed to seek and obtain work

### Module 3: Workplace Readiness

- 3.1 demonstrate knowledge and skills related to occupational health and safety and the Workplace Hazardous Materials Information System (WHMIS)
- 3.2 develop a plan to enhance their employability based on The Conference Board of Canada Employability Skills 2000+
- 3.3 demonstrate an understanding of workplace hierarchies, relationships, and etiquette

### Module 4: Financial Management

- 4.1 make life and work decisions that balance values, financial realities, and media influences
- 4.2 demonstrate strategies for managing money in life and work
- 4.3 demonstrate an understanding of consumer rights, responsibilities, and issues

### Module 5: LifeWork Portfolio

- 5.1 include artifacts to demonstrate their growth in knowledge and skills
- 5.2 include items that illustrate their interests and abilities
- 5.3 reflect on their work to articulate a career plan
- 5.4 communicate their career plans

# Community-Based Learning 10

## Specific Curriculum Outcomes

Students will be expected to

1. demonstrate an understanding of and appreciation for their community\* and its potential
2. demonstrate the behaviours and attitudes of active citizenship\*\*
3. demonstrate a growth in understanding of the importance of safety in the home, workplace, and community
4. apply fundamental skills\*\*\*, including communicating, managing information, using numbers, and problem solving
5. apply personal management skills, including positive attitudes and behaviours, responsibility, adaptability, and lifelong learning
6. apply teamwork skills
7. demonstrate an understanding of the skills and knowledge related to a range of careers and community roles
8. demonstrate a commitment to the process of personal growth
9. expand the range of artifacts in their LifeWork Portfolio
10. demonstrate the skills and attitudes required to be successful in a co-operative education course

\*Community includes individuals, businesses, institutions, organizations, and networks.

\*\*Citizenship is used here to mean responsible behaviour toward community, environment, the law, and other people.

\*\*\*Skills is used here in the context of the Conference Board of Canada's *Employability Skills 2000+*.

# Drama 10

## Learning Outcomes

### Creative/Productive

1. Students will demonstrate personal growth through drama.
2. Students will use drama to explore, formulate, and express ideas, perceptions, and feelings.

### Critical/Responsive

3. Students will be able to respond with critical awareness to their own work and to the work of others.
4. Students will address problems and make decisions relating to their drama work.

### Cultural/Historical

5. Students will value cultural diversity and be able to demonstrate respect for cultural diversity in the drama context.
6. Students will be able to interpret how drama celebrates, comments on, and questions issues and events in cultural and historical contexts.

## Specific Curriculum Outcomes

Students will be expected to

- 1.1 respond with sensitivity and respect to the ideas of others
- 1.2 take greater learning risks within a dramatic context
- 1.3 use various forms for reflection and debriefing
  
- 2.1 complete warm-up activities
- 2.2 assume and sustain role in a dramatic context
- 2.3 use movement, gesture, and stillness to interpret and communicate meaning
- 2.4 use speech to interpret and communicate meaning
- 2.5 use movement and speech to interpret and communicate meaning
  
- 3.1 make informed judgments about their own work and the work of others
- 3.2 reflect on their personal growth using various forms of expression
- 3.3 make connections between text and their own life experiences
- 3.4 apply research from print and non-print sources to the development of dramatic text and to acting, design, and directing choices
- 3.5 make connections between the knowledge, skills, and attitudes developed through their drama experiences and opportunities for participation in the artistic life of their community

- 
- 4.1 demonstrate an awareness that there may be different solutions to different problems
  - 4.2 make considered decisions, act upon them, and accept the implications of these decisions
  
  - 5.1 reflect on ways in which their work and the work of others reflect cultural diversity
  - 5.2 express the cultural diversity of their communities in their drama work
  
  - 6.1 use various dramatic forms to create text that gives meaning to cultural and historical events
  - 6.2 make connections between their own lives and the characters, ideas, and events in a drama work



# English 10 / English 10 Plus

## General Curriculum Outcomes

Students will be expected to

### Speaking and Listening

1. speak and listen to explore, extend, clarify, and reflect on their thoughts, ideas, feelings, and experiences
2. communicate information and ideas effectively and clearly, and to respond personally and critically
3. interact with sensitivity and respect, considering the situation, audience, and purpose

### Reading and Viewing

4. select, read, and view with understanding a range of literature, information, media, and visual texts
5. interpret, select, and combine information using a variety of strategies, resources, and technologies
6. respond personally to a range of texts
7. respond critically to a range of texts, applying their understanding of language, form, and genre

### Writing and Other Ways of Representing

8. use writing and other ways of representing to explore, clarify, and reflect on their thoughts, feelings, experiences, and learnings; and to use their imaginations
9. create texts collaboratively and independently, using a variety of forms for a range of audiences and purposes
10. use a range of strategies to develop effective writing and other ways of representing and to enhance their clarity, precision, and effectiveness

## Specific Curriculum Outcomes

Students will be expected to

- 1.1 examine the ideas of others in discussion to clarify and extend their own understanding
- 1.2 construct ideas about issues by asking relevant questions and responding thoughtfully to questions posed
- 1.3 present a personal viewpoint to a group of listeners, interpret their responses, and take others' ideas into account when explaining their positions
- 1.4 listen critically to analyze and evaluate ideas and information in order to formulate and refine opinions and ideas
  
- 2.1 participate in a range of speaking situations, demonstrating an understanding of the difference between formal and informal speech
- 2.2 recognize that communication involves an exchange of ideas (experiences, information, views) and an awareness of the connections between the speaker and the listener; use this awareness to adapt the message, language, and delivery to the context

- 2.3 give precise instructions, follow directions accurately, and respond thoughtfully to complex questions
- 2.4 recognize that oral communication involves physical qualities and language choices depending on situation, audience, and purpose
  
- 3.1 demonstrate active listening and respect for the needs, rights, and feelings of others
  - analyze the positions of others
- 3.2 demonstrate an awareness of the power of spoken language by articulating how spoken language influences and manipulates, and reveals ideas, values, and attitudes
- 3.3 demonstrate an awareness of varieties of language and communication styles
  - recognize the social contexts of different speech events
  
- 4.1 read a wide variety of print texts which include drama, poetry, fiction, and nonfiction from contemporary, pre-twentieth century Canadian and world writing
- 4.2 view a wide variety of media and visual texts, such as broadcast, journalism, film, television, advertising, CDROM, Internet, music videos
- 4.3 seek meaning in reading, using a variety of strategies such as cueing systems, utilizing prior knowledge, analyzing, inferring, predicting, synthesizing, and evaluating
- 4.4 use specific strategies to clear up confusing parts of a text (e.g., reread/review the text, consult another source, ask for help) and adjust reading and viewing rate (e.g., skimming, scanning, reading/viewing for detail) according to purpose
- 4.5 demonstrate an understanding of impact literary devices and media techniques (editing, symbolism, imagery, figurative language, irony, etc.) have on shaping the understanding of a text
  
- 5.1 research, in systematic ways, specific information from a variety of sources
- 5.2 select appropriate information to meet the requirements of a learning task
  - analyze and evaluate the chosen information
  - integrate chosen information, in a way that effectively meets the requirements of a learning task and/or solves personally defined problems
  
- 6.1 articulate personal responses to text by expressing and supporting a point of view about the issues, themes, and situations within texts, citing appropriate evidence
- 6.2 respond to the texts they are reading and viewing by questioning, connecting, evaluating, and extending
- 6.3 make thematic connections among print texts, public discourse, and media
- 6.4 demonstrate a willingness to consider more than one interpretation of text
  
- 7.1 examine the different aspects of texts (language, style, graphics, tone, etc.) that contribute to meaning and effect
- 7.2 make inferences, draw conclusions, and make supported responses to content, form, and structure
- 7.3 explore the relationships among language, topic, genre, purpose, context, and audience
- 7.4 recognize the use and impact of specific literary and media devices (e.g., figurative language, dialogue, flashback, symbolism)
- 7.5 discuss the language, ideas, and other significant characteristics of a variety of texts and genres
- 7.6 respond critically to a variety of print and media texts
- 7.7 demonstrate an awareness that texts reveal and produce ideologies, identities, and positions
- 7.8 evaluate ways in which both genders and various cultures and socio-economic groups are portrayed in media texts

- 8.1 use writing and other ways of representing to
  - extend ideas and experiences
  - reflect on their feelings, values, and attitudes
  - describe and evaluate their learning processes and strategies
- 8.2 use note-making, illustrations, and other ways of representing to reconstruct knowledge
- 8.3 choose language that creates interesting and imaginative effects
  
- 9.1 demonstrate skills in constructing a range of texts for a variety of audiences and purposes
- 9.2 create an organizing structure appropriate to the purpose, audience, and context of texts
  - select appropriate form, style, and content for specific audiences and purposes
  - use a range of appropriate strategies to engage the reader/viewer
- 9.3 analyze and reflect on others' responses to their writing and audiovisual productions and consider those responses in creating new pieces
  
- 10.1 demonstrate an awareness of what writing/representation processes and presentation strategies work for them in relation to audience and purpose
- 10.2 consistently use the conventions of written language in final products
- 10.3 experiment with the use of technology in communicating for a range of purposes
- 10.4 demonstrate commitment to crafting pieces of writing and other representations
- 10.5 use a range of materials and ideas to clarify writing and other ways of representing for a specific audience (e.g., graphs, illustrations, tables)

# Exploring Technology 10

## General Curriculum Outcomes

Students will be expected to

1. design, develop, evaluate, and articulate technological solutions
2. evaluate and manage technological systems
3. demonstrate an understanding of the history and evolution of technology, and of its social and cultural implications
4. demonstrate an understanding of current and evolving careers and of the influence of technology on the nature of work
5. demonstrate an understanding of their personal responsibility in determining the future.

## Specific Curriculum Outcomes

Students will be expected to

### Module 1: Introduction to Technology (mandatory outcomes)

- 1.1 identify technology in its various forms
- 1.2 demonstrate an understanding of the impacts of technology and its cultural and historical influences
- 1.3 demonstrate an understanding of the history and evolution of a specific area of technology
- 1.4 investigate strengths related to technological career options
- 1.5 demonstrate an ability to work in a team
- 1.6 solve technological problems using the modified problem-solving model
- 1.7 create design portfolios for solutions to each design problem
- 1.8 implement life-cycle analysis when designing and constructing solutions to technological problems
- 1.9 use a variety of materials and tools as part of solving technological problems
- 1.10 demonstrate safety rules for tools and machines used
- 1.11 demonstrate safe attitudes and practices in the laboratory
- 1.12 safely employ appropriate tools, machines, and equipment to solve technological problems

Choose three modules from the following five.

### Module 2: Green Technology

- 2.1 examine the consequences of technology in global manufacturing systems
- 2.2 examine the consequences of technology in domestic use and consumption of energy
- 2.3 design and construct a model renewable energy system
- 2.4 manipulate and test a renewable energy system

### **Module 3: Media Technology**

- 3.1 demonstrate an understanding of the principles of design
- 3.2 demonstrate an awareness of diverse target audiences
- 3.3 create solutions to design problems using a variety of communication media
- 3.4 demonstrate effective use of communications and design tools

### **Module 4: Control Technology**

- 4.1 demonstrate an understanding of technological systems (input, process, output)
- 4.2 design and construct solutions to problems related to control technology
- 4.3 manipulate a variety of materials in the construction of a control system
- 4.4 test and evaluate a control system

### **Module 5: Engineering Technology**

- 5.1 employ appropriate technical drawing techniques
- 5.2 design and construct solutions to real-world engineering technology problems
- 5.3 evaluate solutions to problems by selecting appropriate testing methods
- 5.4 demonstrate an understanding of various STEM (science, technology engineering, math) connections to design problems

### **Module 6: Exploring Trades and Technology**

- 6.1 explore skilled trades and technology-related careers
- 6.2 demonstrate skills related to technological processes in skilled trades through a series of hands-on activities
- 6.3 use appropriate tools of skilled trades
- 6.4 estimate materials and labour requirements for a skilled trades-related project

# Family Studies: Grade 10 Course Options

Family Studies at the grade 10 level comprises five half-credit course options being offered in Nova Scotia schools. Most schools select two half-credits (each with its own course code) and offer as a full-credit choice to their students.

- Food for Healthy Living 10
- Food Preparation/Service 10
- Food Technology 10
- International Foods 10
- Textile Production 10

Food Technology 10, Food Preparation and Service 10, and Textile Production 10 are eligible half credits for the technology graduation requirement.

**Note:** Unit Outcome 1 and its associated specific curriculum outcomes are the same for all of the Grade 10 foods-related curriculum. The focus on safe food handling procedures must be addressed in all courses that involve food preparation.

## Food for Healthy Living 10

### Unit Outcomes

Students will be expected to

1. demonstrate knowledge of safe food preparation techniques and production
2. determine the environmental, cultural, and economic factors that influence consumer food decisions and wellness
3. identify the nutritional benefits of food as they apply to food choices
4. apply nutritional principles to planning and preparing healthy meals for self and family
5. identify and discuss trends and issues as related to foods and well-being
6. identify career and employment opportunities and related skills associated with food choices and well-being

### Specific Curriculum Outcomes

Students will be expected to

#### *Unit 1: Safe Food Preparation Techniques and Production*

- 1.1 identify causes, symptoms, and prevention of food-borne illness
- 1.2 identify kitchen procedures reflective of maintaining a safe workplace
- 1.3 demonstrate safe food handling in the selection, storage, preparation, and serving of foods

*Unit 2: The Food Consumer*

- 2.1 determine what is meant by “being healthy” or “wellness”
- 2.2 determine why people select and eat the foods they do

*Unit 3: Nutrition*

- 3.1 define nutrition terminology and explain how the six main nutrients play a major role in health and well-being
- 3.2 identify proteins (complete and incomplete), their functions and food sources, and apply appropriate food preparation techniques
- 3.3 identify carbohydrates (simple and complex) and dietary fibre, their functions and food sources and apply appropriate food preparation techniques
- 3.4 identify the types of fats, their functions, food sources, related health concerns, and apply appropriate food preparation techniques
- 3.5 identify vitamins (water soluble and fat soluble), their functions and food sources, and apply appropriate food preparation techniques
- 3.6 identify minerals (macro minerals and trace minerals), their functions and food sources, and apply appropriate food preparation techniques
- 3.7 explore the importance of water as a nutrient; its functions and food sources

*Unit 4: Meal Planning and Preparation*

- 4.1 define meal management and identify factors involved in planning meals
- 4.2 understand and analyze Canada’s Food Guide and what is meant by healthy eating
- 4.3 be able to practice general food shopping guidelines that are efficient and economical
- 4.4 develop awareness of food additives to become a knowledgeable and critical consumer
- 4.5 examine and practise the steps involved in healthy and nutritious food preparation
- 4.6 establish guidelines for working together in class

*Unit 5: Food Trends and Issues*

- 5.1 explore, locally and globally, trends and issues related to food and well-being

*Unit 6: Career Pathways in the Food Industry*

- 6.1 be aware of career and employment opportunities related to food industry, food preparation, and nutrition
- 6.2 identify and evaluate personal qualities, skills, abilities, and interests related to career choices in food industry, food preparation, and nutrition

## **Food Preparation and Service 10**

### **Unit Outcomes**

Students will be expected to

1. demonstrate knowledge of safe food preparation techniques and production
2. demonstrate skills in basic food preparation using a variety of tools and technology

3. demonstrate an understanding of the components of meal planning
4. demonstrate skill in providing quality client service and product presentation
5. explore the career and employment opportunities related to food preparation and presentation

## Specific Curriculum Outcomes

Students will be expected to

### *Unit 1: Safe Food Preparation Techniques and Production*

- 1.1 identify causes, symptoms, and prevention of food-borne illness
- 1.2 identify kitchen procedures reflective of maintaining a safe workplace
- 1.3 demonstrate safe food handling in the selection, storage, preparation, and serving of foods

### *Unit 2: Food Preparation Technology*

- 2.1 practice cooking techniques used with a variety of foods
- 2.2 assess the use and economy of various appliances, tools, and convenience foods in food preparation
- 2.3 apply basic knowledge of ingredients and cooking methods to maximize nutrient enhancement and retention

### *Unit 3: Basic Menu Planning*

- 3.1 apply *Canada's Food Guide to Healthy Eating* when meal planning
- 3.2 apply basic math calculations when planning and budgeting for labs
- 3.3 organize, plan, and create a budget for a food service event

### *Unit 4: Introduction to Food Service and Preparation*

- 4.1 demonstrate an understanding of creating a welcoming environment for food service
- 4.2 develop proficiency at setting tables, taking orders, and serving food in a basic restaurant setting
- 4.3 demonstrate their ability to prepare and serve food that is appetizing

### *Unit 5: Food Service—Life-Work Benefits*

- 5.1 identify various employment opportunities in the food industry and training required
- 5.2 describe the nature of the work involved in working in a food-related occupation

## Food Technology 10

### Unit Outcomes

Students will be expected to

1. demonstrate knowledge of safe food preparation techniques and production
2. investigate and analyze the impact of food technology on the consumer and the food industry
3. use factual information to assess current issues related to food production and preparation
4. identify the career and employment opportunities related to food technology and industry



## Specific Curriculum Outcomes

Students will be expected to

### *Unit 1: Safe Food Preparation Techniques and Production*

- 1.1 identify causes, symptoms, and prevention of food-borne illness
- 1.2 identify kitchen procedures reflective of maintaining a safe workplace
- 1.3 demonstrate safe food handling in the selection, storage, preparation, and serving of foods

### *Unit 2: Food Industry Technology*

- 2.1 critique the purpose and impact of technology on food preparation
- 2.2 critically analyze the impacts of evolving technologies on themselves, societies, and the environment

### *Unit 3: Issues Related to Food Industry*

- 3.1 identify various issues related to food technology
- 3.2 gain an understanding of biotechnology and genetically modified foods as they impact consumers
- 3.3 decipher label and package information for product enhancement, claims, and modification

### *Unit 4: Careers in Food Science and Technology*

- 4.1 explore the career and employment opportunities related to food industry and food technology

## International Foods 10

### Unit Outcomes

Students will be expected to

1. demonstrate knowledge of safe food preparation techniques and production
2. develop their knowledge and appreciation of cultural diversity, sensory evaluation techniques, and global influences on Canadian eating habits
3. develop a broadened view of the world, a deeper understanding of other cultures, and an appreciation of ethnic cuisine
4. develop an awareness of both world interdependence and the unequal distribution of the world's resources

### Specific Curriculum Outcomes

Students will be expected to

#### *Unit 1: Safe Food Preparation Techniques and Production*

- 1.1 identify causes, symptoms, and prevention of food-borne illness
- 1.2 identify kitchen procedures reflective of maintaining a safe workplace
- 1.3 demonstrate safe food handling in the selection, storage, preparation, and serving of foods

*Unit 2: An Introduction to Global Foods*

- 2.1 define culture generally and as it is reflected by food
- 2.2 identify factors that influence food choices and customs
- 2.3 show how we share commonalities and express diversity through the medium of food
- 2.4 identify the components of cuisine and demonstrate an ability to evaluate the aesthetic and sensory qualities of food
- 2.5 determine the contribution of cultural and regional foods in the development of our Canadian heritage and food culture
- 2.6 identify the staple foods of the world
- 2.7 compare the ways people of different cultures meet their nutritional needs (Food Guides)

*Unit 3: Global Foods Tour*

- 3.1 explain why and how certain foods have become staples in a given country
- 3.2 identify factors that influence food choices and customs
- 3.3 identify the food patterns and dietary trends of various countries
- 3.4 describe the role of food in traditional celebrations around the world
- 3.5 prepare dishes and use specialty equipment characteristic of various cultures
- 3.6 demonstrate the ability to work co-operatively and independently to prepare foods from a variety of selected global locations
- 3.7 explore a variety of equipment and technologies used in the preparation of food in various countries
- 3.8 use their sensory evaluation techniques to describe their food tasting experiences

*Unit 4: Global Awareness*

- 4.1 explore the distribution of population, wealth, and food supply
- 4.2 identify causes of food shortages and famine
- 4.3 explore global patterns of food distribution that lead to dietary deficiencies and dietary excess
- 4.4 initiate and carry out a personal action project for avoiding dietary excess or for feeding the hungry
- 4.5 use information to access current issues related to food that are impacted by both social and economic factors

## **Textile Production 10**

### **Unit Outcomes**

Students will be expected to

1. use their knowledge of textiles to become informed consumers
2. develop competency in the selection and use of technological applications in textiles
3. understand the impact of textile art and design on our daily lives
4. describe and identify characteristics of careers in the textile industry, apparel production, and in fashion merchandising

## Specific Curriculum Outcomes

Students will be expected to

### *Unit 1: The Informed Textile Consumer*

- 1.1 describe factors affecting clothing decisions
- 1.2 analyze factors to consider when deciding to buy or to sew textile items
- 1.3 explain the textile care process using the information provided on care labels
- 1.4 expand their wardrobe by repairing, redesigning, and/or recycling garments

### *Unit 2: Textile Technology*

- 2.1 trace the evolution of textile technology
- 2.2 describe how fabrics are generated
- 2.3 develop pattern literacy in preparation for project construction
- 2.4 demonstrate the safe use of appropriate technology for completing a textile project

### *Unit 3: Textile Arts and Design*

- 3.1 identify and define the elements of design as applied to textiles
- 3.2 describe the relationship of the colours in the colour wheel using basic colour terminology
- 3.3 describe the relationship between colours and personality, moods and feelings
- 3.4 describe the use of the elements of design in a textile project of their own creation

### *Unit 4: Life-Work Opportunities in Textiles*

- 4.1 describe and identify characteristics of careers in the textile industry, apparel production and in fashion merchandising

# Français de base 10<sup>e</sup> à 12<sup>e</sup> année

Au fur et à mesure que les élèves progressent, tous les résultats d'apprentissages spécifiques seront accompli avec moins de besoin de soutien pédagogique, c'est-à-dire de manière indépendante. Veuillez vous référer aux tableaux des pages 20 à 23 du guide pédagogique *Français de base au secondaire 2<sup>e</sup> cycle – 2003* pour un aperçu global des résultats d'apprentissage spécifiques pour le français de base 10<sup>e</sup> à 12<sup>e</sup> année.

**RAG Communication :** L'élève devrait être capable de communiquer en français de façon efficace et devrait être capable d'interagir de façon appropriée dans une variété de situations reliées à ses besoins et à ses intérêts.

- 1.1 négocier pour comprendre
- 1.2 collaborer avec tout le monde
- 1.3 donner des conseils
- 1.4 initier, entretenir, démontrer qu'il écoute activement
- 1.5 encourager l'interlocuteur
- 1.6 conclure une conversation
- 1.7 organiser son discours de façon cohérente et cohésive
- 1.8 élaborer des descriptions et des comparaisons
- 1.9 présenter son point de vue de façon logique
- 1.10 défendre son point de vue
- 1.11 formuler ses opinions de façons diverses
- 1.12 persuader, argumenter
- 1.13 varier son niveau de langue selon l'auditoire
- 1.14 interviewer des pairs et des adultes
- 1.15 participer à des interviews
- 1.16 jouer des rôles
- 1.17 participer à des débats
- 1.18 participer à un groupe de discussion électronique
- 1.19 mener une discussion de classe
- 1.20 animer un atelier
- 1.21 chercher et évaluer de l'information
- 1.22 sélectionner de l'information pertinente
- 1.23 organiser l'information
- 1.24 interpréter et analyser de l'information
- 1.25 raconter des histoires
- 1.26 donner des comptes-rendus
- 1.27 donner des discours
- 1.28 respecter l'ordre des idées
- 1.29 respecter le sens
- 1.30 utiliser ses propres mots
- 1.31 écrire un journal de rétroaction
- 1.32 dessiner, mimer, dramatiser
- 1.33 planifier, organiser et évaluer un portfolio
- 1.34 composer des chansons, des poèmes
- 1.35 rédiger, par exemple, des annonces, des éditoriaux, des critiques, des lettres
- 1.36 prendre des notes
- 1.37 remplir des formulaires

- 1.38 écrire un journal de bord
- 1.39 faire des reportages
- 1.40 créer des affiches

**RAG Culture :** L'élève devrait être capable de démontrer une appréciation des cultures francophones tout en les comparant à sa propre culture et devrait être capable de démontrer une compréhension des liens entre la culture, la langue et l'identité dans le contexte multiculturel du Canada.

- 2.1 rédiger et présenter le profil d'un pays ou d'une région francophone
- 2.2 comparer d'autres régions francophones avec le Canada
- 2.3 faire une comparaison des perspectives adolescentes des milieux francophones et anglophones
- 2.4 s'entretenir avec quelqu'un au sujet de ses expériences culturelles
- 2.5 présenter une recherche sur la vie d'un francophone célèbre
- 2.6 présenter un rapport sur un aspect culturel de la francophonie
- 2.7 décrire un voyage à un lieu francophone
- 2.8 identifier des aspects multilingues et leurs contributions sur le plan local, provincial et national
- 2.9 faire l'association entre des dialectes et le français standard
- 2.10 se familiariser avec certaines expressions idiomatiques
- 2.11 démontrer un respect pour le niveau de langue approprié
- 2.12 repérer des faits culturels en visionnant une émission de télévision et en écoutant la radio
- 2.13 analyser des journaux francophones
- 2.14 démontrer une connaissance des écrivains canadiens français et québécois
- 2.15 décrire l'histoire du bilinguisme au Canada
- 2.16 expliquer des contributions du bilinguisme à la société canadienne

**RAG Formation langagière générale :** L'élève devrait être capable de choisir et de mettre en pratique des stratégies pour faciliter ses communications en français et pour faciliter son apprentissage.

- 3.1 démontrer sa connaissance des ressemblances et des différences entre le français et l'anglais
- 3.2 utiliser divers ouvrages de référence pour renforcer sa connaissance et son emploi de la langue française
- 3.3 utiliser diverses technologies de l'information et des communications pour faciliter sa communication, en particulier : utiliser différents logiciels; démontrer une compréhension des applications pratiques; évaluer, sélectionner et utiliser un éventail de technologies selon la situation
- 3.4 gérer sa propre expérience d'apprentissage, par exemple : chercher, trouver et planifier l'accès à des documents et à des fichiers électroniques; représenter son apprentissage à l'aide d'une gamme de formes médiatiques y incluant vidéo, audio, et multimédia
- 3.5 collaborer avec d'autres pour accomplir une tâche, en particulier : exprimer son appui aux autres; approfondir les idées des autres; savoir résoudre des conflits; arriver à une entente/un consensus; animer le groupe et faire avancer la discussion
- 3.6 formuler et vérifier des hypothèses
- 3.7 démontrer son appréciation de l'étude du français
- 3.8 utiliser des stratégies en vue de résoudre des problèmes

**RAG Langue :** L'élève devrait être capable de reconnaître et d'utiliser en contexte certains éléments du code linguistique pour faciliter ses communications en français.

- 4.1 se servir d'expressions qui facilitent son interaction, telles que des expressions pour exprimer son accord et son désaccord, des questions pour initier, clarifier, vérifier, et des expressions de politesse
- 4.2 se servir de différents temps des verbes appropriés, des adverbes, des adjectifs, des formes comparatives et superlatives, des connecteurs et des conjonctions pour décrire diverses situations

- 4.3 se servir du présent, du conditionnel, des pronoms emphatiques, des connecteurs, des expressions pour refuser, rejeter et contredire pour exprimer une opinion
- 4.4 se servir du passé composé, de l'imparfait, et du discours indirect pour narrer des événements au passé
- 4.5 utiliser les pronoms objets et relatifs, les conjonctions et les connecteurs dans des situations telles que de résumer les idées principales d'un texte
- 4.6 se servir de phrases simples et complexes aux temps appropriés, et utiliser des formes et des styles qui respectent différents auditoires dans des situations telles que de réagir de façon critique et créative

# Gàidhlig 10 / Gaelic 10

## General Curriculum Outcomes

1. Students will use Gaelic to communicate and interact effectively.
2. Students will create and experience works reflective of the Gaelic language and culture.
3. Students will demonstrate an appreciation and understanding of the Gaelic culture within Nova Scotia and the wider world.

## Specific Curriculum Outcomes

By the end of Gaelic 10, students will be expected to

### Communication

- 1.1 use simple greetings, give and respond to commands, and make introductions
- 1.2 share basic personal information (e.g., name, age, place of residence, possessions)
- 1.3 ask and respond to basic questions about the past, present, and future (e.g., time, date, weather, family, prices, events, locations)
- 1.4 make simple requests in a variety of situations
- 1.5 share tastes, preferences, interests, and feelings
- 1.6 identify and describe objects, animals, people, events, and places that are part of their everyday lives
- 1.7 engage in formal and informal conversation with their teacher, peers, and community members
- 1.8 identify words and expressions from the diversity of Gaelic dialects
- 1.9 identify the main ideas in a text
- 1.10 produce text by following criteria
- 1.11 summarize and select information by reading, listening to, or viewing different texts
- 1.12 compare and/or describe events and pictures from real-life situations identifying where things are and what people are/were doing or did in the past
- 1.13 use the correct linguistic elements in the appropriate context
- 1.14 use technology to develop and present text

### Creative Works

- 2.1 create text reflective of material covered in Gaelic 10
- 2.2 create and perform dramatic works
- 2.3 demonstrate the role of song in traditional daily work
- 2.4 investigate cultural experiences and present their findings using multimedia
- 2.5 engage in traditions unique to the Gaels

### Culture

- 3.1 examine the origins of the Gaels and events leading to their settlement in Nova Scotia
- 3.2 describe the contribution of Gaels to societal growth in Nova Scotia
- 3.3 explain the value of genealogical studies to the Gaels
- 3.4 evaluate the role of Gaelic-related organizations in Nova Scotia (e.g., Comhairle na Gàidhlig, Gaelic Council of Nova Scotia) and their contributions to the growth and maintenance of Gaelic

- 3.5 examine the role of song, story, and poetry in the lives of the Gaels
- 3.6 establish a connection between the traditional instrumental music of Nova Scotia (e.g., fiddles and bagpipes) and Gaelic song
- 3.7 examine the role of proverbs, weather lore, superstitions, riddles, and humour in the Gaelic oral tradition
- 3.8 explore the specific roles of gender in the lives of the Gaels



# Geography 10

## General Curriculum Outcomes

### Part A

1. Students will demonstrate the ability to view the world in spatial terms using a full range of data-collecting techniques within the graphic environment.
2. Students will gather, organize, display, and interpret graphic information in a spatial context.
3. Students will be expected to demonstrate a knowledge of data interpretation, analysis, and utilization through the application of data to recognize patterns and suggest reasons for patterns of spatial organization of physical phenomena.

### Part B

4. Students will be expected to formulate a geographic perspective of physical systems that recognizes changing trends in time.
5. Students will be expected to demonstrate an understanding of the forces that create and erode landform topography.
6. Students will be expected to demonstrate an understanding of the complex ocean environment consisting of the interplay of tides, sea floor processes, continental margins, and their influence on climate, coastal zones, and human activity.
7. Students will be expected to demonstrate an understanding of the complex nature of the atmospheric environment, its life-sustaining function, and the delicate web of relationships that exists among the atmosphere, the biosphere, and the hydrosphere.
8. Students will be expected to demonstrate an understanding of the complexity of systems that control the fragile web of life, and analyze the implications for human responsibility in sustaining the ecosystems of our environment.

## Specific Curriculum Outcomes

Students will be expected to

### Part A

#### *Unit 1—Data Collection*

- 1.1 explain how geographers create a holistic view of Earth through remote sensing such as satellite imagery, aerial photography, and other sensors
- 1.2 explain how geographers use field techniques such as surveying landscape, sampling the landscape, and recording the land use

*Unit 2—Data Processing and Representation*

- 2.1 demonstrate basic image/photo interpretation skills using high/low obliques, vertical, and stereo images, false colour composite, and other satellite imagery
- 2.2 select an appropriate map style (topographic, geologic, thematic, etc.) and use it to gather, organize, and display information in sketch or model form
- 2.3 organize and interpret quantitative data in graph, chart, and table form
- 3.1 analyze geographic information using comparative mapping techniques and strategies and geographic information systems to recognize patterns and to make decisions about the nature of the information

**Part B***Unit 1—Geographic Perspective*

- 4.1 view events from a geographic perspective by defining the nature and scope of geographic phenomena using the five themes of geography: place, location, region, human-environment interaction, and movement
- 4.2 demonstrate an understanding of how long-term and short-term physical processes influence the landscape and the human response and adaptation to these processes
- 4.3 demonstrate an awareness of how changing perspectives of the world are dictated by culture, experience, and the impact of technology

*Unit 2—Land Environment*

- 5.1 demonstrate an understanding of the composition of the plant Earth, its structure and the interior forces of tectonics and results of shifting plates that have shaped the evolution of the planet's physical characteristics and features
- 5.2 demonstrate knowledge of the changing face of Earth's surface and of the forces that keep Earth in motion
- 5.3 demonstrate an understanding of the interior forces associated with diastrophism, earth movements, and mountain building
- 5.4 recognize and explain the forces generating rock-building processes, classify rocks and minerals, and describe the uses of rocks in the daily lives of humans
- 5.5 describe the processes involved in weathering, mass wasting, and soil erosion
- 5.6 recognize and describe the features associated with rivers, and the effects of rivers on human and physical landscapes
- 5.7 demonstrate an understanding of glacial processes and the subsequent impact on the physical environment
- 5.8 demonstrate an understanding of coastal landscape features shaped through the action of waves, and the implications for human-environment interaction

*Unit 3—Ocean Environment*

- 6.1 identify distinctive sea floor processes that form and shape the features of the submarine landscape, its features, and their effects on island formation
- 6.2 assess the effects of the ocean's moving waters on the atmosphere of Earth and upon human activity

*Unit 4—Atmospheric Environment*

- 7.1 analyze the composition of Earth’s unique atmospheric envelope, described through its elements and vertical zones, identifying the conditions in the atmosphere necessary for life to be sustained
- 7.2 demonstrate an understanding of the complex systems resulting from the energy released from the sun
- 7.3 demonstrate a knowledge of the complexity of the hydrosphere as it applies to the hydrologic cycle and subsequent types/modes of precipitation
- 7.4 be able to relate air mass geography to weather systems, both local and globally
- 7.5 use climatic data to identify major climatic zones of the world

*Unit 5—Spaceship Earth*

- 8.1 describe the interconnectedness of Earth’s physical and biological systems
- 8.2 demonstrate an understanding that humanity is part of the planet’s physical-biological web, and that sustainability is dependent upon wise planet management systems and global co-operation

# History 10

## Specific Curriculum Outcomes

Students will be expected to

### Birth of Civilizations

- 1.1 demonstrate awareness and understanding of the chronology of human development and historical periods
- 1.2 demonstrate an understanding of the characteristics that define ancient civilizations
- 1.3 develop an awareness of the fundamental needs of people to form groups and establish structures that validate and nurture civilizations
- 1.4 demonstrate an understanding of the different regions of the ancient world and be able to explain their various contributions
- 1.5 evaluate historic events and human accomplishments of Greece and Rome and two other ancient civilizations

### Political Structures

- 2.1 investigate the source of governance that developed from prehistory to the fall of the Roman Empire
- 2.2 investigate political structures to determine the interdependent relationship between distinct polities while recognizing cultural, racial, and ethnic diversity
- 2.3 demonstrate the connection between governmental systems and their impact on economic development and class diversity
- 2.4 explore how modern political systems/structures have evolved from early political origins
- 2.5 examine how political power and authority have been used to create both social cohesion and conflict

### Empires

- 3.1 demonstrate an understanding of the factors that gave rise to empires
- 3.2 identify the strengths and weaknesses of at least two empires from selected case studies
- 3.3 explore a range of “voices” of constituencies from within the empires through the use of primary source material
- 3.4 evaluate the impact and influences of ancient empires and imperialism on contemporary societies through politics, culture, technological advancements, or economies

### Religion and Civilizations

- 4.1 identify the impact religion has had on the development of human culture
- 4.2 investigate the relationship between religion and historical events
- 4.3 evaluate the impact religion and ancient history has had on modern society

## Revolutions

- 5.1 demonstrate a historical understanding of the concept of revolution throughout history in relation to influences of cultural, racial, ethnic, and commercial factors
- 5.2 compare and contrast how various revolutionary activity has either benefited or hindered societal elements
- 5.3 evaluate the impact of revolution upon the governing structures of two empires
- 5.4 describe the influence of philosophical thought on revolutionary activity

# Information and Communication Technology Integration 10–12

## Outcome Components

*Students will demonstrate expected performance levels in five IT-based learning outcome areas within the context of essential graduation learnings and outcomes specified for the public school program as a whole.*

## Key-Stage Curriculum Outcomes

By the end of grade 12, in addition to the grade 9 outcomes, students will be expected to

### Basic Operations and Concepts (BOC)

- Concepts and skills associated with the safe, efficient operation of a range of information and communication technologies.

BOC 12.1 (relates to 9.1–9.4) use a wide variety of technology, demonstrate a clear understanding of technological applications, and consistently apply appropriate technology to solve curriculum problems

BOC 12.2 (relates to 9.5) demonstrate an ability to assess the application of technology to solve problems, particularly to evaluate significant effects which estimations, program flaws and human error have on any given solution

BOC 12.3 (relates to 9.6) demonstrate facility with the specialized vocabulary associated with the technology they use

BOC 12.4 (relates to 9.7) take personal responsibility for their safe and ergonomic use of technology for learning

### Social, Ethical, and Human Issues (SEHI)

- The understanding associated with the use of ICT, which encourages in students a commitment to pursue personal and social good, particularly to build and improve their learning environments and to foster stronger relationships with their peers and others who support their learning.

SEHI 12.1 (relates to 9.1–9.4) behave ethically and with accuracy as they generate and distribute information about themselves, others, and curriculum topics under study

SEHI 12.2 (relates to 9.2) articulate an informed and critical understanding of mass media, popular culture and electronic information environments; their techniques; and the effects of those techniques

SEHI 12.3 (relates to 9.1–9.4) critically analyze the impacts of evolving technologies on themselves, societies, and the environment

SEHI 12.4 (relates to 9.2–9.4) demonstrate habits of perception, analysis, judgment and selectivity as they contribute to society through the discerning and critical use and creation of information resources and technology

- SEHI 12.5 (relates to 9.3, 9.4) act responsibly when faced with ethical issues that arise from their use of information and ICT and perspectives
- SEHI 12.6 (relates to 9.5) demonstrate an appreciation of the role of technology-related careers in the larger community and assess technology-related career opportunities within the context of their personal values and needs
- SEHI 12.7 (relates to 9.8) follow the *Public School Program Network Access and Use Policy*

## Productivity Tools and Software (PTS)

- The efficient selection and use of ICT to perform tasks such as
    - the exploration of ideas
    - data collection
    - data manipulation, including the discovery of patterns and relationships
    - problem solving
    - the representation of learning
- PTS 12.1 (relates to 9.1) use electronic planning software to support the development and analysis of efficient, personal study and research plans independently
- PTS 12.2 (relates to 9.2, 9.6) evaluate, select, and use the following to learn and to represent curriculum concepts under study: specialized software, including computer-based simulations; and measuring, sampling and recording devices, including complex calculators
- PTS 12.3 (relates to 9.3, 9.4) write and represent their research using the structures, features, conventions, and techniques of specialized publication and presentation formats with growing fluency
- PTS 12.4 (relates to 9.4, 9.5) evaluate, select and use a range of media, and information and communication technology, to create, edit, and publish their work independently
- PTS 12.5 (relates to PTS 9.6 and RPSD 9.2) create electronic charts, tables and graphs; and design, create, and manipulate spread sheets and databases, as part of the process of collecting, analyzing, and displaying data independently

## Communications Technology (CT)

- Specific, interactive technology use supports student collaboration and sharing through communication.
- CT 12.1 (relates to 9.1) use language, in a range of aural, print, media and electronic forms to explore and express their perceptions, feelings, ideas and attitudes; refine their thinking; and interact, negotiate, and collaborate with others in order to build their understanding
- CT 12.2 (relates to 9.1, 9.2) critically apply technological skills in a range of electronic, visual, and print media for formal and informal communication
- CT 12.3 (relates to 9.1) design and create electronic documents to accomplish curricular tasks
- CT 12.4 (relates to CT 9.3) discover, share and reflect upon their own and others' cultures, values, and understandings as they are expressed in electronic and other formats
- CT 12.5 (relates to 9.1–9.3) use multimedia hardware and authoring software to develop non-linear, interactive presentations
- CT 12.6 (relates to 9.3) assess the value and application of information and communication technology in personal and career-related pursuits

**Research, Problem Solving, and Decision Making (RPSD)**

- Students' organization, reasoning, and evaluation of their learning rationalize their use of information and communication technology.

RPSD 12.1 (relates to 9.1) select appropriate devices and software to collect data, solve problems and note patterns; to make logical decisions and draw conclusions; and to present results, with general supervision

RPSD 12.2 (relates to 9.4) identify, evaluate, and compare the quality, congruencies, discrepancies, omissions, biases, and perspectives of information content of print, media, and electronic resources

RPSD 12.3 (relates to 9.3–9.8) evaluate and organize ideas and information from a wide range of media and a variety of sources to meet their curriculum needs efficiently and independently

RPSD 12.4 (relates to 9.7) identify the strengths and limitations of different approaches to research, and select those approaches which efficiently meet their learning needs

RPSD 12.5 (relates to 9.4–9.8) contribute to the development of criteria for selecting a research topic, and, based on those criteria, define and complete a research task efficiently

RPSD 12.6 (relates to 9.9) accurately record and cite, using academically accepted formats and standards, sources of information contributing to their research



# In-School Component of Co-operative Education 10–12

## Specific Curriculum Outcomes

Students will be expected to

### Module 1: Career Planning

- 1.1 identify and use strategies to determine appropriate, realistic education and career plans
- 1.2 demonstrate understanding of and actively participate in the career-building process

### Module 2: Preparing for the Workplace

- 2.1 demonstrate workplace readiness by identifying and assessing personal traits, values, strengths and weaknesses, abilities, and employability skills
- 2.2 demonstrate an understanding of workplace hierarchies, relationships, etiquette, and confidentiality

### Module 3: Workplace Health and Safety

- 3.1 demonstrate an understanding of the major components of the Nova Scotia *Occupational Health and Safety Act* and *Regulations*, including employer and employee rights and responsibilities for workplace health and safety
- 3.2 demonstrate an understanding of the five main types of workplace hazards and their four main contributing factors
- 3.3 demonstrate an understanding of hazard control, including the role of reporting workplace hazards, and the use of personal protective equipment (PPE)
- 3.4 demonstrate an understanding of the components of Workplace Hazardous Materials Information System (WHMIS)—training, labels, and Material Safety Data Sheets (MSDS)

# Life/Work Transitions 10

## General Curriculum Outcomes

Students will be expected to

1. apply the knowledge, skills, and attitudes needed to make informed decisions in their own life/work planning
2. apply their understanding of environmental, personal, and social issues that arise in the workplace
3. engage in a simulated life/work building process
4. demonstrate the skills and knowledge needed to prepare and maintain a career portfolio
5. work independently to extend, apply, or explore in-depth, the ideas, issues, or skills introduced in modules 1, 2, 3, and/or 4

## Specific Curriculum Outcomes

Students will be expected to

### Module 1: Fundamentals of Life/Work—Planning for a Changing World

- 1.1 describe ways that social and economic needs influence the nature and structure of work
- 1.2 identify the knowledge, academic and work skills, attitudes, and external assets that can help achieve life/work goals
- 1.3 locate, interpret, evaluate, and use life/work information
- 1.4 demonstrate and apply the knowledge and skills needed to seek and obtain work

### Module 2: Workplace Readiness

- 2.1 demonstrate the knowledge, skills, and attitudes needed for building positive relationships with employers, employees, and clients
- 2.2 apply strategies for safe and productive practices in the workplace
- 2.3 demonstrate an understanding of the role of ethics in the workplace

### Module 3: A Life/Work Simulation

- 3.1 apply an understanding of the ways that knowledge, academic and work skills, attitudes, and external assets can help achieve life/work goals
- 3.2 demonstrate an understanding of the ways that work choices and career patterns affect lifestyle
- 3.3 demonstrate ways in which work, family, community, and leisure roles are interrelated
- 3.4 identify and select strategies for responding effectively to life/work changes
- 3.5 apply skills needed to seek and obtain/create work

**Module 4: Career Portfolio**

- 4.1 apply organizing and presenting skills in developing, maintaining, and updating their portfolios
- 4.2 document their involvement in activities in school and community
- 4.3 identify employability skills that they require in the changing workplace
- 4.4 assess their skills in relation to workplace expectations
- 4.5 identify, plan for, and acquire credentials/certificates related to their career interests and abilities

**Module 5: Life/Work Project**

- 5.1 develop a plan for acquiring/improving their employability skills outside of the school
- 5.2 set deadlines and develop a work plan to manage time and resources
- 5.3 develop a plan for monitoring their progress and judging success, and contribute to the criteria used for evaluation
- 5.4 implement their plan
- 5.5 present the results of their project
- 5.6 reflect on and assess their learning

# Mathematics 10

## General Curriculum Outcomes

- A. Students will demonstrate number sense and apply number-theory concepts.
- B. Students will demonstrate operation sense and apply operation principles and procedures in both numeric and algebraic situations.
- C. Students will explore, recognize, represent, and apply patterns and relationships, both informally and formally.
- D. Students will demonstrate an understanding of and apply concepts and skills associated with measurement.
- E. Students will demonstrate spatial sense and apply geometric concepts, properties, and relationships.
- F. Students will solve problems involving the collection, display, and analysis of data.
- G. Students will represent and solve problems involving uncertainty.

## Specific Curriculum Outcomes

Students will be expected to

### Data Management

- A2 analyze graphs or charts of given situations to identify specific information
- C3 gather data, plot the data using appropriate scales, and demonstrate an understanding of independent and dependent variables and domain and range
- C4 create and analyze scatter plots using appropriate technology
- C5 sketch graphs from words, tables, and collected data
- C9 construct and analyze graphs and tables relating two variables
- C10 describe real-world relationships depicted by graphs, tables of values, and written descriptions
- C15 develop and apply strategies for solving problems
- C17 solve problems, using graphing technology
- C32 determine if a graph is linear by plotting points in a given situation
- D1 determine and apply formulas for perimeter, area, surface area, and volume
- D7 (optional) determine the accuracy and precision of a measurement
- D9 determine whether differences in repeated measurements are significant or accidental
- F1 design and conduct experiments using statistical methods and scientific inquiry
- F2 (optional) demonstrate an understanding of concerns and issues that pertain to the collection of data
- F3 construct various displays of data
- F4 calculate various statistics, using appropriate technology, analyze and interpret displays, and describe the relationships
- F5 analyze statistical summaries, draw conclusions, and communicate results about distributions of data
- F6 solve problems by modeling real-world phenomena
- F7 explore non-linear data, using power and exponential regression, to find a curve of best fit
- F8 determine and apply a line of best fit, using the least-squares method and median-median method, with and without technology, and describe the differences between the two methods

- F9 demonstrate an intuitive understanding of correlation
- F10 use interpolation, extrapolation, and equations to predict and solve problems
- F12 explore measurement issues using the normal curve
- F13 calculate and apply mean and standard deviation, using technology, to determine if a variation makes a difference

### **Networks and Matrices (optional)**

- B5 (optional) develop, analyze, and apply procedures for matrix multiplication
- B6 (optional) solve network problems using matrices
- C15 develop and apply strategies for solving problems
- C17 solve problems, using graphing technology
- C37 (optional) represent network problems using matrices and vice versa
- C7 (optional) model real-world situations with networks and matrices
- E6 (optional) represent network problems as digraphs

### **Patterns, Relations, and Equations**

- A2 analyze graphs or charts of given situations to identify specific information
- A5 demonstrate an understanding of the zero product property and its relationship to solving equations by factoring
- A6 apply properties of numbers when operating upon expressions and equations
- A7 demonstrate an understanding of and apply the proper use of discrete and continuous number systems
- B1 model (with concrete materials and pictorial representations) and express the relationships between arithmetic operations and operations on algebraic expressions and equations
- B3 use concrete materials, pictorial representations, and algebraic symbolism to perform operations on polynomials
- C1 express problems in terms of equations and vice versa
- C2 model real-world phenomena with linear, quadratic, exponential, and power equations and linear inequalities
- C3 gather data, plot the data using appropriate scales, and demonstrate an understanding of independent and dependent variables and of domain and range
- C5 sketch graphs from words, tables, and collected data
- C8 identify, generalize, and apply patterns
- C9 construct and analyze graphs and tables relating two variables
- C10 describe real-world relationships depicted by graphs, tables of values, and written descriptions
- C13 determine and interpret the slope and  $y$ -intercept of a line from a table of values or a graph
- C14 determine the equation of a line, using the slope and  $y$ -intercept
- C16 interpret solutions to equations based on context
- C17 solve problems, using graphing technology
- C18 investigate and find the solution to a problem by graphing two linear equations, with and without technology
- C20 evaluate and interpret non-linear equations using graphing technology
- C24 rearrange equations
- C25 solve equations using graphs
- C26 solve quadratic equations by factoring
- C27 solve linear and simple radical and exponential equations and linear inequalities
- C28 explore and describe the dynamics of change depicted in tables and graphs
- C29 investigate and make and test conjectures concerning the steepness and direction of a line
- C31 graph equations and inequalities and analyze graphs, both with and without graphing technology

- C32 determine if a graph is linear by plotting points in a given situation
- C33 graph by constructing a table of values, by using graphing technology, and, when appropriate, by the  $y$ -intercept slope method
- C35 expand and factor polynomial expressions using perimeter and area models
- E8 use inductive and deductive reasoning when observing patterns, developing properties, and making conjectures
- F6 solve problems by modeling real-world phenomena
- F10 use interpolation, extrapolation, and equations to predict and solve problems

## Modeling and Functions

- A2 analyze graphs or charts of situations to identify specific information
- A7 demonstrate an understanding of and apply the proper use of discrete and continuous number systems
- C1 express problems in terms of equations and vice versa
- C2 model real-world phenomena with linear, quadratic, exponential, and power equations and linear inequalities
- C3 gather data, plot the data using appropriate scales, and demonstrate an understanding of independent and dependent variables and of domain and range
- C4 create and analyze scatter plots using appropriate technology
- C5 sketch graphs from words, tables, and collected data
- C8 identify, generalize, and apply patterns
- C9 construct and analyze graphs and tables relating two variables
- C10 describe real-world relationships depicted by graphs, tables of values, and written descriptions
- C14 determine the equation of a line using the slope and  $y$ -intercept
- C17 solve problems using graphing technology
- C20 evaluate and interpret non-linear equations using graphing technology
- C21 explore and apply functional relationships both formally and informally
- C22 analyze and describe transformations of quadratic functions and apply them to absolute value functions
- C23 express transformations algebraically and with mapping rules
- C24 rearrange equations
- C27 solve linear and simple radical and exponential equations and linear inequalities
- C28 explore and describe the dynamics of change depicted in tables and graphs
- C30 compare regression models of linear and non-linear functions
- C31 graph equations and inequalities and analyze graphs, both with and without graphing technology
- C33 graph by constructing a table of values, by using graphing technology, and, when appropriate, by the  $y$ -intercept slope method
- E5 use transformations to draw graphs
- F6 solve problems by modeling real-world phenomena
- F7 explore non-linear data, using power and exponential regression, to find a curve of best fit
- F8 determine and apply a line of best fit, using the least-squares method and median-median method, with and without technology, and describe the differences between the two methods
- F9 demonstrate an intuitive understanding of correlation
- F10 use interpolation, extrapolation, and equations to predict and solve problems
- F11 describe real-world relationships depicted by graphs and tables of values and written descriptions

## Geometry/Trigonometry

- A3 demonstrate an understanding of the role of irrational numbers in applications
- A4 approximate square roots
- A8 demonstrate an understanding of and apply properties to operations involving square roots
- B2 develop algorithms and perform operations on irrational numbers
- C27 solve linear and simple radical and exponential equations and linear inequalities
- D2 apply the properties of similar triangles
- D3 relate the trigonometric functions to the ratios in similar right triangles
- D4 use calculators to find trigonometric values of angles and to find angles when trigonometric values are known
- D5 apply trigonometric functions to solve problems involving right triangles, including the use of angles of elevation
- D6 solve problems involving measurement using bearings and vectors
- D7 determine the accuracy and precision of a measurement
- D8 solve problems involving similar triangles and right triangles
- D10 determine and apply relationships between the perimeters and areas of similar figures and between the surface areas and volumes of similar solids
- D12 solve problems using the trigonometric ratios
- D14 apply the Pythagorean Theorem
- E7 demonstrate an understanding of and write a proof for the Pythagorean Theorem
- E8 use inductive and deductive reasoning when observing patterns, developing properties, and making conjectures
- E9 use deductive reasoning, construct logical arguments, and be able to determine, when given a logical argument, if it is valid

## Geometry/Packaging

- A3 demonstrate an understanding of the role of irrational numbers in applications
- C36 explore, determine, and apply relationships between perimeter and area, and between surface area and volume
- D1 determine and apply formulas for perimeter, area, surface area, and volume
- D2 apply the properties of similar triangles
- D5 apply trigonometric functions to solve problems involving right triangles, including the use of angles of elevation
- D7 (optional) determine the accuracy and precision of a measurement
- D10 determine and apply relationships between the perimeters and areas of similar figures and between the surface areas and volumes of similar solids
- D11 explore, discover, and apply properties of maximum area and volume
- D12 solve problems using the trigonometric ratios
- D13 demonstrate an understanding of the concepts of surface area and volume
- E1 explore properties of, and make and test conjectures about, two- and three-dimensional figures
- E2 solve problems involving polygons and polyhedra
- E3 construct and apply altitudes, medians, angle bisectors, and perpendicular bisectors to examine their intersection points
- E4 apply transformations when solving problems
- E8 use inductive and deductive reasoning when observing patterns, developing properties, and making conjectures
- E9 use deductive reasoning construct logical arguments and be able to determine, when given a logical argument, if it is valid

## Linear Programming

- A1 relate sets of numbers to solutions of inequalities
- A2 analyze graphs or charts of given situations to identify specific information
- A7 demonstrate an understanding of and apply the proper use of discrete and continuous number systems
- B4 identify and calculate the maximum and/or minimum values in a linear programming model
- C2 model real-world phenomena with linear, quadratic, exponential, and power equations and linear inequalities
- C6 apply linear programming to find optimal solutions to real-world problems
- C9 construct and analyze graphs and tables relating two variables
- C11 write an inequality to describe its graph
- C12 express and interpret constraints, using inequalities
- C16 interpret solutions to equations, based on context
- C17 solve problems using graphing technology
- C19 solve systems of linear equations using substitution and graphing methods
- C24 rearrange equations
- C27 solve linear and simple radical and exponential equations and linear inequalities
- C31 graph equations and inequalities and analyze graphs, both with and without graphing technology
- C33 graph by constructing a table of values, by using graphing technology, and, when appropriate, by the  $y$ -intercept slope method
- C34 investigate and make and test conjectures about the solution to equations and inequalities using graphing technology



# Mathematics 10 Plus

Mathematics 10 Plus follows the Mathematics 10 curriculum but is presented over 220 hours to allow additional time for teaching and learning. The additional hours are used to meet the needs of students who require additional opportunities to increase their mathematics skills and problem-solving abilities. Students have extended opportunities to revisit concepts, skills, and procedures that require review and/or more developmental time; focus on problem-solving strategies; acquire or consolidate the skills required for success in academic mathematics, and/or extend their knowledge to a deeper understanding.

Given the scope of the possibilities for the additional time, outcomes for Mathematics 10 plus are suggestions only. Teachers must develop a program that meets the needs of his or her students.

## General Curriculum Outcomes

- A: Students will demonstrate number sense and apply number-theory concepts.
- B: Students will demonstrate operation sense and apply operation principles and procedures in both numeric and algebraic situations.
- C: Students will explore, recognize, represent, and apply patterns and relationships, both informally and formally.
- D: Students will demonstrate an understanding of and apply concepts and skills associated with measurement.
- E: Students will demonstrate spatial sense and apply geometric concepts, properties, and relationships.
- F: Students will solve problems involving the collection, display, and analysis of data.
- G: Students will represent and solve problems involving uncertainty.

## Specific Curriculum Outcomes

Students will be expected to

### Data Management

- B2 model, solve, and create problems that utilize addition, subtraction, multiplication, and division of fractions and decimals
- B3 choose appropriate strategies for calculating (mental math, estimation, appropriate technology, paper and pencil), and for problem solving
- C17 solve problems using graphing technology
- F1 collect data, display it accordingly as a histogram, a stem-and-leaf plot, a box plot, a scatter plot, and interpret the displays both with technology and by hand when appropriate
- F2 sketch lines and curves of best fit and determine the equation for the line of best fit by hand and with technology
- F5 analyze statistical summaries, draw conclusions, and communicate the results about distributions of data
- F12 explore measurement issues using the normal curve
- F13 calculate various statistics using appropriate technology, analyze and interpret the displays, and describe relationships

## Networks and Matrices

- A5 represent problem situations involving matrices
- B6 model, solve, and create problems involving the matrix operations of addition, subtraction, and scalar multiplication

## Patterns, Relations, Equations, and Predictions

- A2 demonstrate an understanding of the interrelationships of subsets of real numbers
- A4 graph, and write in symbols and in words, the solution set for equations and inequalities involving all real numbers
- B3 choose appropriate strategies for calculating (mental math, estimation, appropriate technology, paper and pencil), and for problem solving
- B4 explore and explain, using physical models, the connections between arithmetic and algebraic operations
- B5 apply algebraic operations on polynomial expressions and equations to simplify, expand, factor, and to solve relevant problems
- C1 represent patterns and relationships in multiple ways (context, concrete, pictorial, verbal, and symbol) and use these representations to predict and solve problems
- C2 construct and analyze tables and graphs to describe how changes in one quantity affect a related quantity
- C3 solve and create problems involving linear equations and inequalities
- C4 determine the equations of lines by obtaining their slopes and  $y$ -intercepts from graphs
- C5 determine the equations of lines, and solve equations and inequalities by using technology
- C6 apply algebraic methods to solve linear equations and inequalities
- C7 demonstrate an understanding that using strategies is useful in solving routine and non-routine problems

## Modeling Functional Relationships

- C7 demonstrate an understanding that using strategies is useful in solving routine and non-routine problems
- E1 demonstrate an understanding of the properties of transformations and their mapping notation
- F3 use technology to determine the curve of best fit

## How Far? How Tall? How Steep?

- A1 demonstrate an understanding of rational and irrational numbers, compare and order them, and apply them in meaningful situations
- A3 represent numbers in multiple ways (including exponents, ratios, percents, proportions, and scientific notation) and apply appropriate representations to solve problems
- B1 model, solve, and create problems that utilize addition, subtraction, multiplication, and division of integers
- B3 choose appropriate strategies for calculating (mental math, estimation, appropriate technology, paper and pencil), and for problem solving
- B4 explore and explain, using physical models, the connections between arithmetic and algebraic operations
- C7 demonstrate an understanding that using strategies is useful in solving routine and non-routine problems
- D3 develop and use ratio, rate, and proportions as tools for solving problems

## The Geometry of Packaging

- D1 relate the volumes of pyramids, cones, and spheres to the volumes of corresponding prisms and cylinders
- D2 describe patterns and generalize the relationships between areas and perimeters of quadrilaterals and areas and circumferences of circles
- E2 examine and draw representations of 3-dimensional shapes, and from drawings, construct 3-dimension shapes
- E3 develop and apply properties of 2-dimensional figures, and apply them
- E4 develop and apply relationships between parallel lines and congruent angles
- E5 investigate and demonstrate an understanding of the minimum sufficient conditions to guarantee congruent triangles
- E6 make informal deductions using congruent triangle, polygon, and angle properties

## Linear Programming

- A4 graph, and write in symbols and in words, the solution set for equations and inequalities involving all real numbers
- C1 represent patterns and relationships in multiple ways (context, concrete, pictorial, verbal, and symbol) and use these representations to predict and solve problems
- C3 solve and create problems involving linear equations and inequalities
- C5 determine the equations of lines, and solve equations and inequalities by using technology
- C6 apply algebraic methods to solve linear equations and inequalities
- C7 demonstrate an understanding that using strategies is useful in solving routine and non-routine problems

# Mathematics Essentials 10

## General Curriculum Outcomes

- A: Students will demonstrate number sense and apply number-theory concepts.
- B: Students will demonstrate operation sense and apply operation principles and procedures in both numeric and algebraic situations.
- C: Students will explore, recognize, represent, and apply patterns and relationships, both informally and formally.
- D: Students will demonstrate an understanding of, and apply concepts and skills associated with, measurement.
- E: Students will demonstrate spatial sense and apply geometric concepts, properties, and relationships.
- F: Students will solve problems involving the collection, display, and analysis of data.
- G: Students will represent and solve problems involving uncertainty.

## Specific Curriculum Outcomes

By the end of Mathematics Essentials 10, students will be expected to

### The Mental Math

- B16 know the double facts in additions; their extension to two, three, and four digits; their connections to subtraction, multiplication by 2 and by  $\frac{1}{2}$ , division by 2 and multiplication by 50 percent
- B17 know the addition and subtraction facts and extend them to two, three, and four digit numbers
- B18 estimate appropriate sums, differences, products, and quotients
- B19 mentally calculate 1%, 10%, 15%, and 50% quantities that are compatible with these percentage
- B20 estimate and calculate percentage of quantities as performing operations with decimals, fractions, and percent

### Earning and Purchasing

- A1 understand purchasing power
- A2 explain the difference between gross pay and net pay, and describe possible payroll deductions
- A3 explain indirect and direct forms of taxation
- A4 identify and explain the advantages and disadvantages of various plans to make purchases
- B1 determine the remuneration for chosen occupations, including salary and benefits, and evaluate it in terms of purchasing power and living standards
- B2 solve problems involving various ways that an employee can be paid using calculators or appropriate software
- B3 calculate gross pay and net pay for given situations
- B4 estimate and calculate the unit prices of comparable items to determine the best buy
- B5 solve problems involving the estimation and calculation of provincial and federal sales taxes
- B6 estimate and calculate selling price, discounts, and taxes
- B7 provide the correct change for an amount offered and minimize the number of coins/bills
- B8 select amounts to offer for a given charge to minimize the number of coins/bills received in the change

- B9 identify, calculate, and compare the interest costs involved in making purchases under various plans
- B10 estimate and calculate the price in Canadian funds of items bought in or ordered from another country
- F1 read and apply payroll deduction tables
- F2 (optional) identify the information and documents required for filing a personal income tax return, and explain why they are required
- F3 describe the effects on personal spending habits of the frequency of pay period
- F4 make decisions regarding the purchase of costly items by identifying and ranking criteria for the comparison of possible choices
- F5 make decisions regarding the payment options for purchases
- F6 identify various incentives to make purchases

### Banking

- A5 understand transactions such as depositing, transferring and withdrawing money, writing cheques and withdrawing money
- A6 understand what interest is and how interest is calculated by a bank
- B11 calculate simple and compound interest
- C1 recognize patterns in tables where simple and compound interest has been calculated

### Measurement

- A7 recognize and find equivalencies among common fractions and percent
- A8 compare and order common fractions and percent ages
- A9 rename common fractions
- A10 round rational numbers and percentages in contexts
- C2 recognize and apply the patterns in the metric system
- C3 recognize and apply the common fraction patterns found on an Imperial ruler
- D1 demonstrate a working knowledge of the metric system and imperial system
- D2 measure lengths accurately, using metric system and the imperial system
- D3 estimate distances in metric units and in imperial units by applying personal referents
- D4 estimate capacities in metric units by applying personal referents
- D5 estimate, with reasonable accuracy, large numbers that are illustrated visually and explain the strategies used

### Geometry

- E1 identify the first five regular polygons and understand basic properties (number of sides, lines of symmetry, and definitions of geometric terms)
- E2 describe and apply translations, reflections, rotations, and dilatations as they relate to symmetry and design, with the aid of technology
- E3 determine (through investigations, using concrete materials and technology) the characteristics of shapes that will tile the plane with a reflecting pattern
- E4 create designs involving tiling patterns (e.g., Escher-type designs, wallpaper or fabric designs), using technology (e.g., dynamic geometry software, design or drawing software)
- E5 analyze the geometric aspects of logos and design
- E6 create a personal logo, using the mathematics of symmetry, translations, reflections, rotations, or dilatations, with the aid of technology

## Travel and Transportation

- A11 describe the procedures and costs involved in obtaining a driver's license
- A12 describe the costs if failing to operate a vehicle responsibly
- A13 compare the procedures, costs, advantages, and disadvantages involved in buying a new versus a used vehicle
- A14 explain the factors and costs involved in insuring a vehicle
- B12 calculate the fixed and variable costs involved in owning and operating a vehicle
- B13 compare the costs involved in buying versus leasing the same new vehicle
- B14 compare the costs of owning or leasing and maintaining vehicle with the costs of other forms of transportation
- B15 complete a project involving the purchase or lease of a new vehicle or the purchase of a used vehicle, including the cost of insurance
- F7 make personal decisions regarding the best form of transportation

## Probability

- G1 express probabilities of simple events as the number of favourable outcomes divided by the total number of outcomes
- G2 express probabilities as fractions, decimals, and percentages and interpret probabilities expressed in each of these forms
- G3 predict and describe the results obtained in carrying out probability experiments related to familiar situations involving chance
- G4 compare predicted and experimental results for familiar situations involving chance, using technology to extend the number of experimental trials
- G5 simulate familiar situations involving chance and explain the choice of simulation
- G6 interpret information about probabilities to assist in making informed decisions in a variety of situations
- G7 interpret and assess probabilistic information used in the media and in common conversation

# Mathematics Foundations 10

## General Curriculum Outcomes

- A: Students will demonstrate number sense and apply number-theory concepts.
- B: Students will demonstrate operation sense and apply operation principles and procedures in both numeric and algebraic situations.
- C: Students will explore, recognize, represent, and apply patterns and relationships, both informally and formally.
- D: Students will demonstrate an understanding of and apply concepts and skills associated with measurement.
- E: Students will demonstrate spatial sense and apply geometric concepts, properties, and relationships.
- F: Students will solve problems involving the collection, display, and analysis of data.
- G: Students will represent and solve problems involving uncertainty.

## Specific Curriculum Outcomes

Students will be expected to

### Data Management

- A2 analyze graphs or charts of situations to identify specific information
- C3 gather data, plot the data using appropriate scales and demonstrate an understanding of independent and dependent variables, and domain and range
- C5 sketch graphs from words, tables, and collected data
- C9 construct and analyze graphs and tables relating two variables
- C10 describe real-world relationships depicted by graphs, tables of values, and written descriptions
- C15 develop and apply strategies for solving problems
- C17 solve problems using graphing technology
- C32 determine if a graph is linear by plotting points in a given situation
- D1 determine and apply formulas for perimeter, area, surface area, and volume
- D7 determine the accuracy and precision of a measurement
- F1 design and conduct experiments using statistical methods and scientific inquiry
- F2 demonstrate an understanding of concerns and issues that pertain to the collection of data
- F3 construct various displays of data
- F4 calculate various statistics using appropriate technology, analyze and interpret displays, and describe the relationships
- F5 analyze statistical summaries, draw conclusions, and communicate results about distributions of data
- F10 use interpolation, extrapolation, and equations to predict and solve problems
- F15 approximate a line of best fit from a scatter plot

## Networks and Matrices (optional)

- B5 (optional) develop, analyze, and apply procedures for matrix multiplication
- B6 (optional) solve network problems using matrices
- C7 (optional) model real-world situations with networks and matrices
- C17 (optional) solve problems using graphing technology
- C37 (optional) represent network problems using matrices, and vice versa
- E6 (optional) represent network problems as digraphs

## Patterns, Relations, Equations

- A2 analyze graphs or charts of situations to identify specific information
- A6 apply properties of numbers when operating upon expressions and equations
- A8 demonstrate an understanding of and apply the proper use of discrete and continuous number systems
- B1 model (with concrete materials and pictorial representations) and express the relationships between arithmetic operations and operations on algebraic expressions and equations
- B3 use concrete materials, pictorial representations, and symbolism to perform operations on polynomials
- C1 express problems in terms of equations and vice versa
- C2 model real-world phenomena with linear and quadratic equations
- C3 gather data, plot the data using appropriate scales, and demonstrate an understanding of independent and dependent variables, and domain and range
- C5 sketch graphs from words, tables, and collected data
- C8 identify, generalize and apply patterns
- C9 construct and analyze graphs and tables relating two variables
- C10 describe real-world relationships depicted by graphs, tables of values, and written description
- C13 determine and interpret the slope and  $y$ -intercept of a line from a table of values or a graph
- C14 determine the equation of a line using the slope and  $y$ -intercept
- C15 develop and apply strategies for solving problems
- C16 interpret solutions to equations based on context
- C17 solve problems using graphing technology
- C18 investigate and find the solution to a problem by graphing two linear equations with and without technology
- C25 solve equations using graphs
- C26 solve quadratic equations by factoring
- C28 explore and describe the dynamics of change depicted in tables and graphs
- C29 investigate, make and test conjectures concerning the steepness and direction of a line
- C31 graph equations and analyze graphs both with and without graphing technology
- C32 determine if a graph is linear by plotting points in a given situation
- C35 expand and factor polynomial expressions using perimeter and area models
- C38 transform linear equations including slope- $y$  intercept slope method
- C39 make and test conjectures about how linear and quadratic graphs change as particular values in the equations change
- C40 solve linear equations algebraically
- E8 use inductive reasoning when observing patterns, developing properties, and making conjectures
- F6 solve problems by modeling real-world phenomena
- F10 use interpolation, extrapolation, and equations to predict and solve problems



## Modeling and Functions

- A2 analyze graphs or charts of situations to identify specific information
- A8 demonstrate an understanding of and apply the proper use of discrete and continuous number systems
- C1 express problems in terms of equations and vice versa
- C2 model real-world phenomena with linear and quadratic equations
- C3 gather data, plot the data using appropriate scales and demonstrate an understanding of independent and dependent variables, and domain and range
- C4 create and analyze scatter plots using appropriate technology
- C5 sketch graphs from words, tables, and collected data
- C8 identify, generalize, and apply patterns
- C9 construct and analyze graphs and tables involving two variables
- C10 describe real-world relationships depicted by graphs, tables of values, and written descriptions
- C14 determine the equation of a line using the slope and  $y$ -intercept
- C16 interpret solutions to equations based on context
- C17 solve problems using graphing technology
- C21 explore and apply functional relationships informally
- C25 solve equations using graphs
- C33 graph by constructing a table of values, by using graphing technology, and when appropriate by slope  $y$ -intercept method
- F6 solve problems by modeling real-world phenomena
- F7 explore non-linear data using power and exponential regression to find a curve of best fit
- F8 determine and apply a line of best fit using linear regression with technology
- F9 demonstrate an intuitive understanding of correlation
- F10 use interpolation, extrapolation, and equations to predict and solve problems
- F15 approximate a line of best fit from a scatter plot

## Geometry/Trigonometry

- A3 demonstrate an understanding of the role of irrational numbers in applications
- A4 approximate square roots
- A9 explore properties of square roots in applications
- D3 relate the trigonometric functions to the ratios in similar right triangles
- D4 use calculators to find trigonometric values of angles and angles when trigonometric values are known
- D6 solve problems involving measurement using bearings and vectors
- D7 determine the accuracy and precision of a measurement
- D8 solve problems involving similar triangles and right triangles
- D10 determine and apply relationships between the perimeters and areas of similar figures and volumes of similar solids
- D12 solve problems using the trigonometric ratios
- D14 apply the Pythagorean Theorem
- E7 demonstrate an understanding of a proof for the Pythagorean Theorem
- E8 use inductive reasoning when observing patterns, developing properties, and making conjectures

## Geometry/Packaging

- A3 demonstrate an understanding of the role of irrational numbers in applications
- C36 explore, determine, and apply relationships between perimeter and area, and between surface area and volume
- D1 determine and apply formulas for perimeter, area, surface area, and volume
- D4 use calculators to find trigonometric values of angles and angles when trigonometric values are known
- D7 determine the accuracy and precision of a measurement
- D11 explore, discover, and apply properties of maximum area and volume
- D12 solve problems using the trigonometric ratios
- D13 demonstrate an understanding of the concepts of surface area and volume
- E1 explore properties, and make test conjectures about 2- and 3-dimensional figures
- E2 solve problems involving polygons and polyhedra
- E8 use inductive reasoning when observing patterns, developing properties, and making conjectures
- E10 investigate line and rotational symmetry
- E11 draw nets of various polyhedra

# Mathematics Foundations 10 Plus

Mathematics Foundations 10 Plus follows the Mathematics Foundations 10 curriculum but is presented over 220 hours to allow additional time for teaching and learning. The additional hours are used to meet the individual needs of students who require additional opportunities to increase their mathematics skills and problem-solving abilities. Students have opportunities to revisit concepts, skills, and procedures that require review and/or more developmental time, and to focus on problem-solving strategies and other mathematics skills that they have not yet acquired.

Given the scope of the possibilities for the additional time, outcomes for Mathematics Foundations 10 Plus are suggestions only. Teachers must develop a program that meets the needs of his or her students.

## General Curriculum Outcomes

- A: Students will demonstrate number sense and apply number-theory concepts.
- B: Students will demonstrate operation sense and apply operation principles and procedures in both numeric and algebraic situations.
- C: Students will explore, recognize, represent, and apply patterns and relationships, both informally and formally.
- D: Students will demonstrate an understanding of and apply concepts and skills associated with measurement.
- E: Students will demonstrate spatial sense and apply geometric concepts, properties, and relationships.
- F: Students will solve problems involving the collection, display, and analysis of data.
- G: Students will represent and solve problems involving uncertainty.

## Specific Curriculum Outcomes

Students will be expected to

### Data Management

- B2 model, solve, and create problems that utilize addition, subtraction, multiplication, and division of fractions and decimals
- B3 choose appropriate strategies for calculating (mental math, estimation, appropriate technology, paper and pencil), and for problem solving
- F1 collect data, display it accordingly as a histogram, a stem-and-leaf plot, a box plot, a scatter plot, and interpret the displays, both with technology and by hand, when appropriate
- F2 sketch lines and curves of best fit, and determine the equation for the line of best fit by hand and with technology

### Networks and Matrices

- A5 represent problem situations involving matrices
- B6 model, solve, and create problems involving the matrix operations of addition, subtraction, and scalar multiplication

## Patterns, Relations, Equations, and Predictions

- A2 demonstrate an understanding of the interrelationships of subsets of real numbers
- A4 graph, and write in symbols and in words, the solution set for equations and inequalities involving all real numbers
- B3 choose appropriate strategies for calculating (mental math, estimation, appropriate technology, paper and pencil), and for problem solving
- B4 explore and explain, using physical models, the connections between arithmetic and algebraic operations
- B5 apply algebraic operations on polynomial expressions and equations to simplify, expand, factor, and to solve relevant problems
- C1 represent patterns and relationships in multiple ways (context, concrete, pictorial, verbal, and symbol) and use these representations to predict and solve problems
- C2 construct and analyze tables and graphs to describe how changes in one quantity affect a related quantity
- C3 solve and create problems involving linear equations and inequalities
- C4 determine the equations of lines by obtaining their slopes and  $y$ -intercepts from graphs
- C5 determine the equations of lines, and solve equations and inequalities by using technology
- C6 apply algebraic methods to solve linear equations and inequalities
- C7 demonstrate an understanding that using strategies is useful in solving routine and non-routine problems

## Modeling Functional Relationships

- C7 demonstrate an understanding that using strategies is useful in solving routine and non-routine problems
- E1 demonstrate an understanding of the properties of transformations and their mapping notation
- F3 use technology to determine the curve of best fit

## How Far? How Tall? How Steep?

- A1 demonstrate an understanding of rational and irrational numbers, compare and order them, and apply them in meaningful situations
- A3 represent numbers in multiple ways (including exponents, ratios, percents, proportions, and scientific notation) and apply appropriate representations to solve problems
- B1 model, solve, and create problems that utilize addition, subtraction, multiplication, and division of integers
- B3 choose appropriate strategies for calculating (mental math, estimation, appropriate technology, paper and pencil), and for problem solving
- B4 explore and explain, using physical models, the connections between arithmetic and algebraic operations
- C7 demonstrate an understanding that using strategies is useful in solving routine and non-routine problems
- D3 develop and use ratio, rate, and proportions as tools for solving problems
- E5 investigate and demonstrate an understanding of the minimum sufficient conditions to guarantee congruent triangles

## The Geometry of Packaging

- D1 relate the volumes of pyramids, cones, and spheres to the volumes of corresponding prisms and cylinders
- D2 describe patterns and generalize the relationships between areas and perimeters of quadrilaterals, and areas and circumferences of circles
- E2 examine and draw representations of 3-dimensional shapes, and from drawings, construct 3-dimensional shapes
- E3 develop and apply properties of 2-dimensional figures, and apply them
- E4 develop and apply relationships between parallel lines and congruent angles
- E5 investigate, and demonstrate an understanding of the minimum sufficient conditions to guarantee congruent triangles
- E6 make informal deductions using congruent triangle, polygon, and angle properties

# Mi'kmaq Studies 10

## General Curriculum Outcomes

Students will be expected to demonstrate

### **Citizenship, Power, and Governance**

1. an understanding of the rights and responsibilities of citizenship and the origins, functions, and sources of power, authority, and governance

### **Individuals, Societies, and Economic Decisions**

2. their abilities to make responsible economic decisions as individuals and as members of society

### **People, Place, and Environment**

3. an understanding of the interactions among people, places, and the environment

### **Culture and Diversity**

4. an understanding of culture, diversity, and world view, recognizing the similarities and differences reflected in various personal, cultural, racial, and ethnic perspectives

### **Interdependence**

5. an understanding of the interdependent relationship among individuals, societies, and the environment—locally, nationally, and globally—and the implications for a sustainable future

### **Time, Continuity, and Change**

6. an understanding of the past and how it affects the present and the future

## Specific Curriculum Outcomes

Students will be expected to

### **Introductory Unit**

- I1 demonstrate an understanding of the importance of the land to the Mi'kmaw people and of the relationship the Mi'kmaw people have with the land
- I2 demonstrate an understanding of the literal and symbolic teachings of the Medicine Wheel
- I3 formulate a concept of what the term **oral tradition** means

## Governance

- G1 investigate and assess various traditional and emerging theories regarding the peopling of North America
- G2 establish an understanding of the early territories of the Aboriginal peoples of North America
- G3 demonstrate an understanding of the complexities of pre-contact civilization in North America
- G4 demonstrate an understanding of the inherent rights that accrue to the Mi'kmaq and other First Nations as the first occupants of the land
- G5 compare and contrast the pre-contact and post-contact First Nations governing structures
- G6 demonstrate an understanding of the current issues surrounding self-determination of First Nations people in Canada

## Culture

- C1 demonstrate an understanding of the concept of culture and will recognize the effect of their own cultural knowledge and experiences on their interpretations of other cultures
- C2 demonstrate an understanding of the uniqueness of the Mi'kmaw language, its inherent world view, and the importance of language as an important part of the Mi'kmaw culture
- C3 demonstrate an understanding of values, customs, and traditions within Mi'kmaw culture and an appreciation of the role oral tradition plays in the maintenance of cultural continuity and identity
- C4 appreciate the importance of women and Elders in First Nations society and recognize their contributions to the maintenance of their culture
- C5 demonstrate an appreciation for traditional and contemporary expressions of First Nations art, crafts, music, and literature

## Justice

- J1 demonstrate an understanding of the ideas of justice, social justice, and injustice, applying these understandings to the current issues surrounding First Nations communities today
- J2 demonstrate an understanding of the adverse affect discriminatory policy and legislation have had on First Nations in Canada
- J3 identify key opposing viewpoints in the struggle for First Nations control over resource management issues and appreciate the current social and economic crises facing Canada today because of these issues
- J4 compare and contrast the inequities facing First Nations people served by the Canadian justice system and the philosophic contributions of First Nations to this justice system (e.g., restorative justice, sentencing circles)
- J5 express an understanding of the social injustices suffered by the First Nations women and Aboriginal veterans in Canada

## Independent Study

- IS1 engage in specific research using the historical methods and communicate the findings of their research effectively

## Education

- E1 articulate and defend their views on formal and informal education and express ideas on how schools could better serve their students and communities
- E2 identify the traditional education practices within the Mi'kmaw culture and demonstrate an understanding of the First Nations beliefs and values that underlie their holistic approach to education
- E3 articulate an understanding of the efforts of First Nations communities to regain control of their own education based on an appreciation of the difficulties many First Nations face in Canada's school systems
- E4 express an understanding of the changing policies, agencies, and curriculum now in place to make sure that First Nations students receive an education that is respectful of their culture

## Spirituality

- S1 demonstrate an understanding of the beliefs, customs, and values of traditional Mi'kmaw spirituality and an appreciation for the way in which Native people live their spirituality daily
- S2 explain the significance of the creation stories within Mi'kmaw spirituality and recognize the connections between spiritual beliefs and a Mi'kmaw identity and sense of place
- S3 demonstrate an understanding of the influences of Roman Catholicism on Native spirituality and recognize the unique blend of both traditions in some of the spiritual practices and belief systems of the Mi'kmaq
- S4 explore the renewal of traditional spirituality within the Mi'kmaw community and the response of the institutional church to this renewal



# Music 10

## General Curriculum Outcomes

Students will be expected to

### Creating, Making, and Presenting

1. explore, challenge, develop, and express ideas using the skills, language, techniques, and processes of the arts
2. create and/or present, collaboratively and independently, expressive products in the arts for a range of audiences and purposes

### Understanding and Connecting Contexts of Time, Place, and Community

3. demonstrate critical awareness of and value the role of the arts in creating and reflecting culture
4. respect the contributions of individuals and cultural groups to the arts in local and global contexts and value the arts as a record of human experience and expression
5. examine the relationship among the arts, societies, and environments

### Perceiving and Responding

6. apply critical thinking and problem solving strategies to reflect on and respond to their own and others' expressive work
7. understand the role of technologies in creating and responding to expressive works
8. analyze the relationship between artistic intent and the expressive work

## Specific Curriculum Outcomes

Students will be expected to

- CM 1.1 sing or play, maintaining a part within increasingly complex textures and harmonies, using a range of musical structures and styles
- CM 1.2 demonstrate how materials, techniques, and forms can be used to enhance the expression of meaning in music
- CM 1.3 interpret and respond to non-verbal gestures, making connections to notation and musical expression
- CM 1.4 express musical thoughts and ideas using a variety of notational systems, both traditional and non-traditional
  
- CM 2.1 improvise and compose music using a range of skills and forms that express ideas, perceptions, and feelings
- CM 2.2 explore a range of skills and techniques to create, make, and present music
- CM 2.3 explore and perform, alone and with others, music expressing a broad range of thoughts, images, and feelings

- UC 3.1 identify the influences of music in daily life, local and global
- UC 3.2 explore possibilities for musical involvement in school and community, local and global
- UC 3.3 examine a variety of cultural and historical influences on music and musicians
- UC 3.4 explore the various roles of music in local and global contexts
  
- UC 4.1 explore through musical activities how music reflects cultural and historical events and issues
- UC 4.2 analyze and compare music that reflects universal ideas
  
- UC 5.1 examine the connection between music and other arts and music and other school curriculum areas
- UC 5.2 describe the relationship between societies and their music
  
- PR 6.1 identify problems associated with the process of music making
- PR 6.2 explore and use appropriate vocabulary and knowledge of music in responding to their own work and the work of others
- PR 6.3 offer and accept constructive criticism as part of the music-making process
  
- PR 7.1 explore combinations of instruments and sound sources, including electronic sources
- PR 7.2 explore the relationship between technical skill and expressive qualities of non-acoustic and acoustic sound sources
- PR 7.3 use a range of technologies to plan, produce, and create music
  
- PR 8.1 develop criteria to analyze and evaluate their own work
- PR 8.2 explore a range of musical works with reference to the composer's intent
- PR 8.3 analyze performances and provide critical commentary on aspects of musical presentation in light of the performer's intent

# Other Languages 10–12 (Languages Template)

## Specific Curriculum Outcomes

Students will be expected to

### Communicating

1. share personal information, opinions, and preferences, giving reasons
2. ask and respond to basic questions, make simple requests, and ask for assistance
3. exchange information related to activities, people, and things
4. communicate needs, desires, and emotions
5. describe events and experiences in logical progression
6. participate in [Target Language] in a variety of situations drawn from real life

### Acquiring Information

7. find and use information from age-appropriate resources in [Target Language] to complete authentic tasks

### Experiencing Creative Works

8. view, listen to, and read creative works, with visual and contextual support, and respond to them in personal ways

### Understanding Culture and Society

9. identify characteristics of [Target Language] culture(s)
10. identify and examine their own customs, and discuss similarities and differences when compared to [Target Language] culture(s)
11. identify cultural content in resources in [Target Language]

# Physical Education 10

## General Curriculum Outcomes

Students will be expected to

### Knowing

- A: demonstrate an understanding of the concepts that support human movement
- B: demonstrate a knowledge of the components and processes needed to develop and maintain a personal level of functional fitness

### Doing

- C: demonstrate motor skills in all movement categories using efficient and effective body mechanics
- D: participate regularly in a variety of activities that develop and maintain personal physical fitness
- E: demonstrate creativity in all movement categories

### Valuing

- F: demonstrate positive personal and social behaviours and interpersonal relationships
- G: demonstrate positive attitudes toward and an appreciation of physical activity through participation
- H: demonstrate awareness of career and occupational opportunities related to physical activities

## Specific Curriculum Outcomes

Students will be expected to

### Outdoor Pursuits

- 1.1 demonstrate effective interpersonal and communication skills through cooperative activities in group settings
- 1.2 demonstrate understanding of how poor group cohesion can increase chance of incidents during outdoor pursuits
- 1.3 demonstrate an appreciation for the outdoor environment by utilizing effective minimal impact techniques
- 1.4 demonstrate proficient skills and techniques necessary for outdoor adventures taught
- 1.5 demonstrate proficiency utilizing both traditional and current equipment during several outdoor adventures
- 1.6 demonstrate proficiency in a variety of wilderness adventures, using both traditional and current techniques while applying smart risk practices

## **Exercise Science**

- 2.1 demonstrate an understanding of basic human anatomy
- 2.2 apply basic principles of biomechanics to maintain or improve their individual athletic performance using SMART principles
- 2.3 analyze the relationship between nutritional input and the requirements for active living
- 2.4 investigate career and volunteer opportunities related to the field of exercise science

## **Personal Fitness**

- 3.1 apply an understanding of the components of health and skill related physical fitness to activities that develop physical fitness for active, healthy living
- 3.2 apply effective risk practices in health- and skill-related physical activities
- 3.3 apply principles of training to physically active experiences
- 3.4 apply effective risk practices in health- and skill-related physical fitness
- 3.5 apply principles of training to physically active experiences
- 3.6 demonstrate knowledge of what health-related physical fitness appraisals measure: cardiovascular endurance, upper and lower body muscular strength and endurance, flexibility, and body composition
- 3.7 assess their own level health-related physical fitness
- 3.8 set SMART goals to maintain or improve current levels of health related to physical fitness

## **Leadership**

- 4.1 apply effective leadership characteristics through physically active experiences
- 4.2 demonstrate effective interpersonal skills while participating in group physical activities
- 4.3 demonstrate teamwork by co-operating within group physical activities
- 4.4 demonstrate effective teamwork by co-operating within group physical activities
- 4.5 apply effective leadership skills in various activities

# Science 10

## General Curriculum Outcomes

### STSE

1. Students will develop an understanding of the nature of science and technology, of the relationships between science and technology, and of the social and environmental contexts of science and technology.

### Skills

2. Students will develop the skills required for scientific and technological inquiry, for solving problems, for communicating scientific ideas and results, for working collaboratively, and for making informed decisions.

### Knowledge

3. Students will construct knowledge and understandings of concepts in life science, physical science, and Earth and space science and will apply these understandings to interpret, integrate, and extend their knowledge.

### Attitudes

4. Students will be encouraged to develop attitudes that support the responsible acquisition and application of scientific and technological knowledge to the mutual benefit of self, society, and the environment.

## Specific Curriculum Outcomes

Students will be expected to

### Earth and Space Science: Weather Dynamics (25%)

#### Weather: Observations and Measurements

- use weather instruments effectively and accurately for collecting local weather data and collect and integrate weather data from regional and national weather observational networks (213-3, 213-6, 213-7)
- identify questions and analyze meteorological data for a given time span and predict future weather conditions, using appropriate technologies (214-10, 331-5, 212-1)

#### Water Cycle

- use scientific theory, identify questions about, illustrate, and explain heat energy transfers that occur in the water cycle (331-1, 214-3)
- describe how the atmosphere and hydrosphere act as heat sinks in the water cycle (331-3)

### **Weather Dynamics: Heat and Energy**

- use weather data to describe and explain heat transfers in the hydrosphere and atmosphere, showing how these affect air and water currents (331-2)
- illustrate and display how science attempts to explain seasonal changes and variations in weather patterns for a given location (215-5)

### **Weather Forecasting**

- describe examples of Canadian contributions to weather forecasting and satellite imaging, showing how scientific knowledge evolves (117-10, 115-6)
- identify and report the impact of accurate weather forecasting from the personal to the global point of view (118-2, 117-6, 114-6)
- analyze and report on the risks, benefits, and limitations of society's responses to weather forecasting (118-7, 214-11, 116-1)

## **Physical Science: Chemical Reactions (25%)**

### **Investigating Chemical Reactions**

- investigate chemical reactions while applying WHMIS standards, using proper techniques for handling and disposing of materials (213-9, 117-5)
- perform experiments, using appropriate instruments and procedures, to identify substances as acids, bases, or salts, based on their characteristic properties (212-8, 213-5)
- describe how neutralization involves tempering the effects of an acid with a base or vice versa (321-2)

### **Formula Writing**

- name and write formulas for common ionic compounds and molecular compounds and describe the usefulness of the IUPAC nomenclature system (319-1, 114-8)
- classify simple acids, bases, and salts based on their characteristics, name, and formula (319-2)

### **Chemical Reactions**

- represent chemical reactions and the conservation of mass using balanced symbolic equations (321-1)
- design and carry out experiments, controlling variables and interpreting patterns, to illustrate how factors can affect chemical reactions (212-3, 213-2, 321-3, 214-5)

### **STSE Connections**

- investigate and collaborate to describe science and technology relationships and their functions (116-3, 117-7, 215-6, 116-5)

## **Physical Science: Motion (25%)**

### **Motion: Position, Distance, Displacement**

- use instruments and terminologies effectively and accurately for collecting data in various experiments (212-9, 213-3)

### Graphs of Speed and Velocity

- using linear experimentation with appropriate technologies, analyze graphically and quantitatively the relationship among distance, time, and speed (scalar quantities) and the relationship among position, displacement, time, and velocity (vector quantities) (325-1, 212-7, 325-2)

### Motion: Graphs and Formulas

- distinguish among constant, average, and instantaneous speed and velocity of an object (325-3, 212-2)
- describe and evaluate the design and functions of motion technology (114-3, 115-4, 118-3)

### Research in Science and Technology

- identify and imagine questions that could be investigated using relevant research in science and technology (114-6, 117-8)
- describe examples of Canadian contributions to science and technology in the area of motion (117-10)

## Life Science: Sustainability of Ecosystems (25%)

### Sustainability

- question and analyze how a paradigm shift in sustainability can change society's views (114-1)

### Sustainability of an Ecosystem

- distinguish between biotic and abiotic factors, determining the impact on the consumers at all trophic levels due to bioaccumulation, variability, and diversity (318-2, 318-5)
- describe how the classification involved in the biodiversity of an ecosystem is responsible for its sustainability (214-1, 318-6)
- predict and analyze the impact of external factors on the sustainability of an ecosystem, using a variety of formats (212-4, 214-3, 331-6)
- diagnose and report the ecosystem's response to short-term stress and long-term change (213-7, 215-1, 318-4)

### STSE and Sustainable Development

- describe how different geographical locations can sustain similar ecosystems (331-7, 318-3)
- identify, investigate, and defend a course of action on a multi-perspective social issue (118-9, 215-4, 118-5)
- identify and describe peer review, Canadian research, and global projects where science and technology affect sustainable development (114-5, 116-1, 117-3, 118-1)



# Skilled Trades 10

## Specific Curriculum Outcomes

Students will be expected to

### Cluster 1: Skilled Trades Living

1. demonstrate an understanding of the history, evolution, and societal impact of the skilled trades
2. demonstrate an understanding of skilled trades training and apprenticeship
3. demonstrate an awareness of labour standards and safety regulations
4. demonstrate an understanding of the economics and employment opportunities for work in the skilled trades
5. select appropriate artifacts to demonstrate learning throughout Skilled Trades 10 to be included in their LifeWork Portfolio
6. demonstrate an understanding of the nature of work and working conditions in the skilled trades
7. describe the essential skill sets required for success in the skilled trades

### Cluster 2: Safety

8. demonstrate an understanding of and the ability to apply workplace health and safety practices and procedures
9. demonstrate knowledge of how to use tools and equipment safely and to identify safety risks and hazards in the workplace
10. know how to use and maintain personal protective equipment

### Cluster 3: Measurement and Calculation for Trades

11. interpret and apply various systems of measurement
12. perform trades-related calculations
13. demonstrate an ability to use various measuring tools and devices
14. scale and convert trades-related documents

### Cluster 4: Tools and Materials of the Skilled Trades

15. describe and apply safety requirements for using tools and equipment
16. describe the characteristics of professional quality tool design and construction
17. identify appropriate hand tools for a range of applications
18. demonstrate an ability to safely use and maintain hand tools
19. identify appropriate portable power and battery-operated tools for a range of applications
20. demonstrate an ability to safely use and maintain portable power and battery-operated tools
21. demonstrate an ability to safely use and maintain stationary power tools and equipment, machinery
22. demonstrate the ability to select, identify, use, and store, in an environmentally sound way, trades-related materials
23. demonstrate an ability to work safely at levels above grade

# Visual Arts 10

## General Curriculum Outcomes

Students will be expected to

### Creating, Making, and Presenting

1. explore, challenge, develop, and express ideas using the skills, language, techniques, and processes of the arts
2. create and/or present, collaboratively and independently, expressive products in the arts for a range of audiences and purposes

### Understanding and Connecting Contexts of Time, Place, and Community

3. demonstrate critical awareness of and value the role of the arts in creating and reflecting culture
4. respect the contributions of individuals and cultural groups to the arts in local and global contexts and value the arts as a record of human experience and expression
5. examine the relationship among the arts, societies, and environments

### Perceiving and Responding

6. apply critical thinking and problem solving strategies to reflect on and respond to their own and others' expressive work
7. understand the role of technologies in creating and responding to expressive works
8. analyze the relationship between artistic intent and the expressive work

## Specific Curriculum Outcomes

Students will be expected to

- CM 1.1 independently plan and realize artworks using knowledge of art and design elements and principles
- CM 1.2 assess and utilize the properties of various art media and their ability to convey intended meaning
- CM 1.3 create a variety of interrelated artworks on themes found through direct observation, personal experience, and imagination
- CM 1.4 communicate personal response to the use of art and design elements using the critical language of visual arts
- CM 1.5 apply a variety of techniques in the art-making process, from concept to finished work
  
- CM 2.1 use symbols in a variety of media to communicate personal meaning
- CM 2.2 analyze and apply visual, spatial, and temporal concepts in creating art images
- CM 2.3 collaboratively present a display of artworks
- CM 2.4 acknowledge and respect individual approaches to and opinions of art in a collaborative learning environment

- UC 3.1 demonstrate an awareness of the role that visual creations have in our individual modes of expression
- UC 3.2 examine the influence of the visual arts and their relationship to daily life and culture
- UC 3.3 examine how ideas, perceptions, and feelings are embodied in artworks of a culture
- UC 3.4 participate in the visual arts in school and community
- UC 3.5 identify social and ethical issues that arise in artworks
  
- UC 4.1 develop an appreciation of diversity among individuals and cultures as reflected in their artwork
- UC 4.2 incorporate in their personal artwork visual images that reflect a variety of cultural, socio-economic, and national origins
- UC 4.3 explore the role of artists and the arts as they inform, define, and cause us to question and reflect
- UC 4.4 demonstrate an understanding of how individual and societal values affect our response to visual art
- UC 4.5 create images that communicate the influence of local, national, and global artists from a variety of cultural and historical contexts
- UC 4.6 demonstrate knowledge of artwork from different cultures and periods in history
  
- UC 5.1 explore other arts disciplines to inform their art making
- UC 5.2 analyze personal, social, cultural, and physical environments as a basis for visual expression
- UC 5.3 explore the elements of art and principles of design as they exist in art and in the physical and built environments
- UC 5.4 consider and discuss the moral, ethical, and legal issues related to the creation of artworks
  
- PR 6.1 demonstrate independent thinking in interpreting and making judgments about subject matter
- PR 6.2 constructively critique and evaluate personal artwork and the work of others
- PR 6.3 respond to the works of artists through analyzing how they have solved specific visual design problems
- PR 6.4 engage in critical reflective thinking as part of the decision-making and problem-solving process
- PR 6.5 demonstrate an understanding of how meaning is embedded in works of art
- PR 6.6 explore alternative solutions for solving complex problems
  
- PR 7.1 practise safety and demonstrate responsibility in the proper use of materials and tools
- PR 7.2 begin to develop skills in making informed judgments about the use of various media and technological processes, considering their ability to convey meaning
- PR 7.3 demonstrate an understanding of the direct influence expanding technology has had and continues to have on the individual and society
  
- PR 8.1 explore the relationship between intention and outcomes in their own and others' work
- PR 8.2 analyze the source of ideas behind their own work and the work of others
- PR 8.3 explore the relationship between an artwork and its audience



**Grade 11**



# Accounting 11

## Unifying Concepts

As a result of their learning experiences in Accounting 11, students will

- A. be able to begin the accounting cycle for a service industry in accordance with Generally Accepted Accounting Principles
- B. be able to complete the accounting cycle for a service industry
- C. be able to maintain internal cash control procedures of a business
- D. be expected to complete the tasks of the accounts payable clerk, the accounts receivable clerk, and the accounting supervisor
- E. be expected to investigate and learn about the various career opportunities available in the accounting professions and discover how accounting relates to all career fields

## Specific Curriculum Outcomes

Students will be expected to

### Module 1: Beginning the Accounting Cycle

- 1.1 prepare a balance sheet from a completed transaction analysis sheet to determine the financial position of a business
- 1.2 apply the concepts of debit and credit to the balance sheet accounts
- 1.3 prepare and interpret financial statements (income statement and balance sheet with equity accounts)
- 1.4 analyze and record transactions in a general journal and post to the general ledger
- 1.5 prepare a columnar work sheet and classified financial statements

### Module 2: Completing the Accounting Cycle

- 2.1 prepare adjusting entries for prepaid and depreciation expenses
- 2.2 prepare an expanded work sheet that incorporates adjusting entries
- 2.3 journalize and post closing entries
- 2.4 prepare a post-closing trial balance to complete the accounting cycle

### Module 3: Cash Control and Banking

- 3.1 explain the purpose and importance of the internal control system of a business
- 3.2 identify banking activities to prepare and analyze a bank reconciliation

**Module 4: Subsidiary Ledgers**

- 4.1 explain the use and advantages of subsidiary ledgers and control accounts
- 4.2 journalize and post transactions using subsidiary ledgers
- 4.3 verify each of the three ledgers by preparing a general ledger trial balance, a schedule of accounts payable, and a schedule of accounts receivable
- 4.4 describe the importance of division of labour through the use of a three-ledger system

**Module 5: Careers in Accounting**

- 5.1 acquire employability skills and attitudes needed for life and work experiences
- 5.2 investigate career opportunities related to accounting
- 5.3 develop and maintain a Life/Work Portfolio



# Advanced Music 11

## General Curriculum Outcomes

Students will be expected to

### Creating, Making, and Presenting

1. explore, challenge, develop, and express ideas using the skills, language, techniques, and processes of the arts
2. create and/or present, collaboratively and independently, expressive products in the arts for a range of audiences and purposes

### Understanding and Connecting Contexts of Time, Place, and Community

3. demonstrate critical awareness of and value the role of the arts in creating and reflecting culture
4. respect the contributions of individuals and cultural groups to the arts in local and global contexts and value the arts as a record of human experience and expression
5. examine the relationship among the arts, societies, and environments

### Perceiving and Responding

6. apply critical thinking and problem solving strategies to reflect on and respond to their own and others' expressive work
7. understand the role of technologies in creating and responding to expressive works
8. analyze the relationship between artistic intent and the expressive work

## Specific Curriculum Outcomes

Students will be expected to

- CM 1.1 through individual and small ensemble music-making, develop/demonstrate skills in the selection, preparation, and presentation of a recital/performance
- CM 1.2 make informed judgments while selecting appropriate materials, techniques, and forms for their expressive music-making
- CM 1.3 interpret written scores to communicate, through performance, a range of thoughts, images, and feelings
- CM 1.4 demonstrate ability to decode traditional and non-traditional music notation
- CM 1.5 demonstrate ability to analyze music aurally
  
- CM 2.1 using selected sound sources, improvise and compose music, applying appropriate music notation skills, techniques, and forms
- CM 2.2 collaborate with others to create and present a body of music using a range of skills and techniques
- CM 2.3 compare and perform a range of musical styles, forms, and genres, alone and with other

- UC 3.1 consider and discuss the role of music in their daily lives
- UC 3.2 make connections between school, local community, and global musical activities
- UC 3.3 analyze cultural contributions to music locally and globally
- UC 3.4 analyze the various roles of music both locally and globally
- UC 3.5 investigate and analyze world music in the context of the contemporary music environment
  
- UC 4.1 make connections between their own music and the music of others in cultural and historical contexts
- UC 4.2 create, notate, and present music that reflects universal ideas
  
- UC 5.1 pursue possibilities for connecting their own musical activities and other arts and/or curriculum areas
- UC 5.2 analyze and make decisions about the relationship between music and society and music and the natural environment
- UC 5.3 analyze ways in which their own music and that of others expresses the cultural diversity of the community, both local and global
  
- PR 6.1 apply in-depth knowledge and understanding of music to solve problems during the music-making process
- PR 6.2 analyze and compare individual perspectives, perceptions, opinions, and interpretations of musical works
- PR 6.3 reflect on and respond to constructive criticism as it applies to the music-making process
  
- PR 7.1 evaluate the expressive potential of technologies
- PR 7.2 assess the relationship between technical skill and expressive qualities of a variety of sound sources
- PR 7.3 demonstrate an understanding of the effect of technology on music and musicians
- PR 7.4 demonstrate skill in using contemporary technologies for music creation
  
- PR 8.1 analyze and make decisions about their musical work, including performances, in relation to the artistic intent
- PR 8.2 analyze artistic intent and its role in the music-making process
- PR 8.3 analyze feedback and make informed decisions about their musical work

# Advanced Visual Arts 11

## General Curriculum Outcomes

Students will be expected to

### Creating, Making, and Presenting

1. explore, challenge, develop, and express ideas using the skills, language, techniques, and processes of the arts
2. create and/or present, collaboratively and independently, expressive products in the arts for a range of audiences and purposes

### Understanding and Connecting Contexts of Time, Place, and Community

3. demonstrate critical awareness of and value the role of the arts in creating and reflecting culture
4. respect the contributions of individuals and cultural groups to the arts in local and global contexts and value the arts as a record of human experience and expression
5. examine the relationship among the arts, societies, and environments

### Perceiving and Responding

6. apply critical thinking and problem solving strategies to reflect on and respond to their own and others' expressive work
7. understand the role of technologies in creating and responding to expressive works
8. the relationship between artistic intent and the expressive work

## Specific Curriculum Outcomes

Students will be expected to

- CM 1.1 develop and realize artworks demonstrating skilful knowledge of formal principles, and present a body of work in a formal exhibition
- CM 1.2 explore and demonstrate intrinsic properties of art media to express specific intent
- CM 1.3 sustain a concept through diverse approaches and art media in a series of artworks
- CM 1.4 demonstrate through artmaking, an understanding of formal design principles
- CM 1.5 refine the art-making process through personal skill development from concept to finish, collaborating with professional artists in the field
  
- CM 2.1 investigate, create, and employ signs and their signifies (symbols) to communicate contemporary issues and/or personal meaning through thematic development and the use of a variety of media
- CM 2.2 critically engage visual, spatial, and temporal concepts through various contexts and media
- CM 2.3 make critical and articulate judgements when sorting, arranging, and displaying artworks, both collaboratively and independently
- CM 2.4 encourage peers to express individual approaches to and opinions of aesthetic forms in collaborative learning environments

- UC 3.1 reflect on the impact that an everyday visual context has on personal expression
- UC 3.2 explore the links between visual arts and the student's personal environment
- UC 3.3 demonstrate an understanding of how visual arts contribute to the creation of culture
- UC 3.4 actively engage in art advocacy through presentations and community collaboration
- UC 3.5 investigate and demonstrate the ways in which artists explore social and artistic issues
- UC 3.6 give voice to personal concerns through visual expression in the realization of a body of work
- UC 3.7 use critical and historical practice to generate ways to interpret and explain works of art
  
- UC 4.1 articulate an appreciation for the diversity of art and artifacts from individuals and various cultures
- UC 4.2 incorporate in their personal artworks ideas and images that reflect a variety of personal and cultural origins, drawn and assessed from a larger cultural context
- UC 4.3 articulate through various texts how artists and the arts inform, define, and cause us to question and reflect, and present specific examples from famous artists
- UC 4.4 analyze and articulate personal understanding of how individual and societal values affect their own response to visual arts
- UC 4.5 research and create images that communicate the influence of local, national, and global artists from a variety of cultural and historical contexts
- UC 4.6 recognize and respond to artworks from different cultures and periods, generating ways to interpret and explain images and messages presented
  
- UC 5.1 collaborate with artists in other disciplines to create artwork that is informed by these disciplines
- UC 5.2 analyze and demonstrate an understanding of how personal, social, cultural, and physical environments interact
- UC 5.3 generate artwork that demonstrates an understanding of the elements of art and the principles of design as they exist in art and in natural and built environments
- UC 5.4 examine and debate the moral, ethical, and legal issues related to the creation of artworks
- UC 5.5 explore and present the functions and ethics of how societies use the arts
- UC 5.6 explore ways in which histories, narratives, and other accounts can be built to explain practices and interest in the field of art and design
  
- PR 6.1 develop an expanded art vocabulary in order to facilitate evaluation and interpretation of artworks
- PR 6.2 continue to engage in the critical process to develop informed, aesthetic responses
- PR 6.3 recognize strategies by which visual art and design problems can be resolved
- PR 6.4 investigate the roles and relationships among concepts of artist/designer, work, world, and audience/consumer in critical and historical investigations
  
- PR 7.1 articulate issues of occupational health and safety in the making of a range of artworks
- PR 7.2 make informed judgments about use of various media and technological processes, considering the ability to convey meaning
- PR 7.3 analyze and respond to the direct influence expanding technology has had and continues to have on the individual and society with regard to art and design
  
- PR 8.1 recognize and analyze the evolving interaction between a concept and its execution in personal artwork and the works of others
- PR 8.2 develop a deeper awareness of how consideration of the intended audience affects and impacts on an artwork

# African Canadian Studies 11

## General Curriculum Outcomes

Students will be expected to

1. demonstrate an understanding of the diversity of Africa and various African cultures and show their importance in the development of Canadian identity
2. demonstrate an understanding of the history of the pre-colonial kingdoms up to the Transatlantic Slave Trade
- 3A. demonstrate an understanding of the impact of colonial expansion on the African diaspora
- 3B. demonstrate an understanding of the conditions of enslavement, strategies of resistance, and the implications of enslavement on African Canadian settlement
4. demonstrate effective skills in conducting research using historical methods and in communicating the results of their research effectively
5. analyze critically the struggle of peoples of African descent for the pursuit of civil rights and equality
6. investigate the importance of collective consciousness of peoples of African descent as a strategy for empowerment

## Specific Curriculum Outcomes

Students will be expected to

### Module 1: Evolution and Change

- 1.1 share background knowledge that students bring to the course about African heritage
- 1.2 examine the diversity of Africa in light of its physical environments, cultures, languages, and nationalities
- 1.3 describe their own cultural identity and why this identity is important
- 1.4 examine the meaning of culture and identify the various elements of culture
- 1.5 examine the meaning of “historiography, ethnocentrism, Eurocentrism, and Afrocentrism” and analyze the significance of these terms for the construction of identity
- 1.6 investigate the roots of Afrocentricity from the history, geography, and culture of Africa
- 1.7 explore the notion of Africa as the birth place of humankind

### Module 2: Elements of the African Diaspora

- 2.1 identify the historical and geographical location of different ancient African civilizations
- 2.2 examine the political, economic, and social systems of ancient African kingdoms (e.g., Kush, Aksum, Ghana, Mali)
- 2.3 examine the various elements of pre-colonial African cultures
- 2.4 analyze the effects of these cultural components on the history of pre-colonial Africa and on the changes that took place from pre-colonial Africa to colonial Africa

### **Module 3A: Impact of Colonial Expansion**

- 3A.1 identify the colonial and imperial systems causing slavery
- 3A.2 examine the Transatlantic Slave Trade (routes, conditions, economics, etc.)
- 3A.3 compare and contrast the difference between displacement, migration, and force migration as these relate to the African people throughout the diaspora
- 3A.4 investigate how enslavement has been used to shape the world economically and politically throughout time
- 3A.5 explore the development (economical, political, social, spiritual) of slave culture in North America and the Caribbean and analyze the effects of enslavement on people of African descent
- 3A.6 examine how people of African descent used various means to resist enslavement through cultural expression (music, slave insurrections, religion, folktales, literature) and anti-slavery movements

### **Module 3B: Struggle for Identity**

- 3B.1 examine the causes and outcomes of the American Revolution and its implications for people of African descent
- 3B.2 investigate why the Black Loyalists, Maroons, and Black Refugees immigrated to Canada
- 3B.3 evaluate the impact of the Underground Railroad on the diaspora of African people within the United States and Canada
- 3B.4 analyze the implications of the Civil War and its aftermath (the Emancipation Act and Reconstruction) on people of African descent
- 3B.5 identify the problems Black settlers experienced coming to Canada, (e.g., Slave Code Laws, legislation, environment, and settlement patterns)
- 3B.6 examine the implications of Confederation on Canada as a nation, and demonstrate an understanding of the contributions and roles that African Canadians have played in pre- and post-confederation (e.g., leadership in communities and society, military)
- 3B.7 compare and contrast Black communities across Canada within changing demographics (e.g., Migration patterns, Immigration policy, expansion of Black communities after 1867)

### **Module 4: Independent Study**

- 4.1 develop and refine a proposal for an inquiry or creative work
- 4.2 develop a work plan that enables time management, monitors progress, and contributes to the criteria for evaluation
- 4.3 formulate a question for research
- 4.4 conduct an organized research, using a variety of information sources (e.g., audio-visual materials, internet sites) that present a diverse range of perspectives on African Canadian Studies
- 4.5 organize research findings, using a variety of methods and forms: graphs, charts, maps, diagrams, etc.
- 4.6 demonstrate an ability to identify bias, prejudice, stereotyping, or a lack of substantiation in statements, arguments, and opinions
- 4.7 compare key interpretations of African Canadian studies
- 4.8 explain relationships and connections in the data studied (e.g., chronological ties, cause and effect, similarities and differences)

## Module 5: In Pursuit of Justice

- 5.1 examine the concept of power and the correlation between power, disenfranchisement, segregation, and racism as these relate to the social conditions of people of African descent (e.g., employment, housing, education, and politics)
- 5.2 compare and contrast the history of the Civil-Rights Movement in Africa, United States, and Canada
- 5.3 analyze the impact of the Civil-Rights Movement on people of African descent in Canada, and in particular, in Nova Scotia
- 5.4 investigate how legal documents relate to the Canadian context regarding Confederation, Constitution. (e.g., UN documents, Charter of Rights and Freedom, Constitutional documents)
- 5.5 examine the traditions of the Black church as an instrument for political, social, and educational leadership

## Module 6: The Journey toward Empowerment

- 6.1 examine the concept of empowerment (i.e., empowerment model: Catalyst, Awareness, Analysis and Action-CAAA) and investigate its impact on people of African descent through institutional change (e.g., education, economics, political institutions, individual empowerment, community empowerment)
- 6.2 investigate the global impact of political empowerment and independence of colonized countries from the 1950s to the present
- 6.3 demonstrate how community-based groups / grassroots organizations have developed and changed over time (e.g., Nova Scotia Association for the Advancement of Coloured People, African United Baptist Association, Black United Front, Nova Scotia Coloured Home, Association for Black Social Workers, Black Cultural Centre, Congress of Black Women)
- 6.4 demonstrate an understanding of the contributions and achievements of African Canadians in the following contexts: social, educational, political, religious, and judicial institutions
- 6.5 examine the evolution of Black families in Canada such as traditional family structure, extended family, and nuclear family
- 6.6 examine the challenges facing African Canadians and African Nova Scotians today
- 6.7 demonstrate an understanding of the consciousness of people of African descent throughout the diaspora as these relate to the African continent

# Agriculture/Agrifood 11

## Specific Curriculum Outcomes

Students will be expected to

### **Module 1: Connections—Factors, Experiments, and Lives (15%)**

#### Investigations

- investigate and explain abiotic and biotic factors that influence agriculture (AG-01)
- design and perform plant experiments using different variables and proper equipment (AG-02)
- examine and explain a compost heap and report on its use (AG-03)

#### An Overview

- identify with examples of Nova Scotia agricultural commodities, activities, and careers, connecting these locally, nationally, and globally (AG-04)

### **Module 2: Primary Production Systems (30%)**

#### Animal and/or Plant Science

- identify a farm to explore, collect data, and report findings (AG-05)
- explain how the organism on the farm lives and grows (AG-06)
- compare and contrast what can be produced locally with a different global climate (AG-07)

#### Industries, Production, and Technology

- explore how supply and demand can affect the production of the commodity (AG-08)
- indicate careers and technologies that have developed to aid industries and production of the commodity (AG-09)
- explain the relationships among the variables (space, food, population, and health) for livestock and/or plant farming (AG-10)

### **Module 3: Support Systems (20%)**

#### Farm Supports

- compare and contrast the production of various farms (AG-11)
- identify the range of roles in supporting infrastructure at the farm, provincial, national, and international levels (AG-12)
- explain how effective management increases efficiency and responsible farming practices (AG-13)



### Society and Environment Connections

- compare the risks and benefits to society and the environment of production while maintaining health, preventing pests and diseases, and supply and demand (AG-14)
- explain how funding, regulations, and quotas affect farming (AG-15)

Choose one of either Module 4 or Module 5.

### Module 4: Beyond the Farm Gate (15%)

#### From Farm to the Consumer

- differentiate how management, production, and marketing has evolved locally and globally (AG-16)
- identify and explain processes on how to get the product to the consumer (AG-17)

#### Value of the Product

- examine how the value of a product can be increased and promoted (AG-18)
- synthesize information and present their findings on the effects on farming and production with respect to policies, regulations, and career regulations (AG-19)

### Module 5: Foods (15%)

#### Production and Safety

- investigate food production techniques and explain their effectiveness (AG-20)
- compare food safety regulations and processes locally and compare globally (AG-21)

#### From Local to National to Global

- identify local products and compare them with similar products that are produced globally (AG-22)
- compile production information of a similar product produced both locally and globally (AG-23)

### Module 6: Agriculture/AgriFood Project (20%)

#### Designing an Investigation

- identify questions to investigate that include economy, environment, culture, and social aspects (AG-24)
- design an investigation, identifying and controlling major variables, that collects evidence from various perspectives (AG-25)

#### Performing and Presenting

- perform an investigation, using appropriate tools, and record information (AG-26)
- respond to the investigation's findings and propose a course of action, taking into account various needs (AG-27)

# Biology 11 / Advanced Biology 11

## General Curriculum Outcomes

### STSE

1. Students will develop an understanding of the nature of science and technology, of the relationships between science and technology, and of the social and environmental contexts of science and technology.

### Skills

2. Students will develop the skills required for scientific and technological inquiry, for solving problems, for communicating scientific ideas and results, for working collaboratively, and for making informed decisions.

### Knowledge

3. Students will construct knowledge and understandings of concepts in life science, physical science, and Earth and space science, and apply these understandings to interpret, integrate, and extend their knowledge.

### Attitudes

4. Students will be encouraged to develop attitudes that support the responsible acquisition and application of scientific and technological knowledge to the mutual benefit of self, society, and the environment.

## Specific Curriculum Outcomes

**Note:** Students in Advanced Biology 11 will be expected to achieve the outcomes for Biology 11 as well as those for Advanced Biology 11.

Students will be expected to

### **Matter and Energy for Life (30%) (Advanced, 25%)**

#### The Cell

- explain how cell theory has developed over time, referencing evidence, theories, and paradigms (114-2, 314-5, 114-1)
- perform experiments using specimens and microscopes and record the data collected (213-3, 214-3)

### Interaction of Cell Structures

- using appropriate equipment, observe and describe cell organelles (314-6, 213-8)
- compare and contrast different types of procaryotic and eucaryotic cells (314-7)
- describe how organelles manage various cell processes (314-8)
- do investigations of cell size and display collected data, including variables and conclusions (212-7, 213-2, 213-5)

### Photosynthesis and Respiration

- design, perform, and report on experiments that investigate the basic and critical processes of photosynthesis and respiration (214-11, 114-5)
- compare and contrast matter and energy transformations associated with the processes of photosynthesis and aerobic respiration (314-9)

## Biodiversity (25%) (Advanced, 20%)

### Classifying Living Things

- describe and apply classification systems and nomenclatures used in the biological science (214-1)
- use organisms found in local or regional ecosystems to demonstrate an understanding of the fundamental principles of taxonomy (316-5)
- analyze and describe examples where scientific knowledge evolved, was enhanced, or revised as a result of new laws, theories, and/or technologies (115-7, 116-2)

### Diversity among Living Things

- construct arguments to support a decision or judgment, using examples and evidence, recognizing various perspectives (118-6)
- describe the anatomy and physiology of a representative organism from each kingdom, including a representative virus (316-6)
- analyze and explain the life cycle of a representative organism from each kingdom, including a representative virus (313-1)

## Maintaining Dynamic Equilibrium I (35%) (Advanced, 30%)

### Homeostatis

- explain the importance of nutrition and fitness to the maintenance of homeostatis, debating the merits of funding specific scientific or technological endeavours and not others (117-4, 317-3)
- explain, with specific examples, how behaviours such as tropisms, instinct, and learned, help to maintain homeostasis and identify multiple perspectives that influence a decision/issue (215-4, 317-8)

### Body Systems

**Note:** Biology 11 requires that a minimum of two (2) of the following five body systems be investigated in detail—circulatory, respiratory, digestive, excretory, and immune systems.

- design and perform experiments, identifying specific variables, to investigate how body systems work based on scientific understandings (212-6, 116-4)

- analyze and report how natural and technological systems have developed and improved over time, including organ transplants (115-5, 116-7)
- explain how different plant and animal systems maintain homeostasis (317-1)
- identify and describe the role of chemicals, including elements, compounds, biochemicals, and water on the structure and function of various body systems (314-1, 314-2, 314-3)
- identify and predict the impact of viruses, diseases, and environmental factors on the homeostasis of an organism and propose alternate solutions (317-4, 317-6, 214-15)

### **Interactions among Living Things (10%) (Advanced, 5%)**

#### **Biomes**

- compare and interpret patterns of North America's biomes with another continent in terms of climate, vegetation, physical geography, and location (214-5, 318-7)

#### **Population Dynamics**

- synthesize information from multiple sources to describe and explain factors that influence population growth and interactions within and between populations (215-3, 318-8, 319-9)
- propose courses of action on social, economic, and cultural issues related to Earth's carrying capacity and demands on natural resources, referencing the energy pyramid (116-7, 118-10, 318-10, 318-11)

### **Advanced Biology 11 Outcomes (Draft)**

#### **In-depth Treatment: Cellular Biology (completed within units)**

- identify chemical elements and compounds that are commonly found in living systems (314-1)
- identify and describe the structure and function of the important biochemical compounds, carbohydrates, proteins, and lipids (314-3)
- use library and electronic research tools to collect and synthesize relevant information on the features of the Canadian biome (213-6)
- work co-operatively with team members to develop and carry out a plan, and troubleshoot problems as they arise (215-6)
- carry out procedures controlling the major variables and adapting or extending procedures where required (213-2)
- compile and organize data, using appropriate formats and data treatments to facilitate interpretation of the data (213-5)
- describe how organelles manage various cell processes such as ingestion, digestion, transportation, and excretion (314-8)

#### **In-depth Treatment: Literature Search and Report on Mental Health (5%)**

- collect information on how the brain functions with respect to the biology of mental health and mental illness compared with other diseases (AB-1)
- define mental health and mental illness, giving the causes and strategies to address them (AB-2)
- examine society's expectations about positive mental health and mental illness (AB-3)
- report on mental health and mental illness from a medical or societal perspective (AB-4)

**Investigation: An Independent Study/Experiment (15%)**

- design a plant problem- or project-based investigation and report on the findings (AB-5)

# Business Technology 11

## Unifying Concepts

As a result of their learning experiences in Business Technology 11, students will

- A. develop a basic proficiency in touch keyboarding
- B. integrate touch keyboarding skills with skills in document processing and design
- C. create spreadsheets to manage data
- D. apply the principles and practices of desktop publishing to design and produce documents
- E. become confident and purposeful users of technology

## Specific Curriculum Outcomes

Students will be expected to

### Module 1: Touch Keyboarding (15–20 hours)

- 1.1 demonstrate correct touch-system technique
- 1.2 set up and organize workstations safely and efficiently
- 1.3 develop keyboarding speed and accuracy

### Module 2: Document Processing (35–40 hours)

- 2.1 apply formatting skills to a range of workplace documents
- 2.2 use the keyboard to compose and format text for a range of personal and workplace purposes
- 2.3 integrate data from multiple files to create an original document

### Module 3: Spreadsheets (20 hours)

- 3.1 identify the purpose, characteristics, and terminology associated with the use of spreadsheet application software
- 3.2 manipulate data using spreadsheet software to solve problems
- 3.3 use mathematical features of spreadsheet software to manage data
- 3.4 produce functional, informative, and effectively formatted charts to present a range of workplace data
- 3.5 create and format spreadsheets to solve a range of workplace problems

### Module 4: Desktop Publishing (35 hours)

- 4.1 identify the purpose, characteristics, and terminology associated with the use of desktop publishing software
- 4.2 demonstrate an understanding of copyright and intellectual property laws
- 4.3 use desktop publishing software features to enhance publications
- 4.4 design and create a variety of print and on-line publications for specific purposes and audiences using desktop publishing software

**Module 5: Business Technology Fundamentals (5 hours)**

- 5.1 use hardware and software terminology and features
- 5.2 access and use information responsibly and ethically
- 5.3 investigate career opportunities related to information technology
- 5.4 acquire employability skills and attitudes needed for life and work experiences
- 5.5 develop and maintain a LifeWork Portfolio
- 5.6 manage common hardware and software processes, files, and basic workstation procedures

# Canadian History 11

## General Curriculum Outcomes

Students will be expected to

### **Citizenship, Power, and Governance**

- A. demonstrate an understanding of the rights and responsibilities of citizenship and the origins, functions, and sources of power, authority, and governance

### **Individuals, Societies, and Economic Decisions**

- B. demonstrate the ability to make responsible economic decisions as individuals and as members of society

### **People, Place, and Environment**

- C. demonstrate an understanding of the interactions among people, places, and the environment

### **Culture and Diversity**

- D. demonstrate an understanding of culture, diversity, and world view, recognizing the similarities and differences reflected in various personal, cultural, racial, and ethnic perspectives

### **Interdependence**

- E. demonstrate an understanding of the interdependent relationship among individuals, societies, and the environment—locally, nationally, and globally—and the implications for a sustainable future

### **Time, Continuity, and Change**

- F. demonstrate an understanding of the past and how it affects the present and the future

## Specific Curriculum Outcomes

Students will be expected to

### **Introduction**

- IN1 identify and describe continuing/persistent questions that have deep roots in Canada's history
- IN2 identify those individuals, events, and/or symbols that they believe have contributed to the development of Canada and explain their historical significance



## Globalization

- GL1 investigate and assess various traditional and emerging theories regarding the peopling of the Americas
- GL2 analyze the effects of contact and subsequent colonization
- GL3 demonstrate an understanding that Canada's development was influenced by evolving relationships with France, Britain, and the USA
- GL4 analyze the role played by WWI in shaping Canada's identity
- GL5 analyze the role played by WWII in shaping Canada's identity
- GL6 analyze the evolution of Canada's roles in the late twentieth century

## Development

- D1 investigate the economic systems of Aboriginal societies in North America
- D2 analyze the role played by the Staple Trade in the development of (Colonial) Canada
- D3 analyze the relationship between the National Policy and the industrialization of Canada
- D4 analyze the role of the free trade debate/issue in Canada's development
- D5 analyze the economic trends and policies that impact on Canada's current and future development

## Governance

- G1 demonstrate an understanding of how pre-contact and post-contact First Nations governing structures and practices were reflective of their societies
- G2 demonstrate an understanding of how and why competing French, British, and American governing philosophies merged in BNA
- G3 analyze how emerging political and economic structures led to Confederation
- G4 evaluate the evolution of federalism in Canada from Confederation to Patriation
- G5 analyze the shift from a traditional two-party process to a multi-party process in post-Confederation Canada
- G6 demonstrate an understanding of the purpose of the Canadian constitution

## Independent Study

- IS1 engage in specific research using the historical method and communicate the findings of their research effectively

## Sovereignty

- S1 demonstrate an understanding that struggles for sovereignty affect countries and peoples globally
- S2 demonstrate an understanding of how desires for sovereignty create conflict and compromise
- S3 analyze the struggles of First Nations to re-establish sovereignty
- S4 identify and explain the historical and contemporary facts that promoted the emergence of Quebec nationalism
- S5 analyze the external factors that have impacted on the struggle for Canadian sovereignty

**Justice**

- J1 analyze the contributions of First Nations, France, and Britain to Canada's legal system
- J2 demonstrate an understanding of the relationship between land and culture and analyze the effects of displacement
- J3 demonstrate an understanding of Canada's immigration policies and analyze their origins and effects
- J4 demonstrate an understanding of how the lack of political and economic power has led to inequities and analyze the responses to these inequities
- J5 analyze the evolution of the struggle to achieve rights and freedoms

# Career Development 11

## Specific Curriculum Outcomes

Students will be expected to

### Module 1: Career Awareness

- 1.1 clarify and define their life and work goals through further analysis of self-assessment data
- 1.2 independently develop a long-term plan by evaluating the relevance of their career and life decisions and by using additional career information
- 1.3 apply the knowledge and skills needed to seek and obtain career-related work
- 1.4 apply the knowledge and skills needed to manage the transition to a range of post-secondary destinations

### Module 2: Work Cultures

- 2.1 demonstrate an understanding of human rights issues in the workplace
- 2.2 investigate employee and employer rights and responsibilities
- 2.3 investigate the roles of unions and other professional organizations
- 2.4 demonstrate an awareness of the issues and resources related to a mental health and workplace balance
- 2.5 make decisions that reflect an understanding of workplace ethics, norms, and values

### Module 3: Financial Management

- 3.1 make life and work decisions that reflect financial realities
- 3.2 access and use resources related to financial management and planning

### Module 4: LifeWork Portfolio

- 4.1 update and maintain a LifeWork Portfolio
- 4.2 include artifacts (like an anticipated career plan) to demonstrate their growth in knowledge and skills
- 4.3 include items that illustrate their employability

# Chemistry 11 / Advanced Chemistry 11

## General Curriculum Outcomes

### STSE

1. Students will develop an understanding of the nature of science and technology, of the relationships between science and technology, and of the social and environmental contexts of science and technology.

### Skills

2. Students will develop the skills required for scientific and technological inquiry, for solving problems, for communicating scientific ideas and results, for working collaboratively, and for making informed decisions.

### Knowledge

3. Students will construct knowledge and understandings of concepts in life science, physical science, and Earth and space science, and apply these understandings to interpret, integrate, and extend their knowledge.

### Attitudes

4. Students will be encouraged to develop attitudes that support the responsible acquisition and application of scientific and technological knowledge to the mutual benefit of self, society, and the environment.

## Specific Curriculum Outcomes

**Note:** Students in Advanced Chemistry 11 will be expected to achieve the outcomes for Chemistry 11 as well as those for the advanced course.

Students will be expected to

### **Stoichiometry (40%) (Advanced, 30%)**

#### The Mole and Molar Mass

- define molar mass and perform mole-mass inter-conversions for pure substances (323-1)
- explain how a major scientific milestone, the mole, changed chemistry (115-3)

## Calculations and Chemical Equations

- identify mole ratios of reactants and products from balanced chemical equations (323-10)
- identify practical problems that involve technology where equations were used (214-13)
- state a prediction and a hypothesis based on available evidence and background information (212-4)
- perform stoichiometric calculations related to chemical equations (323-11)

## Stoichiometric Experimentation

- design stoichiometric experiments identifying and controlling major variables (212-3)
- use instruments effectively and accurately for collecting data (213-3)
- identify and explain sources of error and uncertainty in measurement using precision and accuracy (214-10)
- communicate questions, ideas, and intentions, and receive, interpret, understand, support, and respond to the ideas of others (215-1)
- identify various constraints that result in trade-offs during the development and improvement of technologies (114-4)

## Applications of Stoichiometry

- identify various stoichiometric applications (323-12)
- predict how the yield of a particular chemical process can be maximized (323-13)
- explain how data support or refute the hypotheses or prediction of chemical reactions (214-12)
- compare processes used in science with those used in technology (114-7)
- analyze society's influence on science and technology (117-2)

## From Structures to Properties (30%) (Advanced, 25%)

### Properties of Ionic and Molecular Compounds and Metallic Substances

- select and integrate information from various print and electronic sources or from several parts of the same source (213-7)
- identify and describe the properties of ionic and molecular compounds and metallic substances (321-7)

### Classifying Compounds

- classify ionic, molecular, and metallic substances according to their properties (321-9)
- identify consumer products and investigate the claims made by companies about the products (212-5)

### Bonding

- illustrate and explain the formation of ionic, covalent, and metallic bonds (321-4)

### Structural Models of Bonding

- explain the structural model of a substance in terms of the various bonds that define it (321-11)
- explain how knowledge of bonding evolves as new evidence and theories are tested and subsequently revised or replaced (115-7)
- analyze examples of Canadian contributions to bonding (117-11)
- analyze and describe examples where technologies were developed based on bonding (116-4)

- analyze, from a variety of perspectives, the risks and benefits to society and the environment of applying bonding knowledge or introducing a particular technology (118-2)

### **Bond Energies**

- identify limitations of categorizing bond types based on differences in electronegativity between the elements and compounds (214-2)
- explain the evidence from a bonding experiment and from collected data in the development of bond energies (114-2)
- describe how the different types of bonds account for the properties of ionic and molecular compounds and metallic substances (321-8)

### **Polar and Pure Covalent Bonding**

- illustrate and explain hydrogen bonds and van der Waals' forces (321-5)
- use library and electronic research tools to collect bonding information (213-6)
- select and integrate information from various print and electronic sources or from several parts of the same source (213-7)
- compile and display evidence and information, by hand or computer, in a variety of formats, including diagrams, flow charts, tables, and graphs (214-3)

## **Organic Chemistry (30%) (Advanced, 25%)**

### **So Many Compounds**

- explain the large number and diversity of organic compounds with reference to the unique nature of the carbon atom (319-4)

### **Influences of Organic Compounds on Society**

- explain how synthesizing organic molecules revolutionized thinking in the scientific community (115-3)
- explain how organic chemistry has evolved as new evidence has come to light (115-6)
- identify various constraints that result in trade-offs during the development and improvement of technologies (114-4)
- provide organic chemistry examples of how science and technology are an integral part of their lives and their community (117-5)
- analyze natural and technological systems to interpret and explain the influence of organic compounds on society (116-7)

### **Classifying Organic Compounds**

- classify various organic compounds by determining to which families they belong, based on their names or structures (319-7)

### **Naming and Writing Organic Compounds**

- write the formula and provide the IUPAC name for a variety of organic compounds (319-5)

### Applications of Organic Chemistry

- identify limitations of the IUPAC classification system and identify alternative ways of classifying to accommodate anomalies (214-2)
- distinguish between scientific questions and technological problems (115-1)
- select and use apparatus and material safely (213-8)
- provide a statement that describes the relationship between bonding and organic chemistry investigated in light of the link between data and the conclusion (214-11)
- evaluate the design of a technology and the way it functions, on the basis of a variety of criteria that they have identified themselves (118-4)
- identify and apply criteria, including the presence of bias, for evaluating evidence and sources of information on an organic topic (214-9)

### Isomers in Organic Chemistry

- define isomers and illustrate the structural formulas for a variety of organic isomers (319-6)

### Writing and Balancing Chemical Equations

- write and balance chemical equations to predict the reactions of selected organic compounds (319-8)

### Polymerization

- define problems to facilitate investigation of polymers (212-2)
- design an experiment identifying and controlling major variables (212-3)
- describe processes of polymerization and identify some important natural and synthetic polymers (319-9)

### Risks and Benefits of Organic Compounds: STSE Perspectives

- communicate questions, ideas, and intentions, and receive, interpret, understand, support, and respond to the ideas of others (215-1)
- describe and evaluate the design of technological solutions and the way they function using scientific principles (116-6)
- analyze from a variety of perspectives the risks and benefits to society and the environment of applying organic chemistry knowledge or introducing a particular technology (118-2)
- develop, present, and defend a position or course of action on organic chemistry based on findings (215-5)
- select, integrate, and synthesize information from multiple sources including various print and electronic sources, and make inferences on this information (213-7, 215-3)
- debate the merits of funding specific scientific or technological endeavours and not others (117-4)

## Advanced Chemistry 11 Outcomes

### In-depth Treatment (completed within the units)

- perform stoichiometric calculations related to chemical equations (323-11)
- predict how the yield of a particular chemical process can be maximized (323-13)
- design stoichiometric experiments identifying and controlling major variables (212-3)

- use instruments effectively and accurately for collecting data (213-3)
- illustrate and explain the formation of ionic, covalent, and metallic bonds (321-4)
- explain the structural model of a substance in terms of the various bonds that define it (321-11)
- identify limitations of categorizing bond types based on differences in electronegativity between the elements and compounds (214-2)
- analyze natural and technological systems to interpret and explain the influence of organic compounds on society (116-7)
- develop, present, and defend a position or course of action on organic chemistry based on findings (215-5)
- define isomers and illustrate the structural formulas for a variety of organic isomers (319-6)
- write and balance chemical equations to predict the reactions of selected organic compounds (319-8)
- describe processes of polymerization and identify some important natural and synthetic polymers (319-9)

### **Literature Search and Report (5%)**

- develop the nature of bonding through a time line (AC-01)
- outline the past/present scientific discoveries and match these with the previously developed time line (AC-02)

### **Investigation of a Physical Concept (15%)**

- gain information through modelling and guidance on the processes involved in scientific research and development (AC-05)
- conduct a hands-on, minds-on, self-directed experience and generate a report for public presentation (AC-06)



# Child Studies 11

## Unit Outcomes

Students will be expected to

1. demonstrate knowledge of parenting and family relationships
2. demonstrate knowledge and understanding of human development
3. demonstrate knowledge of the needs of and care for infants and children
4. demonstrate knowledge of interacting with infants and children
5. demonstrate knowledge of community connections that support the care and welfare of children
6. demonstrate knowledge of career opportunities related to the care and welfare of children
7. apply child development theories to practical experiences and situations with infant, preschool, and young children in a practicum setting
8. identify and research local and global strategies that support the care and welfare of children locally and globally

## Specific Curriculum Outcomes

Students will be expected to

### Unit 1: Parenting in Canada

- 1.1 identify the reasons for and methods of studying children
- 1.2 identify and evaluate various child-rearing practices, beliefs, and techniques practised in our past
- 1.3 describe personal, psychological, physical, financial, and philosophical readiness for parenting
- 1.4 analyze the impact of individual choices of choosing to parent or not to parent
- 1.5 evaluate the role of contraception in planned parenting and personal health
- 1.6 differentiate between various contraceptive options
- 1.7 determine and discuss the issues involved in teen pregnancy and parenting
- 1.8 identify ways of becoming a parent
- 1.9 describe and explain parenting roles, responsibilities, and challenges experienced by caregivers and extended family
- 1.10 reflect on the influence of family, caregivers, and community on the development of children

### Unit 2: Beginning of Parenthood

- 2.1 describe the male and female reproductive systems and the process by which fertilization takes place
- 2.2 describe how personal characteristics are inherited
- 2.3 identify the role of medical technology and its impact on human reproduction
- 2.4 identify and describe the phases of fetal development
- 2.5 describe the maternal changes during the three trimesters of pregnancy and the importance of prenatal health
- 2.6 describe the processes of labour and delivery
- 2.7 identify causes of complications in prenatal development, labour, and delivery
- 2.8 describe the importance and role of services available to families for prenatal and postnatal care

### **Unit 3: Human Growth and Development**

- 3.1 identify the characteristics and areas of human growth and development
- 3.2 identify and examine theories of human growth and development
- 3.3 identify appropriate and inappropriate caregiving behaviours that influence growth and development
- 3.4 describe the care for the newborn with emphasis on feeding, personal care, and initial bonding
- 3.5 identify possible complications and the care that may be required for the mother and newborn throughout the postnatal period
- 3.6 explain the methods of caregiving and nurturing infants during the first year of life and stimulating their physical, emotional, intellectual, and social development
- 3.7 identify caregiving behaviours that promote a healthy and nurturing environment
- 3.8 identify and describe different parenting styles and assess their influence on family dynamics
- 3.9 identify effective techniques for encouraging appropriate behaviour and effective ways to handle misbehaviour in children
- 3.10 identify reliable resources for parenting information
- 3.11 recommend food choices and physical activities that promote healthy development for infants and young children

### **Unit 4: Relationships with Children**

- 4.1 identify and demonstrate effective communication skills to create healthy parenting/caregiving relationships with children
- 4.2 demonstrate effective communication skills appropriate for resolving conflicts
- 4.3 define, describe, and explain how play enhances the development of infants and preschool children
- 4.4 identify types and stages of play
- 4.5 categorize play activities, toys, and games according to an infant/preschool child's stage of development
- 4.6 demonstrate how caregivers can use art, drama, literacy, media, music, and play to support children's growth and development
- 4.7 identify resources for caregivers to support development of the learning relationship

### **Unit 5: Community Connections**

- 5.1 research cultural differences related to early childhood development and parenting
- 5.2 identify and analyze models that describe the different ways of learning
- 5.3 identify the care requirements of children with special needs
- 5.4 research and report on policies and guidelines in Nova Scotia that relate to child care services
- 5.5 identify and describe the attributes of quality daycare
- 5.6 identify agencies and organizations that support child well being and safety in Canada

### **Unit 6: Career Connections**

- 6.1 research careers that provide services for infants, children, and families
- 6.2 identify how to develop skills that would contribute to working successfully with children

**Unit 7: Practicum**

- 7.1 develop and demonstrate skills related to the care of an infant
- 7.2 demonstrate an understanding of child development when observing and interpreting children's behaviour
- 7.3 provide support for early childhood development by interacting with young children in a variety of settings

**Unit 8: Global Connections**

- 8.1 investigate global issues relating to the health and wellness of children around the world
- 8.2 identify national and international supports for child welfare
- 8.3 identify levels of support individual citizens can provide for impoverished children

# Communications Technology 11

## General Curriculum Outcomes

Students will be expected to

1. design, develop, evaluate, and articulate technological solutions
2. evaluate and manage technological systems
3. demonstrate an understanding of the history and evolution of technology, and of its social and cultural implications
4. demonstrate an understanding of current and evolving careers and of the influence of technology on the nature of work
5. demonstrate an understanding of their personal responsibility in determining the future

## Specific Curriculum Outcomes

Students will be expected to

### **Module 1: Fundamentals of Communications Technology (mandatory threading outcomes)**

- 1.1 demonstrate an understanding of the history of communication
- 1.2 investigate their strengths related to career options in communications technology
- 1.3 generate a professional portfolio representing a collection of work completed throughout the course using the design process
- 1.4 determine and create solutions to design problems that can persuade or entertain an audience using a variety of electronic communications tools
- 1.5 demonstrate an understanding of the social and environmental impacts of communications technology
- 1.6 demonstrate an understanding of life-cycle analysis of modern communications equipment and processes
- 1.7 demonstrate safe practices when using communications technology tools and equipment

### **Module 2: Digital Photography (mandatory module)**

- 2.1 demonstrate an understanding of the basic operation and care of a digital camera
- 2.2 practice various photographic techniques and photographic composition using a single lens reflex camera and tripod
- 2.3 explore various scene lighting techniques and the effects of it
- 2.4 demonstrate an understanding of image resolution and digital file formats

Choose any three modules from the following six.

### **Module 3: Technical Design**

- 3.1 create three-dimensional designs through digital solid modelling techniques
- 3.2 demonstrate an understanding of orthographic and isometric projection through digital solid modelling techniques
- 3.3 demonstrate an understanding of technical communication language and symbols

### **Module 4: Graphic Design**

- 4.1 demonstrate an understanding of the principles and elements of design
- 4.2 demonstrate effective use of the colour wheel for graphic design
- 4.3 demonstrate an understanding of appropriate uses of typography for graphic design
- 4.4 communicate a message by manipulating images and words using a digital format
- 4.5 use appropriate settings for output of images for web use

### **Module 5: Web Publishing**

- 5.1 plan, design, and create a web interface and navigation system within a website
- 5.2 identify the elements of a web page
- 5.3 identify basic HTML code
- 5.4 create and edit web-appropriate graphics, photographs, and written text

### **Module 6: Video Production**

- 6.1 use a digital video camera and tripod safely and appropriately to capture video
- 6.2 incorporate sound tracks into video
- 6.3 edit video using a digital format
- 6.4 compress a video for electronic distribution

### **Module 7: Broadcasting**

- 7.1 practice using different modalities and applications of broadcasting through various roles within a broadcast studio
- 7.2 identify broadcasting equipment and the various range of broadcast signals
- 7.3 produce a broadcast for a specific purpose
- 7.4 practice journalism story form to broadcast a message

### **Module 8: Animation**

- 8.1 demonstrate an understanding of storyboarding techniques for animation
- 8.2 demonstrate an understanding of the fundamentals of sequencing moving digital images
- 8.3 create an animation that has a purpose and message

# Construction Trades 11

## Specific Curriculum Outcomes

Students will be expected to

### Cluster 1: Construction Trades Realities

1. demonstrate an understanding of the nature of work and working conditions in the construction trades
2. identify the work of carpenters, plumbers, construction electricians, lathers, painters and decorators, and floor covering installers; and the roles and responsibilities of people working in those trades
3. demonstrate an ability to sequence trade-related tasks and schedule different trades to complete a construction project
4. recognize established work standards in the construction trades and perform work reflecting those standards
5. model the employability skills required for successful employment in the construction trades
6. produce appropriate artifacts for their LifeWork Portfolio to demonstrate learning throughout Construction Trades 11

### Cluster 2: Safety

7. demonstrate an understanding of and apply workplace health and safety practices and procedures
8. identify safety risks and hazards in the workplace
9. demonstrate knowledge of how to use tools and equipment safely
10. demonstrate proper use and maintenance of personal protective equipment
11. demonstrate an ability to work safely at levels above grade

### Cluster 3: Measurement and Calculation for Construction Trades

12. scale, convert, and interpret trades-related documents and drawings
13. demonstrate an ability to estimate length, area, and volume
14. perform trades-related calculations
15. apply various systems of measurement

### Cluster 4: Tools and Materials of the Construction Trades

16. demonstrate an ability to use and maintain tools and machines in a safe, accurate, and developmentally appropriate manner
17. demonstrate the ability to demolish existing structures in a safe and environmentally sustainable manner
18. demonstrate the ability to identify, select, use, and store construction-related materials in a safe and environmentally sustainable manner

# Cultural Industries 11

## Learning Outcomes

1. Students will explore the cultural industries and related careers.
2. Students will create a work(s) of art.
3. Students will plan, implement, and evaluate a cultural mini venture and explore the nature of entrepreneurship in the cultural industries.
4. Students will work independently or collaboratively on a cultural industries project that will extend, apply, or explore in depth ideas, issues, or skills introduced in modules 1, 2, and 3.
5. Students will explore issues in the cultural industries, including government policies, funding, advocacy, professional development, the impact of technology, and issues of cultural diversity.

## Specific Curriculum Outcomes

Students will be expected to

### Module 1: The Culture Biz

- 1.1 assess their own passions and interests as possible career indicators
- 1.2 explore the cultural resources in their communities
- 1.3 demonstrate an understanding of the meaning of career-related terms such as career, occupation, job, and work in planning for the future
- 1.4 research cultural career opportunities
- 1.5 analyze the realities of work in the cultural industries
- 1.6 demonstrate an understanding of the impact of the cultural industries on the economy
- 1.7 recognize expanding prospects in the cultural industries
- 1.8 identify cultural work and workplaces
- 1.9 make appropriate use of cultural workplace vocabulary
- 1.10 recognize technology as an increasingly important tool in the creation and delivery of cultural products
- 1.11 create/develop a network of people who are potential contacts for work or volunteer opportunities
- 1.12 explore special work search tools for the cultural field
- 1.13 identify professional skills and experience required in the cultural industries
- 1.14 negotiate assessment and evaluation processes

### Module 2: The Artist in Me

- 2.1 create artwork(s)
- 2.2 demonstrate an understanding of specific techniques and processes to produce a work of art
- 2.3 examine critically their own work and the works of others using criteria they have developed
- 2.4 apply and demonstrate problem-solving skills in the creative process
- 2.5 make connections among arts disciplines
- 2.6 create and present a portfolio of artwork(s) and related materials (works in progress, sketchbooks, sample or demo recording, press releases, etc.)
- 2.7 negotiate assessment and evaluation process

### **Module 3: The Cultural Venture**

- 3.1 generate a list of cultural venture ideas
- 3.2 identify ideas that provide a good opportunity for mini-venturing
- 3.3 prepare and present a plan to implement a cultural mini venture
- 3.4 implement the cultural venture mini plan
- 3.5 identify the criteria for assessing and evaluating the success of the mini cultural venture
- 3.6 review and reflect upon the mini-venture experience
- 3.7 share with peers the results of the mini-venture experience
- 3.8 demonstrate an understanding of the role of cultural entrepreneurs in the cultural industries
- 3.9 identify entrepreneurial traits, qualities, and attitudes
- 3.10 identify and connect with local cultural entrepreneurs to assist/advise on potential mini ventures
- 3.11 create/develop a network of cultural entrepreneurs who may be potential contacts for future mentorships
- 3.12 explain intellectual property (copyright) as it pertains to the cultural ventures
- 3.13 discuss the pros and cons of venture management structures (including sole proprietorship, partnership, corporation, co-operatives, franchise, limited companies, and non-profit societies)
- 3.14 identify the 4 Ps of marketing (product, price, promotion, and place)
- 3.15 describe the key features of a marketing survey
- 3.16 negotiate assessment and evaluation processes

### **Module 4: Cultural Industries Project**

- 4.1 explore options for a cultural industries project
- 4.2 identify the components of a project plan
- 4.3 identify information needs; locate and evaluate resources
- 4.4 describe potential risks and propose a contingency plan
- 4.5 identify strategies for securing resources and support
- 4.6 set deadlines; develop and present a work plan to manage time and resources
- 4.7 implement the project
- 4.8 demonstrate problem solving and decision making
- 4.9 demonstrate the furthering of arts-related abilities and skills
- 4.10 develop a plan for monitoring progress
- 4.11 negotiate assessment and evaluation of the cultural industries project

### **Module 5: Issues in Culture**

- 5.1 demonstrate an understanding of the importance of Nova Scotia's Cultural Policy on the cultural industries
- 5.2 explore the commitments the government makes to maintaining our culture's vitality
- 5.3 explore the government role in providing funding for arts organizations and institutions
- 5.4 research other funding sources for arts organizations and institutions
- 5.5 compare the funding of arts organizations and institutions in urban areas (Halifax Metro) to those in rural areas of the province
- 5.6 demonstrate an understanding of advocacy in the arts and culture sector
- 5.7 identify advocacy issues and activities as they pertain to the student's local area or community
- 5.8 discover how effective advocacy activities affect funding possibilities for the arts and culture sector
- 5.9 understand the relationship between advocacy and marketing in the arts and culture sector
- 5.10 analyze issues of cultural diversity as they pertain to artistic expression and the cultural industries
- 5.11 demonstrate an understanding of and value for diversity within cultural art forms
- 5.12 articulate reasons for the importance of professional development for artists



- 5.13 explain the types of professional development activities available to local artists
- 5.14 identify funding sources for professional development activities
- 5.15 demonstrate an understanding of the impact of technology on culture
- 5.16 negotiate assessment and evaluation processes

# Dance 11

## General Curriculum Outcomes

### Creative/Productive

1. Students will use dance to explore, develop, refine, and express ideas, experiences, and feelings and demonstrate personal growth through these experiences.
2. Students will create their own dances, both individually and collaboratively.
3. Students will present, perform, and communicate through movement, applying their understanding of skills and techniques.

### Critical/Responsive

4. Students will respond with critical awareness and sensitivity to their own dance work and the work of others.
5. Students will address problems and make decisions relating to their dance work.
6. Students will make connections in local and global contexts among various dance disciplines, and between dance and other disciplines.

### Cultural/Historical

7. Students will demonstrate an understanding of dance in cultural and historical contexts at personal, local, and global levels.

## Specific Curriculum Outcomes

Students will be expected to

- 1.1 take learning risks within a dance context
- 1.2 move in response to various stimuli
- 1.3 develop and refine their vocabulary of dance movement and their creative expression through experiences with space, time, dynamics, and relationship
- 1.4 apply materials, techniques, and forms to enhance expression through dance
- 2.1 use movement vocabulary to interpret and communicate meaning
- 2.2 experiment with a range of creative forms to create works in dance that express personal meaning
- 2.3 improvise within a given structure
- 2.4 build dance works from the ideas and contributions of others
- 3.1 demonstrate techniques specific to one or more genres
- 3.2 perform or interpret a given style or choreographic task
- 3.3 adapt a performance for a given environment
- 3.4 perform dance sequences that show smooth transitions between movement, varying in form, flow, and speed

- 3.5 collaborate in the process of presenting dance, demonstrating personal preparedness, respect for others' contributions, and commitment to rehearsing
- 3.6 demonstrate a working knowledge of safe warm-up and cool-down techniques
  
- 4.1 analyze and make decisions about structure, style, and meaning in dance
- 4.2 critically examine their own work and the work of others using criteria they have developed
- 4.3 connect their dance experiences with their personal growth
- 4.4 explore connections between dance and life experiences
  
- 5.1 identify problems relating to their own work and address them by using effective problem-solving and decision-making strategies
- 5.2 explore and present various solutions to a range of choreographic problems
  
- 6.1 compare and contrast the definitive styles of various genres in terms of the elements of movement
- 6.2 use elements from the various arts in the design, creation, and presentation of their dance works
- 6.3 connect the knowledge, skills, and discipline developed through dance to life's opportunities
  
- 7.1 demonstrate an understanding of the relationship between personal identity and cultural heritage
- 7.2 demonstrate an understanding of and respect for the richness of dance in local and global cultures
- 7.3 show ways in which their work and the work of others reflect cultural richness
- 7.4 demonstrate an understanding of cultural/historical influences on dance and dancers
- 7.5 demonstrate an understanding of how dance celebrates, comments on, and influences issues and events in local and global contexts, both historical and present day

# Design 11

## Learning Outcomes

1. Students will be expected to apply the elements and principles of design to a range of problems in a variety of contexts.
2. Students will use their understanding of issues, principles, processes, and technology to solve design problems in the built environment.
3. Students will be expected to use a variety of forms to design communications for a range of purposes.
4. Students will use their understanding of issues, principles, processes, and technology to design products used in their environments.
5. Students will be expected, independently or as members of a design team, to conduct an investigation or create a product, communication, or environment.

## Specific Curriculum Outcomes

Students will be expected to

### Module 1: Design Fundamentals

- 1.1 demonstrate an understanding of the elements and principles of design
- 1.2 render forms through drawing and other ways of representing
- 1.3 demonstrate understanding of the relationship between form and function of objects
- 1.4 apply their understanding of a range of issues, and their cultural/historical contexts, in making design decisions
- 1.5 demonstrate an understanding of applications for a range of materials, treatments, and finishes
- 1.6 apply understanding of the design process in planning and evaluating a design
- 1.7 apply design strategies to plan, communicate, inquire, and make decisions
- 1.8 describe and apply their understanding of the relationship between design and the environment

### Module 2: The Built Environment

- 2.1 describe how human requirements affect design
- 2.2 describe how the environment has an impact on design
- 2.3 demonstrate an understanding of the impact of a living environment on human beings
- 2.4 describe how social, cultural, and economic issues have an impact on design
- 2.5 describe the responsibility design has toward the human and natural environment
- 2.6 demonstrate competency in the use of design tools useful in the design of built environments
- 2.7 apply the elements, principles, and processes associated with design in interior, architectural, and/or environmental designs to address human and or environmental needs
- 2.8 organize and present design projects

### **Module 3: Communications Design**

- 3.1 use a variety of communication tools to design and create texts for a range of purposes
- 3.2 identify and interpret the strategies they and others use to create texts for specific purposes
- 3.3 explain designs' power to engage
- 3.4 observe, listen, critique, and subsequently learn from their own ideas and the insights offered by peers

### **Module 4: Product Design**

- 4.1 demonstrate their knowledge of the factors which influence effective product design
- 4.2 demonstrate an understanding of the impact of human form in the design of products (ergonomics)
- 4.3 describe how the design of products may be affected by the environment in which they are to be used including extreme and toxic environments
- 4.4 describe the responsibility designers have toward the human and natural environment
- 4.5 describe a range of economic factors which influence effective product design
- 4.6 demonstrate competency in the use of tools useful in the design of products
- 4.7 apply the elements and principles of design, and processes associated with design, as they apply to product design
- 4.8 identify and use mechanical systems to effectively analyze a product design
- 4.9 select, organize, and present designs for a range of products
- 4.10 select and use appropriate tools and materials

### **Module 5: Design Project**

- 5.1 develop and refine a proposal for an investigation or the development of a product, communication, or environment
- 5.2 identify information needs and locate and evaluate resources
- 5.3 identify and extend, refine, and/or acquire required skills
- 5.4 share research and reflections
- 5.5 make project decisions which demonstrate creativity, innovation, and a willingness to take risks
- 5.6 set deadlines and develop a work plan to manage time and resources
- 5.7 develop a plan for monitoring their progress and judging success and contribute to the criteria used for evaluation
- 5.8 gather, organize, and synthesize information and ideas
- 5.9 present the results of their work
- 5.10 reflect on and assess their own learning and the learning of others

# Drama 11

## Learning Outcomes

### Creative/Productive

1. Students will demonstrate personal growth through drama.
2. Students will use drama to explore, formulate, and express ideas, perceptions, and feelings.

### Critical/Responsive

3. Students will be able to respond with critical awareness to their own work and to the work of others.
4. Students will address problems and make decisions relating to their drama work.

### Cultural/Historical

5. Students will value cultural diversity and be able to demonstrate respect for cultural diversity in the drama context.
6. Students will be able to interpret how drama celebrates, comments on, and questions issues and events in cultural and historical contexts.

## Specific Curriculum Outcomes

Students will be expected to

- 1.1 build on the ideas of others
- 1.2 use risk taking to enhance the dramatic experience
- 1.3 use an increasing number of various forms for reflection and debriefing to extend their own engagement in dramatic creation
  
- 2.1 lead warm-up activities
- 2.2 assume and sustain role in both dramatic and theatrical contexts
- 2.3 select and use dramatic forms of movement to interpret and communicate meaning
- 2.4 select and use dramatic forms of speech to interpret and communicate meaning
- 2.5 select and combine dramatic forms of expression to interpret meaning and to communicate that meaning in a theatrical context
  
- 3.1 make informed responses to their own and others' work
- 3.2 reflect on personal growth using a wide variety of forms and incorporate that reflection in future work
- 3.3 explore more fully connections made between text and their own life experiences and circumstances
- 3.4 understand and use technical support in production work
- 3.5 explore the opportunities that exist for extending their own drama experiences through involvement in the artistic life of their community and through careers in the arts

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- 4.1 present different solutions to different problems and draw critical conclusions
  - 4.2 identify problems relating to their own work and address these problems by using effective problem-solving and decision-making strategies
  
  - 5.1 experience and celebrate the cultural richness of their own work and the work of others
  - 5.2 demonstrate respect for the cultural richness of all communities
  
  - 6.1 use a broad range of dramatic forms to create text that gives meaning to cultural and historical events
  - 6.2 exhibit and celebrate through their dramatic work an awareness of the universal connections between themselves and others

# Electrotechnologies 11

## Learning Outcomes

1. Students will be expected to apply appropriate techniques, including component assembly procedures, to construct and analyze basic electronic circuits.
2. Students will be expected to apply appropriate techniques, including component assembly procedures, to construct and test power distribution and conversion devices.
3. Students will be expected to identify, select, and apply integrated circuits to solve practical problems.
4. Students will be expected to formulate, apply, and test the principles governing the forms and functions of control systems.
5. Students will work alone or in groups to extend, apply, or explore in depth, ideas, issues, or skills introduced in modules 1, 2, 3, and/or 4.

## Specific Curriculum Outcomes

Students will be expected to

### Module 1: Concepts and Components (Compulsory)

- 1.1 identify the variables involved in electronic circuits (current, voltage, and resistance)
- 1.2 explain the relationship among variables involved in electronic circuits
- 1.3 use a multimeter to measure the variables involved in electronic circuits
- 1.4 arrange electronic components in series, parallel, and combination configurations
- 1.5 predict the behaviour of electric circuits using their knowledge of the variables involved in electronic circuits
- 1.6 solve problems involving series, parallel, and combination circuits
- 1.7 demonstrate their ability to use industrially accepted fabrication techniques
- 1.8 describe circuits using electronic symbols and conventions
- 1.9 describe applications of series, parallel, and combination circuits
- 1.10 identify appropriate construction methods to fabricate a circuit board
- 1.11 lay out and construct a simple electronic circuit board using approved construction techniques
- 1.12 use a PC board and accepted fabrication techniques to assemble a project

**Note:** The following outcomes of Module 1 are addressed in all modules of Electrotechnologies 11.

- 1.13 practise the appropriate health and safety procedures outlined in the *Nova Scotia Occupational Health and Safety Act*
- 1.14 practise safety procedures applicable to chemical, electronic, and other equipment as appropriate
- 1.15 use computer software to conduct investigations and solve problems
- 1.16 use the Internet to search for and gather learning resource materials
- 1.17 make connections among their learning, their own lives, and their communities



## Module 2: Power Distribution and Conversion

Outcomes 1.13–1.17, as well as the following:

- 2.1 explain the relationship between electricity and magnetism
- 2.2 construct electromagnetic devices that illustrate the relationship between electricity and magnetism
- 2.3 describe a range of electromagnetic applications in a range of settings
- 2.4 describe various types of AC and DC power supplies
- 2.5 construct a simple power supply
- 2.6 demonstrate an understanding of the environmental impact of a range of power generation systems
- 2.7 explain electromotive principles as applied to direct current (DC) and single phase alternating current (AC) motors
- 2.8 explain the operational characteristics of AC motors
- 2.9 practise the appropriate health and safety procedures outlined in the *Nova Scotia Occupational Health and Safety Act*
- 2.10 use computer software to conduct investigations and solve problems
- 2.11 use the Internet to search for and gather learning resource materials
- 2.12 make connections among their learning, their own lives, and their communities

## Module 3: Control Systems

Outcomes 1.13–1.17, as well as the following:

- 3.1 describe the binary numbering system
- 3.2 relate the binary number system to electronic concepts
- 3.3 describe basic logic gates
- 3.4 construct basic logic gates
- 3.5 verify basic logic gates using multimeters
- 3.6 construct a simple logic circuit and explain its functions
- 3.7 distinguish between analog and digital systems
- 3.8 identify and describe the major components of a logic system such as a microcomputer system
- 3.9 identify the major integrated circuit (IC) families and describe their unique functions
- 3.10 identify and interface components with small-scale integration IC families
- 3.11 identify components and construct a prototype of typical small-scale and complex logic networks using integrated circuits
- 3.12 practise the appropriate health and safety procedures outlined in the *Nova Scotia Occupational Health and Safety Act*
- 3.13 use computer software to conduct investigations and solve problems
- 3.14 use the Internet to search for and gather learning resource materials
- 3.15 make connections among their learning, their own lives, and their communities

## Module 4: Control Systems

Outcomes 1.13–1.17, as well as the following:

- 4.1 describe a variety of everyday problems that are solved by control systems
- 4.2 identify how control systems are used in residential and commercial applications
- 4.3 explain how basic process control systems function
- 4.4 describe the operation of devices used for process control using standard terms
- 4.5 construct basic process control circuits using passive devices
- 4.6 distinguish between digital and analog systems

- 4.7 construct basic control systems to process input information in order to achieve a desired result
- 4.8 practise the appropriate health and safety procedures outlined in the *Nova Scotia Occupational Health and Safety Act*
- 4.9 use computer software to conduct investigations and solve problems
- 4.10 use the Internet to search for and gather learning resource materials
- 4.11 make connections among their learning, their own lives, and their communities

## **Module 5: Electrotechnologies Project**

Outcomes 1.13–1.17, as well as the following:

- 5.1 develop and refine a proposal for an inquiry or the development of a product or electronic device
- 5.2 identify information needs, and locate evaluate resources
- 5.3 identify and extend, refine and/or acquire required skills
- 5.4 share research and reflections made by themselves and their peers
- 5.5 make project decisions which demonstrate creativity, innovation, and a willingness to take risks
- 5.6 set deadlines and develop a work plan to manage time and resources
- 5.7 develop a plan for monitoring their progress and judging success
- 5.8 contribute to the criteria used for evaluation
- 5.9 gather, organize, and synthesize information and ideas
- 5.10 use their knowledge and skills to conduct an inquiry or create a product or electronic device
- 5.11 present the results of their investigation or product
- 5.12 reflect on and assess their own learning and the learning of others
- 5.13 practise the appropriate health and safety procedures outlined in the *Nova Scotia Occupational Health and Safety Act*
- 5.14 use computer software to conduct investigations and solve problems
- 5.15 make connections among their learning, their own lives, and their communities
- 5.16 respond to challenges for which prescribed solutions do not already exist.

# Energy, Power, and Transportation Technology 11

## Unifying Concepts

By the end of the course, students will be expected to demonstrate an understanding of energy, power, and transportation technology.

Students will be expected to

- A. demonstrate an understanding of the function of energy, power, and transportation in historical contexts and modern society
- B. demonstrate an understanding of the basic technology system and its application in energy, power, and transportation
- C. analyze, critique, and evaluate the application and outputs of a variety of methods used in energy, power, and transportation technology and the design process in satisfying needs and wants
- D. demonstrate an understanding of the requirements for careers in energy, power, and transportation

## Specific Curriculum Outcomes

Students will be expected to

### Unit 1: Electricity and Electronics

- 1.1 explain electricity in terms of the behaviour and control of electrons
- 1.2 define voltage, amperage, and resistance in terms of electrons and recognize series circuits, parallel circuits, and series parallel circuits
- 1.3 identify and verify series and parallel circuit operation
- 1.4 identify and apply the fundamentals of Ohm's law
- 1.5 distinguish between analog and digital devices and circuits
- 1.6 recognize and name the basic components used in electronics
- 1.7 identify the schematic symbols of electronic components, understand and follow electronic and schematic diagrams
- 1.8 recognize and demonstrate the effects of capacitance and inductance in a DC circuit and an AC circuit
- 1.9 explain and give examples of the properties of permanent magnetism and electro-magnetism
- 1.10 explain the characteristics of AC current and voltage
- 1.11 recognize and identify the characteristics of semi-conductors and properties of PN junctions
- 1.12 explain and test the device parameters of diodes and transistors
- 1.13 identify integrated circuit logic memory
- 1.14 explain logic gates, how they are constructed, and how they work
- 1.15 combine logic gates to build complex digital devices like clocks, flip flops, and timers
- 1.16 apply and display the principles of Boolean algebra to digital circuits
- 1.17 calculate amperage and wattage according to Ohm's law and Watt's law
- 1.18 define and demonstrate voltage drop in simple circuits, and explain the difference between direct and alternating current

- 1.19 distinguish and use electronic components, such as diodes, transistors, integrated circuits, and microprocessors
- 1.20 list and apply general safety rules procedures in the study of energy, power, and transportation
- 1.21 identify, manipulate, and use the basic controls of an oscilloscope, and set up and display various electrical wave forms
- 1.22 calculate and test unknown voltage current resistance or power in a simple circuit using Ohms law
- 1.23 connect, evaluate, and troubleshoot linear integrated circuits
- 1.24 connect, evaluate, and troubleshoot digital integrated circuits subsystems
- 1.25 breadboard/simulate, operate, test, and troubleshoot various electronic circuits
- 1.26 employ electronic components to control electric current, e.g., resistor and LED
- 1.27 employ switching devices that use small amounts of energy to control much larger amounts of energy, e.g., relays
- 1.28 operate test equipment to find faults in circuits, e.g., resistance, metre, multimeter, and continuity tester

## **Unit 2: Robotics and Automation**

- 2.1 describe the basic feature of a robot for both low and high technology applications such as axis manipulators, actuators, controllers
- 2.2 describe the use of electric and fluid power systems as used in robotics
- 2.3 describe the operation of a microcomputer and list the major developments in the evolution of the computer and its application in an automated control system
- 2.4 identify the use of robots in modern industries and discuss their social and economic impact
- 2.5 explain what is meant by an automated control system and demonstrate the three separate functions: sensing, control, and operating

## **Unit 3: Mechanics**

- 3.1 compare and contrast different types of engines, including their historical development under the following categories: internal, external, intermittent, continuous, reciprocating, rotary and describe the working principles of at least one engine in each category
- 3.2 name five applications of small engines and describe design variables used in small gas engines
- 3.3 describe how jet engines operate, and explain the operation of two types of rocket engines used in the space exploration programs
- 3.4 analyze the technologies used to change power to different torques and/or horsepower, and relate how power is controlled in a mechanical energy system
- 3.5 define transportation technology and describe the importance of the four major categories listed as terrestrial, marine, atmospheric, and space
- 3.6 identify different types of land transportation systems and the need for them, including bus, truck, automobile, and rail
- 3.7 describe the two major categories of marine systems—inland and ocean—and provide examples of the variety of modes used
- 3.8 state the economic and social impact of air transportation and its value to society and the supporting agencies
- 3.9 list the basic aviation principles dealing with aerodynamics, and identify the important parts of an aircraft
- 3.10 describe and demonstrate the purpose and operation of small engine systems, including ignition, cooling, fuel, lubrication, starting, and exhaust systems
- 3.11 identify and perform various service procedures and trouble-shooting tasks used on small gasoline engines

- 3.12 describe and illustrate the differences between the operation of two- and four-cycle engines of both gasoline and diesel variety
- 3.13 explain and illustrate, in graphic form, the operation of several continuous combustion engines, including the Sterling, gas turbine, and steam turbine
- 3.14 distinguish and demonstrate at least three ways of transmitting power to machines, and solve problems involving simple machines to effect mechanical advantage
- 3.15 demonstrate how gears, pulleys and belts, sprockets and chains, clutches, and couplings are used to control and/or change the direction of power

#### **Unit 4: Nature and Sources of Energy**

- 4.1 say where fossil fuel resources are located in Nova Scotia and identify different types of characteristics
- 4.2 define how petroleum exploration takes place and describe how it is produced and transported
- 4.3 summarize the characteristics and describe the refining of natural gas and detail how it is distributed in Canada
- 4.4 identify the six major forms of energy, and state the meaning of the laws of energy conservation
- 4.5 define energy, explain how it is able to produce motion, heat, and light, and recount the terms used to measure energy
- 4.6 pinpoint the energy source in different products that are being produced
- 4.7 explain the terms **work**, **energy**, **power**, and **foot pounds** and state the use of the formulas for work efficiency, power, and horsepower, and the difference between kinetic and potential energy
- 4.8 specify the extent to which nuclear energy is used in Canada, and define nuclear fusion
- 4.9 describe how energy originates and explain how it is converted into controlled forms used in residential, industry, business, and transportation situations
- 4.10 recognize several principles of solar-derived energy, and define differences between active and passive solar technology
- 4.11 explain how heat is moved by conduction, radiation, and convection and demonstrate the application of this knowledge
- 4.12 outline the operation of a solar collector, and specify some residential uses of solar energy
- 4.13 relate the operation and use of solar photovoltaic cells
- 4.14 identify the different forms of technology used to generate wind energy and describe the inherent potential and problems
- 4.15 distinguish the four different types of biomass and summarize how biomass can be used as an energy resource (especially wood)
- 4.16 discuss the importance of hydroelectric energy and identify and describe one example in Nova Scotia
- 4.17 relate the application of an alternative source of energy

#### **Unit 5: Power Generation, Transfer, Control, and Conservation**

- 5.1 describe how Nova Scotians produce power from the three basic energy source groups
- 5.2 describe and provide examples of energy conversion for the purpose of moving energy to where it is needed and delivering it in a form appropriate to the need
- 5.3 explain how to apply the basic elements of control to various energy or power forms—stop, start, amplify, efficiency, containment, and direction
- 5.4 describe the operation of hydraulic and pneumatic fluid power systems, and explain fluid power principles, including force pressure and mechanical advantage
- 5.5 define various fluid characteristics, including viscosity, pour point, and types of additives, and compare and contrast the advantages and disadvantages of using synthetic fluids in fluid power systems

- 5.6 realize the importance of lubrication in reducing energy losses
- 5.7 realize in products that parts can move in relation to one another and that such systems are called mechanisms
- 5.8 use calculations to predict the operation and effectiveness of mechanisms
- 5.9 associate that control systems have inputs processes and outputs and locate these in products
- 5.10 understand that sensitivity and lag are important in control systems
- 5.11 specify boundaries within a control system to clarify where the system to be controlled begins and ends
- 5.12 identify within the construction of a product the difference between an open and closed loop system and the importance of feedback and achieving control
- 5.13 pinpoint and record the control functions of various parts of a system that have been produced
- 5.14 design and model simple mechanical systems that change the magnitude and motion of an input force in terms of type, axis, or plane
- 5.15 demonstrate how fluid is used to transfer force and can be used to change the relationship between force distance or speed
- 5.16 define and apply several terms used to describe power, including work, power, force, torque, and horsepower, and describe how horsepower is measured
- 5.17 use different sources of energy in products that have been made to control movement in devices that are being made and recognize that control is making things do what is intended
- 5.18 embody in a product design: levers to augment movement, gears or pulleys to change the speed and direction of rotation, or electric circuits twinned to a power source
- 5.19 operate and combine simple mechanical components such as linkages, cranks, and gears to achieve different types of movement, e.g., linear, rotary, or oscillating, within a product
- 5.20 interconnect different systems in a product using solenoid or electromechanical interfaces
- 5.21 employ sensors in switching and digital logic circuits
- 5.22 use different sized and/or linked syringes to transmit force pneumatically or hydraulically
- 5.23 apply a range of valves and other control devices and make analogies with switching devices and other systems
- 5.24 employ mechanisms to achieve movement in more than one plane
- 5.25 use single-acting cylinders in three port valves in basic pneumatic systems
- 5.26 actuate mechanisms to achieve movement in more than one plane
- 5.27 employ microelectronic devices to control pneumatic, hydraulic, or mechanical systems

## **Unit 6: Environmental Impact of Energy, Power, and Transportation**

- 6.1 explain the coal mining process and appreciate the possible negative and positive impacts on society and the environment
- 6.2 express the major principles of how to conserve energy in any system, including heat loss, gain, and other thermal properties
- 6.3 provide examples of methods used to save energy in the commercial and residential sectors of society, and identify the use of several energy-saving appliances
- 6.4 specify and communicate several ways to save energy in the transportation sector of society
- 6.5 observe how the use of power contributes to pollution, and list the major sources of pollution
- 6.6 discuss the role of government in controlling pollution, and explain the importance of recycling
- 6.7 discern and describe the possible technologies that may evolve in the future in the area of energy, power, and transportation
- 6.8 recognize the need and purpose for space transportation programs

**Unit 7: Future Trends and Careers**

- 7.1 outline and describe current and potential careers in transportation and power technology
- 7.2 explain the role of research and development in gaining new knowledge and solutions to problems in the realm of energy, power, and transportation
- 7.3 summarize how an understanding of their personal abilities, interests, and values is important in making a career choice

# English 11 / English/Communications 11 / Advanced English 11

## General Curriculum Outcomes

Students will be expected to

### Speaking and Listening

1. speak and listen to explore, extend, clarify, and reflect on their thoughts, ideas, feelings, and experiences
2. communicate information and ideas effectively and clearly, and to respond personally and critically
3. interact with sensitivity and respect, considering the situation, audience, and purpose

### Reading and Viewing

4. select, read, and view with understanding a range of literature, information, media, and visual texts
5. interpret, select, and combine information using a variety of strategies, resources, and technologies
6. respond personally to a range of texts
7. respond critically to a range of texts, applying their understanding of language, form, and genre

### Writing and Other Ways of Representing

8. use writing and other ways of representing to explore, clarify, and reflect on their thoughts, feelings, experiences, and learnings; and to use their imaginations
9. create texts collaboratively and independently, using a variety of forms for a range of audiences and purposes
10. use a range of strategies to develop effective writing and other ways of representing and to enhance their clarity, precision, and effectiveness

## Specific Curriculum Outcomes

**Note:** Students in Advanced English 11 courses are required to achieve the outcomes for English 11 in addition to the outcomes for Advanced English 11.

Students will be expected to

- 1.1 follow-up on and extend others' ideas in order to reflect upon their own interpretation of experiences
- 1.2 ask perceptive/probing questions to explore ideas and gain information
- 1.3 address complex issues, present points of view backed by evidence, and modify, defend, or argue for their positions in response to opposing points of view
- 1.4 listen critically to evaluate others' ideas in terms of their own understanding and experiences, and identify ambiguities, and unsubstantiated statements



- 2.1 use their awareness of the difference between formal and informal speech to interact effectively in panel discussions, formal debates, and other structured and formal situations
- 2.2 effectively adapt language and delivery for a variety of audiences and situations in order to achieve their goals or intents
- 2.3 ask and respond to questions in a range of situations, including those related to complex texts and tasks
- 2.4 critically evaluate others' uses of language and use this knowledge to reflect on and improve their own uses of language
  
- 3.1 demonstrate sensitivity and respect in interaction with peers and others in both informal and formal situations
- 3.2 discuss and experiment with some language features in formal, defined structures that enable speakers to influence and persuade audiences
- 3.3 adapt language and communication style to audience, purpose, and situation
  
- 4.1 read a wide variety of print texts recognizing elements of those texts that are relevant to their own lives and community
- 4.2 view a wide variety of media and visual texts, comparing and analyzing the structure, genre, style, and cultural diversity of the different texts
- 4.3 assess ideas, information, and language, synthesizing and applying meaning from diverse and differing perspectives
- 4.4 demonstrate an understanding of and apply the strategies required to gain information from complex print texts and multimedia texts
- 4.5 articulate their understanding of the purpose of the author in relation to the impact of literary devices and media techniques on the reader or viewer
  
- 5.1 acquire information from a variety of sources, recognizing the relationships, concepts, and ideas that can be utilized to generate student text
  - select appropriate information from a variety of sources, making meaningful selections for their own purposes
  - recognize and reflect upon the appropriateness of information for the purpose of making meaningful student text
  - synthesize information from a range of sources, including the electronic network, to address a variety of topics and issues
  
- 6.1 recognize and articulate the elements of information from a variety of sources that trigger personal responses
- 6.2 make connections between the ideas and information presented in literary and media texts and their own experiences
- 6.3 make connections among the themes, issues, and ideas expressed in various texts
- 6.4 demonstrate a willingness to explore multiple perspectives on text
- 6.5 justify points of view on various print and media texts
- 6.6 recognize and articulate feelings about ambiguities in complex texts, interpreting details and subtleties to clarify their understanding
  
- 7.1 recognize the commonalities and differences in form, structure, and ideas of various texts
- 7.2 recognize how the artful use of language and the structures of genre and text can influence or manipulate the reader/viewer
- 7.3 examine the relationships among language, topic, purpose, context, and audience
- 7.4 examine the relationship of specific elements within and among texts

- 7.5 analyze the merits of the language, ideas, and other significant characteristics of a variety of texts and genres
- 7.6 respond critically to complex print and media texts
- 7.7 explore the diverse ways in which texts reveal and produce ideologies, identities, and positions
- 7.8 reflect on their responses to print and media texts, considering their own and others' social and cultural contexts
  
- 8.1 use writing and other ways of representing to
  - explore, interpret, and reflect on their experiences with a range of texts and issues
  - monitor the language and learning processes and strategies they use
  - record and assess their achievements as language users and learners
  - express their feelings, and reflect on experiences that have shaped their ideas, values, and attitudes
- 8.2 use note-making strategies to document experience and reconstruct knowledge by
  - paraphrasing
  - summarizing
  - using note cards, note-taking sheets, research grids
  - video or audio techniques
- 8.3 make informed choices of language and techniques to enhance the impact of imaginative writing and other ways of representing
  
- 9.1 construct increasingly complex texts using a range of forms to serve their purposes
- 9.2 create a clear and coherent structure in various forms of writing and media production
  - make informed choices of form, style, and content to address the demands of different audiences and purposes
  - use effective strategies to engage the reader/viewer
- 9.3 use audience feedback in the process of writing and media production to improve the effectiveness of final products
  
- 10.1 apply a variety of writing/representation strategies to construct increasingly complex texts
- 10.2 demonstrate control of the conventions of written language in final products
- 10.3 make informed choices about the use of computer and media technology to serve their communication purposes
- 10.4 demonstrate a commitment to crafting a range of writing and other representations
- 10.5 use information from a variety of sources to construct and communicate meaning

### **Advanced English 11 Outcomes (Draft)**

- AE1.1 compare their own ideas with those of other perspectives and cultures to extend personal growth and understanding
- AE1.2 ask probing questions to seek to understand alternate viewpoints from a variety of sources
- AE1.3 reflect upon and address challenging issues
- AE1.4 clearly articulate substantiated ideas
- AE1.5 identify and address ambiguous, unsubstantiated ideas
  
- AE2.1 use formal and informal speech to interact with proficiency in a wide variety of contexts
- AE2.2 demonstrate an understanding of appropriate language choices for a variety of audiences, situations, and purposes

- AE2.3 formulate, analyze, and respond to complex questions in a wide range of situations
- AE2.4 develop a critical understanding of the impact of language choice on meaning
- AE3.1 listen actively, critically, and empathetically
- AE3.2 engage critically and respectfully in arguments
- AE4.1 read challenging texts, independently analyzing elements of those texts
- AE4.2 demonstrate a critical evaluation of the crafting of voice, meaning, and purpose in texts
- AE4.3 compare style, tone, devices, and approach in a variety of texts (including their own) to demonstrate an understanding of the impact of language on meaning
- AE4.4 view a wide variety of media and visual texts, demonstrating an understanding of the complexities of form, structure, genre, style, and cultural diversity of the texts
- AE5.1 use sophisticated search strategies and tools to source valid and reliable texts for learning
- AE5.2 synthesize research information with personal ideas to generate well-supported student text, and know when it is appropriate to cite sources
- AE5.3 evaluate the usefulness of information/ideas in preparing well-reasoned texts, selecting relevant arguments or facts
- AE5.4 record, organize, analyze, and utilize relevant information and ideas researched from a variety of sources
- AE5.5 represent information/ideas from relevant sources to generate meaningful texts on complex issues and topics
- AE6.1 explore, evaluate, and synthesize connections among texts from both a personal and a culturally sensitive context
- AE6.2 build meaningful connections between issues and ideas expressed in texts
- AE6.3 explore multiple perspectives on texts
- AE6.4 organize references to justify points of view on texts
- AE6.5 recognize and articulate how details, subtleties, and ambiguities of complex texts inform, clarify, and influence personal understanding
- AE7.1 apply knowledge of commonalities and differences in form, genre, structure, and ideas
- AE7.2 explain how the artful use of language, including the crafting of voice and the structure of texts, influence, manipulate, or challenge the reader/viewer
- AE7.3 differentiate and evaluate the relationship of language, topic, purpose, content, form/genre, and audience within and amongst complex texts
- AE7.4 understand how language, ideas, forms, and genres contribute to meaning
- AE7.5 respond critically to complex and sophisticated texts
- AE7.6 differentiate and evaluate diverse ideologies, identities, and authorial positions of texts
- AE7.7 formulate and evaluate diverse responses to texts, demonstrating an awareness and appreciation of personal, societal, and cultural contexts
- AE8.1 appraise their learning processes and experiences through writing and other ways of representing
- AE8.2 monitor and consider the language and learning processes they use and vary them
- AE8.3 evaluate and record their achievements as language users to improve their practice
- AE8.4 share and compare their feelings, imaginative experiences, and responses to texts they create and encounter
- AE8.5 use note-making strategies to collect evidence, to illustrate a topic, to support a thesis, or to reconstruct knowledge
- AE8.6 practise and evaluate stylistic choices appropriate for writing and other forms of representing

- AE9.1 demonstrate an understanding of choices available to address the demands of audiences and purposes
  - AE9.2 construct complex texts, selecting an appropriate range of forms for purpose and audience
  - AE9.3 create coherent works in various media, creatively using and extending tools and conventions for communicating
  - AE9.4 experiment with strategies that will engage the audience
  - AE9.5 revise and develop text, in response to an audience, to fulfill a given purpose
- 
- AE10.1 analyze and choose appropriate strategies to construct effective texts
  - AE10.2 demonstrate strong control of the conventions of writing
  - AE10.3 select and use appropriate information and communication technology applications that support and enhance learning
  - AE10.4 create and support a scholarly thesis with information from a variety of sources and fields of knowledge

# Fitness Leadership 11

## General Curriculum Outcomes

Students will be expected to

### Knowing

- A. demonstrate an understanding of the concepts that support human movement
- B. demonstrate a knowledge of the components and processes needed to develop and maintain a personal level of functional fitness

### Doing

- C. demonstrate motor skills in all movement categories using efficient and effective body mechanics
- D. participate regularly in a variety of activities that develop and maintain personal physical fitness
- E. demonstrate creativity in all movement categories

### Valuing

- F. demonstrate positive personal and social behaviours and interpersonal relationships
- G. demonstrate positive attitudes toward and an appreciation of physical activity through participation
- H. demonstrate awareness of career and occupational opportunities related to physical activities

## Specific Curriculum Outcomes

Students will be expected to

### Anatomy and Physiology

- 1.1 analyze various physiological changes to the body before, during, and after physical activity through a variety of movement experiences
- 1.2 apply their knowledge of proper terminology to identify various structures of the skeletal, muscular, and cardiovascular systems

### Principles of Conditioning

- 2.1 recognize the health-related skill components of fitness and apply their knowledge of each component of physical fitness within an instructional fitness class
- 2.2 design programs that will enhance the components of physical fitness, using the principles of conditioning
- 2.3 create and lead a variety of conditioning programs designed to enhance the various components of fitness for various age groups

## **Leadership**

- 3.1 apply effective leadership techniques and management skills designed to maximize learning, fun, and activity time for group led fitness experiences
- 3.2 recognize and research factors that may contribute to physical inactivity among children and youth
- 3.3 demonstrate an understanding of the relationship between healthy eating and physical activity
- 3.4 examine legal liabilities associated with administering program delivery

## **Injury Prevention and Risk Management**

- 4.1 successfully complete a level C CPR course
- 4.2 demonstrate an understanding of what to do if an injury occurs during instructional time
- 4.3 recognize injury prevention practices in various teaching and leadership situations
- 4.4 apply appropriate action and procedures to common and fitness-related injuries

## **Components of a Fitness Class**

- 5.1 lead age-appropriate warm-up and cool-down activities
- 5.2 demonstrate various techniques in cueing fitness exercises
- 5.3 demonstrate various fitness exercises in a progressive order
- 5.4 design and deliver a community-based fitness experience for children and youth ages 5–18

# Français de base 10<sup>e</sup> à 12<sup>e</sup> année

Au fur et à mesure que les élèves progressent, tous les résultats d'apprentissages spécifiques seront accompli avec moins de besoin de soutien pédagogique, c'est-à-dire de manière indépendante. Veuillez vous référer aux tableaux des pages 20 à 23 du guide pédagogique *Français de base au secondaire 2<sup>e</sup> cycle – 2003* pour un aperçu global des résultats d'apprentissage spécifiques pour le français de base 10<sup>e</sup> à 12<sup>e</sup> année.

**RAG Communication :** L'élève devrait être capable de communiquer en français de façon efficace et devrait être capable d'interagir de façon appropriée dans une variété de situations reliées à ses besoins et à ses intérêts.

- 1.1 négocier pour comprendre
- 1.2 collaborer avec tout le monde
- 1.3 donner des conseils
- 1.4 initier, entretenir, démontrer qu'il écoute activement
- 1.5 encourager l'interlocuteur
- 1.6 conclure une conversation
- 1.7 organiser son discours de façon cohérente et cohésive
- 1.8 élaborer des descriptions et des comparaisons
- 1.9 présenter son point de vue de façon logique
- 1.10 défendre son point de vue
- 1.11 formuler ses opinions de façons diverses
- 1.12 persuader, argumenter
- 1.13 varier son niveau de langue selon l'auditoire
- 1.14 interviewer des pairs et des adultes
- 1.15 participer à des interviews
- 1.16 jouer des rôles
- 1.17 participer à des débats
- 1.18 participer à un groupe de discussion électronique
- 1.19 mener une discussion de classe
- 1.20 animer un atelier
- 1.21 chercher et évaluer de l'information
- 1.22 sélectionner de l'information pertinente
- 1.23 organiser l'information
- 1.24 interpréter et analyser de l'information
- 1.25 raconter des histoires
- 1.26 donner des comptes-rendus
- 1.27 donner des discours
- 1.28 respecter l'ordre des idées
- 1.29 respecter le sens
- 1.30 utiliser ses propres mots
- 1.31 écrire un journal de rétroaction
- 1.32 dessiner, mimer, dramatiser
- 1.33 planifier, organiser et évaluer un portfolio
- 1.34 composer des chansons, des poèmes
- 1.35 rédiger, par exemple, des annonces, des éditoriaux, des critiques, des lettres
- 1.36 prendre des notes
- 1.37 remplir des formulaires

- 1.38 écrire un journal de bord
- 1.39 faire des reportages
- 1.40 créer des affiches

**RAG Culture :** L'élève devrait être capable de démontrer une appréciation des cultures francophones tout en les comparant à sa propre culture et devrait être capable de démontrer une compréhension des liens entre la culture, la langue et l'identité dans le contexte multiculturel du Canada.

- 2.1 rédiger et présenter le profil d'un pays ou d'une région francophone
- 2.2 comparer d'autres régions francophones avec le Canada
- 2.3 faire une comparaison des perspectives adolescentes des milieux francophones et anglophones
- 2.4 s'entretenir avec quelqu'un au sujet de ses expériences culturelles
- 2.5 présenter une recherche sur la vie d'un francophone célèbre
- 2.6 présenter un rapport sur un aspect culturel de la francophonie
- 2.7 décrire un voyage à un lieu francophone
- 2.8 identifier des aspects multilingues et leurs contributions sur le plan local, provincial et national
- 2.9 faire l'association entre des dialectes et le français standard
- 2.10 se familiariser avec certaines expressions idiomatiques
- 2.11 démontrer un respect pour le niveau de langue approprié
- 2.12 repérer des faits culturels en visionnant une émission de télévision et en écoutant la radio
- 2.13 analyser des journaux francophones
- 2.14 démontrer une connaissance des écrivains canadiens français et québécois
- 2.15 décrire l'histoire du bilinguisme au Canada
- 2.16 expliquer des contributions du bilinguisme à la société canadienne

**RAG Formation langagière générale :** L'élève devrait être capable de choisir et de mettre en pratique des stratégies pour faciliter ses communications en français et pour faciliter son apprentissage.

- 3.1 démontrer sa connaissance des ressemblances et des différences entre le français et l'anglais
- 3.2 utiliser divers ouvrages de référence pour renforcer sa connaissance et son emploi de la langue française
- 3.3 utiliser diverses technologies de l'information et des communications pour faciliter sa communication, en particulier : utiliser différents logiciels; démontrer une compréhension des applications pratiques; évaluer, sélectionner et utiliser un éventail de technologies selon la situation
- 3.4 gérer sa propre expérience d'apprentissage, par exemple : chercher, trouver et planifier l'accès à des documents et à des fichiers électroniques; représenter son apprentissage à l'aide d'une gamme de formes médiatiques y incluant vidéo, audio, et multimédia
- 3.5 collaborer avec d'autres pour accomplir une tâche, en particulier : exprimer son appui aux autres; approfondir les idées des autres; savoir résoudre des conflits; arriver à une entente/un consensus; animer le groupe et faire avancer la discussion
- 3.6 formuler et vérifier des hypothèses
- 3.7 démontrer son appréciation de l'étude du français
- 3.8 utiliser des stratégies en vue de résoudre des problèmes



**RAG Langue :** L'élève devrait être capable de reconnaître et d'utiliser en contexte certains éléments du code linguistique pour faciliter ses communications en français.

- 4.1 se servir d'expressions qui facilitent son interaction, telles que des expressions pour exprimer son accord et son désaccord, des questions pour initier, clarifier, vérifier, et des expressions de politesse
- 4.2 se servir de différents temps des verbes appropriés, des adverbes, des adjectifs, des formes comparatives et superlatives, des connecteurs et des conjonctions pour décrire diverses situations
- 4.3 se servir du présent, du conditionnel, des pronoms emphatiques, des connecteurs, des expressions pour refuser, rejeter et contredire pour exprimer une opinion
- 4.4 se servir du passé composé, de l'imparfait, et du discours indirect pour narrer des événements au passé
- 4.5 utiliser les pronoms objets et relatifs, les conjonctions et les connecteurs dans des situations telles que de résumer les idées principales d'un texte
- 4.6 se servir de phrases simples et complexes aux temps appropriés, et utiliser des formes et des styles qui respectent différents auditoires dans des situations telles que de réagir de façon critique et créative

# Gaelic Studies 11

## General Curriculum Outcomes

Students will be expected to

1. demonstrate an understanding of the origins of the Gaels
2. demonstrate an understanding of the contribution of the Gaels to the settlement, growth, and identity of Canada
3. demonstrate an understanding of the contribution of the Gaels to the economic, military, and political life of Canada
4. engage in specific research using the historical method and communicate the results of their research effectively
5. examine the role of oral tradition and literature in the expression of Gaelic culture
6. explore and express thoughts, experiences and feelings through Gaelic Arts

## Specific Curriculum Outcomes

Students will be expected to

### Module 1: Roots

- 1.1 demonstrate an understanding of the ancient historical and geographic roots of the Gaels
- 1.2 describe the Highland experience and analyze its effect on Gaelic culture
- 1.3 analyze the key events that led to the Gaelic migrations (diaspora)

### Module 2: Settlement, Growth, and Identity

- 2.1 demonstrate an understanding of the role played by the Gaels in the Fur Trade and exploration of North Western Canada
- 2.2 describe and analyze forces shaping the settlement patterns of Gaels in Canada
- 2.3 describe the social structure of Gaelic communities and their relationship to other cultures in Canada
- 2.4 demonstrate an understanding of the ways in which Gaelic language, music, and oral tradition have shaped Gaelic identity

### Module 3: Economic, Military, and Political Life

- 3.1 assess the leadership of the Gaels in the development of public life in Canada
- 3.2 explain the impact of the Gaels on Canada's military history and traditions
- 3.3 analyze the role played by Gaels in Confederation

## Module 4: Independent Study

- 4.1 develop and refine a proposal for an inquiry or creative work
- 4.2 develop a work plan that enables time management, monitors progress and contributes to the criteria for evaluation
- 4.3 formulate a question for research
- 4.4 conduct an organized research, using a variety of information sources (e.g., primary and secondary sources, audio-visual materials, Internet sites) that present a diverse range of perspectives on Canadian history
- 4.5 organize research findings, using a variety of methods and forms (e.g., note taking, graphs and charts, maps, and diagrams)
- 4.6 demonstrate an ability to identify bias, prejudice, stereotyping, or a lack of substantiation in statements, arguments, and opinions
- 4.7 compare key interpretations of Canadian history
- 4.8 explain relationships and connections in the data studied (e.g., chronological ties, cause and effect, similarities and differences)
- 4.9 draw conclusions based on the effective evaluation of sources, analysis of information, and awareness of diverse historical interpretations
- 4.10 demonstrate an ability to develop a cogent thesis substantiated by effective research
- 4.11 communicate effectively, using a variety of styles and forms
- 4.12 use an accepted form of academic documentation effectively and correctly (e.g., footnotes, endnotes, or author-date citations; bibliographies or reference lists; appendices), and avoid plagiarism
- 4.13 express ideas, opinions, and conclusions clearly, articulately, and in a manner that respects the opinions of others
- 4.14 reflect upon and value what they have learned

## Module 5: Oral Tradition and Literature

- 5.1 demonstrate an understanding of ways in which oral tradition transmits culture and history
- 5.2 illustrate the scope and richness of Gaelic language tradition across Canada as evidenced through a range of cultural expression
- 5.3 explore traditional Gaelic customs and beliefs and describe their impact on contemporary life
- 5.4 evaluate the impact of Nova Scotia institutions on the degree of survival of Gaelic language in Nova Scotia
- 5.5 assess the impact of emerging technologies on language, culture, and tradition
- 5.6 compare the relationship between Gaelic literature in Canada and Scotland
- 5.7 compare the variations in expression of culture among Gaelic communities across Canada

## Module 6: Gaelic Arts

- 6.1 demonstrate an understanding of the arts as an integral part of the Gaelic culture
- 6.2 communicate thoughts, experiences, and feelings, through art forms found in Gaelic culture
- 6.3 examine and explain cultural, historical, and linguistic influences on Gaelic arts
- 6.4 make connections among various arts disciplines in the Gaelic culture as well as connection to universal cultural themes across Canada
- 6.5 demonstrate an awareness of and appreciation for the cultural legacy of the Gaels found in local, Canadian, and global contexts

# Gàidhlig 11 / Gaelic 11

## General Curriculum Outcomes

1. Students will use Gaelic to communicate and interact effectively.
2. Students will create and experience works reflective of the Gaelic language and culture.
3. Students will demonstrate an appreciation and understanding of the Gaelic culture within Nova Scotia and the wider world.

## Specific Curriculum Outcomes

By the end of Gaelic 11, students will be expected to

### Communication

- 1.1 interact in a classroom where Gaelic is the language spoken
- 1.2 interact effectively and with spontaneity in situations drawn from real life
- 1.3 converse in a variety of formal and informal settings
- 1.4 use Gaelic to bring meaning to what they observe, feel, and hear through questions and discussions
- 1.5 narrate and describe events from personal experience
- 1.6 exchange ideas and thoughts about areas of personal interest
- 1.7 give reasons and information to support points of view on various issues
- 1.8 recognize the linguistic elements relating to areas of experience that will enable them to communicate effectively, to interact in a classroom where Gaelic is spoken, and to interpret and respond to Gaelic critically and effectively
- 1.9 initiate storytelling, song, and folklore circles
- 1.10 interpret and respond to texts according to a given set of criteria
- 1.11 produce a variety of texts according to a given set of criteria
- 1.12 present information and text by electronic means
- 1.13 communicate effectively with other Gaelic students across the world by electronic or literary means
- 1.14 consolidate their knowledge of Gaelic by using reference and technology tools
- 1.15 understand and differentiate among a variety of linguistic elements to communicate effectively
- 1.16 express long- and short-term plans, goals, and intentions

### Creative Works

- 2.1 create text reflective of material studied in Gaelic 11
- 2.2 experience and participate in the oral tradition by reciting poetry, singing songs, or sharing stories reflective of the Gaelic culture
- 2.3 develop, produce, and perform short skits or plays based on Gaelic cultural activities
- 2.4 view, listen to, and read creative writings and respond to them through visual arts, drama, music, and writing
- 2.5 use electronic means to present research findings and text to a wider audience
- 2.6 engage in Gaelic traditions

## Culture

- 3.1 gain an understanding of the Nova Scotian Gael and his or her place in modern society
- 3.2 compare and contrast the contemporary and traditional lifestyles of the Gaels in Nova Scotia
- 3.3 identify Gaelic cultural content in samples of Nova Scotia's art and literature (e.g., "*Island*"—short stories by Alistair MacLeod)
- 3.4 investigate the contributions of the Gaelic community to Canadian society
- 3.5 examine the use of Gaelic in Nova Scotian society in the twentieth century (e.g., the tradition of precentorship in Presbyterian churches)
- 3.6 give examples of how one is influenced by one's cultural experiences
- 3.7 show cultural sensitivity in everyday situations through appropriate behaviour and language
- 3.8 examine the use of song and story in preserving the history of the Gaels in Canada and investigate attitudes toward Canada by the early settlers
- 3.9 examine relations between First Nations and the Gaels

# Geography of Canada 11

## Specific Curriculum Outcomes

Students will be expected to

### Canada in Spatial Terms (intro module)

- 1.1 demonstrate an understanding of the connection between physical and cultural landscapes and the shaping of the Canadian identity
- 1.2 interpret spatial dimensions within Canada and the broader global community to develop an understanding of Canada's place in the world
- 1.3 demonstrate an understanding of the tectonic forces at work in the building of a continent and the physical systems that continue to define its landscape
- 1.4 analyze the impact of physical systems on human activity
- 1.5 demonstrate an understanding of cultural and physical features of Canada (cities, rivers)

### Canadian Ecumene (compulsory module)

- 2.1 analyze population statistics over time
- 2.2 explain the distribution of population as a consequence of physical or cultural factors
- 2.3 analyze changing trends in migration, emigration, and immigration patterns over time
- 2.4 demonstrate an understanding of the evolving cultural complexity of the Canadian population
- 2.5 apply demographic concepts to explain past, present, and future trends in population

### Patterns of Development (compulsory module)

- 3.1 demonstrate and analyze linkages between a region's natural geology and its resource base
- 3.2 demonstrate an understanding of Canada's natural resources
- 3.3 explain the impact of resource development on settlement patterns at both local and national scales
- 3.4 model issues pertaining to resource assessment
- 3.5 analyze the changing function of a resource-based community as it responds to shifts in market price and demand
- 3.6 analyze the interdependent and evolving nature of the Canadian economy.
- 3.7 forecast the skills required for success in the global economy

### Regional Development (optional module)

- 4.1 use Heartland and Hinterland as a framework for regional development
- 4.2 analyze regional disparity
- 4.3 explain locational factors in economic development
- 4.4 evaluate initiatives designed to equalize regions on local, provincial, and federal scales
- 4.5 predict trends in regional development and suggest regional development policy

### **Rural-Urban Land Use (optional module)**

- 5.1 demonstrate an understanding of the criteria used to classify settlements
- 5.2 apply Christaller's "central place theory" to urban settlement patterns
- 5.3 analyze land use within towns or cities
- 5.4 demonstrate an understanding of the organization of the rural landscapes
- 5.5 identify and analyze land use change in the rural and urban areas (urban fringe)
- 5.6 analyze issues related to migration between rural and urban centres

### **Global Links (optional module)**

- 6.1 demonstrate an understanding of the Canadian geopolitical landscape within a global context
- 6.2 evaluate Canada's economic position within the global trade framework
- 6.3 demonstrate an understanding of the cultural links within the global community (ESL in education, food, fashion, architecture etc.)
- 6.4 analyze the issue of Americanization of Canadian and global culture
- 6.5 evaluate how technologies complement global independence

### **Geography of Risk (optional module)**

- 7.1 explain how physical and cultural landscapes have been altered by physical and human material
- 7.2 demonstrate an understanding of the importance of water and securities and Canada's sovereignty
- 7.3 demonstrate an understanding of the issue of environmental racism
- 7.4 analyze Canada's ability to maintain food security (Movement Blend this section as movement, technology, and communication are course themes)
- 7.5 predict how lifestyles of the twenty first century and beyond will change as a consequence of new technology

### **Independent Study**

The teacher may wish to create a module of study that has not already been addressed in the above modules. The module must consist of four to five clearly articulated SCOs. A GIS community-centred project might be a good avenue to explore.

# Information and Communication Technology Integration 10–12

## Outcome Components

*Students will demonstrate expected performance levels in five IT-based learning outcome areas within the context of essential graduation learnings and outcomes specified for the public school program as a whole.*

## Key-Stage Curriculum Outcomes

By the end of grade 12, in addition to the grade 9 outcomes, students will be expected to

### Basic Operations and Concepts (BOC)

- Concepts and skills associated with the safe, efficient operation of a range of information and communication technologies.

BOC 12.1 (relates to 9.1–9.4) use a wide variety of technology, demonstrate a clear understanding of technological applications, and consistently apply appropriate technology to solve curriculum problems

BOC 12.2 (relates to 9.5) demonstrate an ability to assess the application of technology to solve problems, particularly to evaluate significant effects which estimations, program flaws and human error have on any given solution

BOC 12.3 (relates to 9.6) demonstrate facility with the specialized vocabulary associated with the technology they use

BOC 12.4 (relates to 9.7) take personal responsibility for their safe and ergonomic use of technology for learning

### Social, Ethical, and Human Issues (SEHI)

- The understanding associated with the use of ICT, which encourages in students a commitment to pursue personal and social good, particularly to build and improve their learning environments and to foster stronger relationships with their peers and others who support their learning.

SEHI 12.1 (relates to 9.1–9.4) behave ethically and with accuracy as they generate and distribute information about themselves, others, and curriculum topics under study

SEHI 12.2 (relates to 9.2) articulate an informed and critical understanding of mass media, popular culture and electronic information environments; their techniques; and the effects of those techniques

SEHI 12.3 (relates to 9.1–9.4) critically analyze the impacts of evolving technologies on themselves, societies, and the environment

SEHI 12.4 (relates to 9.2–9.4) demonstrate habits of perception, analysis, judgment and selectivity as they contribute to society through the discerning and critical use and creation of information resources and technology



- SEHI 12.5 (relates to 9.3, 9.4) act responsibly when faced with ethical issues that arise from their use of information and ICT and perspectives
- SEHI 12.6 (relates to 9.5) demonstrate an appreciation of the role of technology-related careers in the larger community and assess technology-related career opportunities within the context of their personal values and needs
- SEHI 12.7 (relates to 9.8) follow the *Public School Program Network Access and Use Policy*

### **Productivity Tools and Software (PTS)**

- The efficient selection and use of ICT to perform tasks such as
    - the exploration of ideas
    - data collection
    - data manipulation, including the discovery of patterns and relationships
    - problem solving
    - the representation of learning
- PTS 12.1 (relates to 9.1) use electronic planning software to support the development and analysis of efficient, personal study and research plans independently
- PTS 12.2 (relates to 9.2, 9.6) evaluate, select, and use the following to learn and to represent curriculum concepts under study: specialized software, including computer-based simulations; and measuring, sampling and recording devices, including complex calculators
- PTS 12.3 (relates to 9.3, 9.4) write and represent their research using the structures, features, conventions, and techniques of specialized publication and presentation formats with growing fluency
- PTS 12.4 (relates to 9.4, 9.5) evaluate, select and use a range of media, and information and communication technology, to create, edit, and publish their work independently
- PTS 12.5 (relates to PTS 9.6 and RPSD 9.2) create electronic charts, tables and graphs; and design, create, and manipulate spread sheets and databases, as part of the process of collecting, analyzing, and displaying data independently

### **Communications Technology (CT)**

- Specific, interactive technology use supports student collaboration and sharing through communication.
- CT 12.1 (relates to 9.1) use language, in a range of aural, print, media and electronic forms to explore and express their perceptions, feelings, ideas and attitudes; refine their thinking; and interact, negotiate, and collaborate with others in order to build their understanding
- CT 12.2 (relates to 9.1, 9.2) critically apply technological skills in a range of electronic, visual, and print media for formal and informal communication
- CT 12.3 (relates to 9.1) design and create electronic documents to accomplish curricular tasks
- CT 12.4 (relates to CT 9.3) discover, share and reflect upon their own and others' cultures, values, and understandings as they are expressed in electronic and other formats
- CT 12.5 (relates to 9.1–9.3) use multimedia hardware and authoring software to develop non-linear, interactive presentations
- CT 12.6 (relates to 9.3) assess the value and application of information and communication technology in personal and career-related pursuits

**Research, Problem Solving, and Decision Making (RPSD)**

- Students' organization, reasoning, and evaluation of their learning rationalize their use of information and communication technology.

RPSD 12.1 (relates to 9.1) select appropriate devices and software to collect data, solve problems and note patterns; to make logical decisions and draw conclusions; and to present results, with general supervision

RPSD 12.2 (relates to 9.4) identify, evaluate, and compare the quality, congruencies, discrepancies, omissions, biases, and perspectives of information content of print, media, and electronic resources

RPSD 12.3 (relates to 9.3–9.8) evaluate and organize ideas and information from a wide range of media and a variety of sources to meet their curriculum needs efficiently and independently

RPSD 12.4 (relates to 9.7) identify the strengths and limitations of different approaches to research, and select those approaches which efficiently meet their learning needs

RPSD 12.5 (relates to 9.4–9.8) contribute to the development of criteria for selecting a research topic, and, based on those criteria, define and complete a research task efficiently

RPSD 12.6 (relates to 9.9) accurately record and cite, using academically accepted formats and standards, sources of information contributing to their research

# In-School Component of Co-operative Education 10–12

## Specific Curriculum Outcomes

Students will be expected to

### Module 1: Career Planning

- 1.1 identify and use strategies to determine appropriate, realistic education and career plans
- 1.2 demonstrate understanding of and actively participate in the career-building process

### Module 2: Preparing for the Workplace

- 2.1 demonstrate workplace readiness by identifying and assessing personal traits, values, strengths and weaknesses, abilities, and employability skills
- 2.2 demonstrate an understanding of workplace hierarchies, relationships, etiquette, and confidentiality

### Module 3: Workplace Health and Safety

- 3.1 demonstrate an understanding of the major components of the Nova Scotia *Occupational Health and Safety Act* and *Regulations*, including employer and employee rights and responsibilities for workplace health and safety
- 3.2 demonstrate an understanding of the five main types of workplace hazards and their four main contributing factors
- 3.3 demonstrate an understanding of hazard control, including the role of reporting workplace hazards, and the use of personal protective equipment (PPE)
- 3.4 demonstrate an understanding of the components of Workplace Hazardous Materials Information System (WHMIS)—training, labels, and Material Safety Data Sheets (MSDS)

# Mathematics 11 / Advanced Mathematics 11

## General Curriculum Outcomes

- A. Students will demonstrate number sense and apply number-theory concepts.
- B. Students will demonstrate operation sense and apply operation principles and procedures in both numeric and algebraic situations.
- C. Students will explore, recognize, represent, and apply patterns and relationships, both informally and formally.
- D. Students will demonstrate an understanding of and apply concepts and skills associated with measurement.
- E. Students will demonstrate spatial sense and apply geometric concepts, properties, and relationships.
- F. Students will solve problems involving the collection, display, and analysis of data.
- G. Students will represent and solve problems involving uncertainty.

## Specific Curriculum Outcomes

The outcomes specific to the advanced-level course are indicated with (advanced) after the outcome number.

Students will be expected to

### The Algebra of 3-Space

- A4 demonstrate an understanding of the conditions under which matrices have inverses
- A5 demonstrate an understanding of properties of matrices and apply them
- B2 demonstrate an understanding of the relationship between operations on algebraic and matrix equations
- B11 develop and apply the procedure to obtain the inverse of a matrix
- B12 (advanced) derive and apply the procedure to obtain the inverse of a matrix
- B13 solve systems of equations using inverse matrices
- B14 (advanced) determine the equation of a plane given three points on the plane
- B15 solve systems of “ $m$ ” equations in “ $n$ ” variables with and without technology
- B16 develop, analyze, and apply the procedures for matrix multiplication
  
- C5 determine quadratic functions using systems of equations
- C8 demonstrate an understanding of real-world relationships by translating between graphs, tables, and written descriptions
- C12 interpret geometrically the relationships between equations in systems
- C13 demonstrate an understanding that an equation in three variables describes a plane
- C14 demonstrate an understanding of the relationships between equivalent systems of equations
- C19 solve problems involving systems of equations
- E1 demonstrate an understanding of the position of axes in 3-space
- E2 locate and identify points and planes in 3-space

## Independent Study

- I1 demonstrate an understanding of a mathematical topic through independent research
- I2 communicate the results of the independent research
- I3 demonstrate an understanding of the mathematical topic presented by other students

## Trigonometry 1

- B5 analyze and apply the graphs of the sine and cosine functions
- C3 determine the equations of sinusoidal functions
- C8 demonstrate an understanding of real-world relationships by translating between graphs, tables, and written descriptions
- C9 analyze tables and graphs of various sine and cosine functions to find patterns, identify characteristics, and determine equations
- C21 describe how various changes in the parameters of sinusoidal equations affect their graphs
- C23 identify periodic relations and describe their characteristics

## Trigonometry 2

- A1 demonstrate an understanding of irrational numbers in applications
- B1 demonstrate an understanding of the relationship between operations on fractions and rational algebraic expressions
- B4 use the calculator correctly and efficiently
- C1 model situations with sinusoidal functions
- C4 (advanced) determine the equations of sinusoidal functions expressed in radians
- C9 analyze tables and graphs of various sine and cosine functions to find patterns, identify characteristics, and determine equations
- C10 (advanced) analyze tables and graphs of various sine and cosine functions to find patterns, identify characteristics, and determine equations expressed in radians
- C15 demonstrate an understanding of sine and cosine ratios and functions for non-acute angles
- C16 (advanced) demonstrate an understanding of sine and cosine ratios and functions for non-acute angles expressed in radians
- C18 interpolate and extrapolate to solve problems
- C22 (advanced) describe how various changes in the parameters of sinusoidal equations, expressed in radians, affect their graphs
- C24 derive and apply the reciprocal and Pythagorean identities
- C25 prove trigonometric identities
- C27 apply function notation to trigonometric equations
- C28 analyze and solve trigonometric equations with and without technology
- C29 (advanced) analyze and solve trigonometric equations with and without technology, expressing the solution in radians
- C30 demonstrate an understanding of the relationship between solving algebraic and trigonometric equations
- D1 derive, analyze, and apply angle and arc length relationships
- D2 demonstrate an understanding of the connection between degree and radian measure and apply it

## Statistics

- A3 demonstrate an understanding of the application of random numbers to statistical sampling
- F1 draw inferences about a population from a sample
- F2 identify bias in data collection, interpretation, and presentation
- F4 demonstrate an understanding of how the size of a sample affects the variation in sample results
- F7 draw inferences from graphs, tables, and reports
- F8 apply characteristics of normal distributions
- F9 demonstrate an understanding of the difference between sample standard deviation and population standard deviation
- F10 interpret and apply histograms
- F11 determine, interpret, and apply confidence intervals
- F14 distinguish between descriptive and inferential statistics
- F15 design and conduct surveys and/or simulate data collection to explore sampling variability
- F16 (advanced) demonstrate an understanding of the difference between situations involving binomial experiments and those which do not
- F18 (advanced) identify the characteristics of a binomial experiment
- F19 demonstrate an understanding of the differences in the quality of sampling methods
- F20 demonstrate an understanding of how the confidence levels affects the confidence interval
- F21 demonstrate an understanding of the role of the Central Limit Theorem in the development of confidence intervals
- F22 distinguish between the calculation of confidence intervals for a known population mean versus an unknown population mean
- G3 graph and interpret sample distributions of the sample mean

## Applications of Trigonometry

- B4 use the calculator correctly and efficiently
- B6 derive and analyze the Law of Sines, the Law of Cosines, and the formula “area of triangle  $ABC = \frac{1}{2} bc \sin A$ ”
- C28 analyze and solve trigonometric equations with and without technology
- D3 apply sine and cosine ratios and functions to situations involving non-acute angles
- D5 apply the Law of Sines, the Law of Cosines, and the formula “area of a triangle  $ABC = \frac{1}{2} bc \sin A$ ” to solve problems

# Mathematics Essentials 11

## General Curriculum Outcomes

- A. Students will demonstrate number sense and apply number-theory concepts.
- B. Students will demonstrate operation sense and apply operation principles and procedures in both numeric and algebraic situations.
- C. Students will explore, recognize, represent, and apply patterns and relationships, both informally and formally.
- D. Students will demonstrate an understanding of and apply concepts and skills associated with measurement.
- E. Students will demonstrate spatial sense and apply geometric concepts, properties, and relationships.
- F. Students will solve problems involving the collection, display, and analysis of data.
- G. Students will represent and solve problems involving uncertainty.

## Specific Curriculum Outcomes

Students will be expected to

### Mental Math

- B1 know the multiplication and division facts
- B2 extend multiplication and division facts to products of tens, hundreds, and thousands by single-digit factors
- B3 estimate sums and differences
- B4 estimate products and quotients
- B5 mentally calculate 25%,  $33\frac{1}{3}\%$ ,  $66\frac{1}{3}\%$  and of quantities compatible with these percents
- B6 estimate percents of quantities

### Data Management

- F1 read and interpret various data displays
- F2 analyze graphs to describe patterns within the context of the data and predict future trends
- F3 select an appropriate display for a given set of data and explain the reasons for the choice
- F4 represent given data in a variety of displays, using spreadsheets or other technology
- F5 collect, display, and analyze data to draw appropriate conclusions about relevant questions or issues

### Banking

- A1 understand the various savings and investing alternatives commonly available
- A2 explore the concepts of risk tolerance vs. reward investing and demonstrate an understanding of how it changes during different life stages
- B7 calculate the cost of a loan using amortization tables
- B8 determine the cost of using credit, using technology
- C1 interpret data from amortization tables
- C2 explore the effects of parameter changes on the cost of borrowing money

- C3 determine the effects of compound interest on deposits made into savings accounts using technology
- C4 explore the growth of savings based on a variety of investment strategies ranging in amounts and time frames using technology

## Housing

- A3 understand the rights and responsibilities of landlords and tenants

## Measurement and Design

- D1 demonstrate an understanding of the concept of perimeter and area
- D2 calculate perimeter and area
- D3 estimate perimeter and area using estimation strategies
- D4 use perimeter and area to solve a variety of real world problems
- D5 demonstrate an understanding of volume and surface area
- D6 calculate surface area and volume of rectangular prisms and cylinders
- D7 use surface area and volume to solve real world problems
- D8 estimate the volume and surface area using estimation strategies
- D9 calculate scale factors in 2-D scale diagrams and 3-D scale models; understand the relationship among the scale factor and the related change in area or volume
- E1 understand the meaning and use of square root numbers when determining the dimensions (sides) of a square
- E2 understand and apply the Pythagorean Theorem
- E3 find the missing side measure in a right angle triangle
- E4 create 2-D scale diagrams and 3-D scale models

## Taking a Trip

- A4 understand how to read a map
- B10 determine the expenses related to taking a trip (i.e., gasoline, accommodations, meals, etc.)
- B11 determine the distances using scales on a map
- B9 determine the cost associated with renting an apartment or buying a house



# Mathematics Foundations 11

## General Curriculum Outcomes

- A. Students will demonstrate number sense and apply number-theory concepts.
- B. Students will demonstrate operation sense and apply operation principles and procedures in both numeric and algebraic situations.
- C. Students will explore, recognize, represent, and apply patterns and relationships, both informally and formally.
- D. Students will demonstrate an understanding of and apply concepts and skills associated with measurement.
- E. Students will demonstrate spatial sense and apply geometric concepts, properties, and relationships.
- F. Students will solve problems involving the collection, display, and analysis of data.
- G. Students will represent and solve problems involving uncertainty.

## Specific Curriculum Outcomes

Students will be expected to

### Making Choices: Linear Programming

- A2 relate sets of numbers to solutions of inequalities
- B3 demonstrate an understanding of the relationship between arithmetic operations on equations and inequalities
- B4 use the calculator correctly and efficiently
- C6 apply the linear programming process to find optimal solutions
- C8 demonstrate an understanding of real-world relationships by translating between graphs, tables, and written descriptions
- C11 express and interpret constraints
- C18 interpolate and extrapolate to solve problems
- C20 solve systems of equations and inequalities both with and without technology
- E3 represent systems of inequalities as feasible regions
- E4 represent linear programming problems using the Cartesian coordinate system
- F5 organize and display information in various ways with and without technology

### Independent Study

- I1 demonstrate an understanding of a mathematical topic through independent research
- I2 communicate the results of the independent research
- I3 demonstrate an understanding of the mathematical topic presented by other students

### Decision-Making in Consumer Situations

- B4 use the calculator correctly and efficiently
- B7 estimate and calculate income and deductions
- B8 solve problems involving budgets

- B9 analyze situations and make decisions involving the financing of purchases
- B10 analyze situations and make decisions involving the cost of transport
- C7 develop and apply informal decision-making flowcharts
- C8 demonstrate an understanding of real-world relationships by translating between graphs, tables, and written descriptions
- C11 express and interpret constraints
- C18 interpolate and extrapolate to solve problems
- C26 demonstrate an understanding of the difference between simple and compound interest
- F7 draw inferences from graphs and tables

## Statistics

- A3 demonstrate an understanding of the application of random numbers to statistical sampling
- F1 draw inferences about a population from a sample
- F2 identify bias in data collection, interpretation, and presentation
- F3 demonstrate an understanding of what can be inferred about a population by examining sample means and dispersions
- F4 demonstrate an understanding of how the size of a sample affects the variation in sample results
- F5 organize and display information in various ways with and without technology
- F7 draw inferences from graphs and tables
- F12 interpret normal curves and standard deviation to express levels of confidence
- F13 calculate, analyze, and interpret various statistics
- F15 design and conduct experiments/surveys to explore sampling variability
- F17 design and conduct experiments/surveys, and interpret and communicate level of confidence
- G3 graph simple distributions and interpret them using the language of probability

## Trigonometry

- A3 demonstrate an understanding of the application of random numbers to statistical sampling
- B3 demonstrate an understanding of the relationship between arithmetic operations on equations and inequalities
- B4 use the calculator correctly and efficiently
- C28 solve simple trigonometric equations
- D4 solve problems using sine, cosine, and tangent ratios
- D5 apply the Law of Sines, the Law of Cosines, and the formula “area of a triangle  $ABC = \frac{1}{2} bc \sin A$ ”

# Music 11

## General Curriculum Outcomes

Students will be expected to

### Creating, Making, and Presenting

1. explore, challenge, develop, and express ideas using the skills, language, techniques, and processes of the arts
2. create and/or present, collaboratively and independently, expressive products in the arts for a range of audiences and purposes

### Understanding and Connecting Contexts of Time, Place, and Community

3. demonstrate critical awareness of and value the role of the arts in creating and reflecting culture
4. respect the contributions of individuals and cultural groups to the arts in local and global contexts and value the arts as a record of human experience and expression
5. examine the relationship among the arts, societies, and environments

### Perceiving and Responding

6. apply critical thinking and problem solving strategies to reflect on and respond to their own and others' expressive work
7. understand the role of technologies in creating and responding to expressive works
8. analyze the relationship between artistic intent and the expressive work

## Specific Curriculum Outcomes

Students will be expected to

- CM 1.1 develop skills in the selection, preparation, and presentation of music through individual and ensemble music making
- CM 1.2 make informed judgments to select appropriate materials, techniques, and forms to enhance the expression of meaning in music
- CM 1.3 interpret and represent a range of thoughts, images, and feelings, by responding to non-verbal gestures
- CM 1.4 analyze and interpret music notation, traditional and non-traditional
  
- CM 2.1 use vocal, instrumental, and electronic sound sources, to improvise and compose music applying a range of skills, techniques, and forms
- CM 2.2 collaborate with others to create and present music using a range of skills and techniques
- CM 2.3 compare and perform, alone and with others, a range of musical styles, forms, and genres
  
- UC 3.1 consider and discuss the influence of music on their daily lives
- UC 3.2 make connections between school, local community, and global musical activities

- UC 3.3 analyze the richness of cultural contributions to music, local and global
- UC 3.4 analyze the various roles of music in local and global contexts
  
- UC 4.1 make connections between their own music and the music of others in cultural and historical contexts
- UC 4.2 create music that reflects universal ideas
  
- UC 5.1 pursue possibilities for connecting their own musical activities and other curriculum areas
- UC 5.2 explore ways in which their own music and that of others expresses the cultural diversity of the community, both local and global
  
- PR 6.1 apply their knowledge and understanding of music to solve problems during the music-making process
- PR 6.2 discuss and compare individual perspectives, perceptions, opinions, and interpretations of musical works
- PR 6.3 reflect on and respond to constructive criticism as it applies to the music-making process
  
- PR 7.1 evaluate available technologies and how they can represent a variety of moods, thoughts, and feelings
- PR 7.2 assess the relationship between technical skill and expressive qualities of a variety of sound sources
- PR 7.3 demonstrate an understanding of the effect of technology on music and musicians
  
- PR 8.1 analyze and make decisions about their musical work in relation to the artistic intent
- PR 8.2 speculate on the importance of artistic intent on the music-making process
- PR 8.3 analyze and make decisions about their musical work, using available technology and feedback from others

# Oceans 11

## Specific Curriculum Outcomes

Students will be expected to

### **Structure and Motion (25%)**

#### Oceans, Seas, Gulfs, and Straits

- identify oceans and related water areas in the world and describe related science- and technology-based careers (OSM-1)

#### The Ocean Bottom: Origins and Bathymetry

- analyze the basic structure of Earth's waters using evidence and information to support your findings (OSM-2)

#### The Properties of Seawater

- identify, collect data, and describe the unique properties of water (OSM-3)

#### Ocean Currents

- identify, explain, and show how ocean currents' Coriolis effect, and thermohaline currents are related (OSM-4)

#### Ocean Currents (extension)

- identify and describe wave motion found in the marine environment and in everyday situations (OSM-5)

#### Tides

- identify and describe tide theory and types of tides (OSM-6)

### **Marine Biome (25%)**

#### Life in the Oceans

- explain the marine biome and describe the biodiversity of ocean life and determine interconnections that exist within the marine biome (MBIO-1)

#### Habitats

- compare representative marine organisms and communities (MBIO-2)

#### Open Ocean versus Coastal Areas

- compare characteristics of the open ocean and coastal zones referencing terms and impact on local ecosystems (MBIO-3)

### The Field Trip

- develop and report appropriate sampling procedures to obtain quantitative data on the abundance of marine organisms at a local coastal area and describe and apply classification systems and nomenclatures to organisms found in the marine biome (MBIO-4)

### Organisms and Habitats

- explain how a particular organism functions in its habitat (MBIO-5)

## Coastal Zones (compulsory, 25%)

### Identifying Coastal Zones

- discuss the concept of coastal zones and how these vary around the world (CZON-1)

### Variations in Coastal Zone Structure and Properties

- describe and explain the causes and characteristics of major types of coastal zones (CZON-2)

### The Importance of Coastal Zones to Humans

- identify and explain sustainability and human use of an environment, including populations and resources, locally and globally (CZON-3)

### Keeping Our Coastal Zones

- list and discuss human interactions with the processes involved in the coastal zone environment, and describe competing views (CZON-4)
- discuss the purpose and process of integrated coastal zone management and analyze a coastal zone management structure and the interrelationships found in a local area (CZON-5)

Choose one of either Aquaculture or Fisheries

## Aquaculture (25%)

### Farming, Fishing, and Food

- identify, and compare aquaculture—locations and species—grown in Nova Scotia, in the rest of Canada, and globally (AQUA-1)

### What Species? Where? Why?

- describe and identify groups of organisms raised through aquaculture and their geographic locations, referring to anatomy and physiology of a major species and ecology of cultured species (AQUA-2)

### **Water Quality**

- describe, measure, and analyze conditions for aquaculture operations (AQUA-3)

### **Site Acceptance by the Community**

- analyze site planning from various perspectives and report on both the risks and benefits to society and the environment (AQUA-4)

### **Marketing the Product**

- identify, analyze, and evaluate various aquaculture business opportunities (AQUA-5)

### **Aquaculture-Related Issues**

- explain aquaculture-related issues (AQUA-6)

## **Fisheries (25%)**

### **Fisheries Are a Unique Resource**

- explain the importance of a sustainable fishery as a resource to global and local food supply and employment with reference to terminology (FISH-1)

### **Life Cycle**

- describe, identify, and analyze the external and internal anatomy of a major finfish or shellfish species that is part of the commercial fishery (FISH-2)

### **Models of Fish Stocks**

- construct, interpret, and evaluate various ecological factors (FISH-3)

### **Fish Population and Management**

- compile and organize fish population data and explain the dynamic interrelationships among the physical environment, the biological environment, and the health and distribution of a fish stock (FISH-4)

### **Technology in the Fisheries**

- compare the risks and benefits to society and the environment of applying scientific knowledge or introducing a technology to the fisheries (FISH-5)

### **What Does Management Mean?**

- identify, describe, and analyze multiple perspectives of the main organizations in research and decision making in fisheries management in Canada (FISH-6)

# Other Languages 10–12 (Languages Template)

## Specific Curriculum Outcomes

Students will be expected to

### Communicating

- 1.1 exchange ideas and thoughts about areas of personal interest
- 1.2 give reasons and information to support points of view on various issues
- 1.3 express long- and short-term plans, goals, and intentions
- 1.4 interact in [Target Language] effectively and with some spontaneity in situations drawn from real life

### Acquiring Information

- 1.5 research, analyze, and use relevant information from several sources on a chosen topic to complete authentic tasks

### Experiencing Creative Works

- 1.6 view, listen to, and read creative works, and respond to them through drama, visual arts, music, and writing

### Understanding Culture and Society

- 1.7 give examples of how one is influenced by one's cultural experience
- 1.8 identify cultural content in [Target Language] resources
- 1.9 show cultural sensitivity in everyday situations through appropriate behaviour and language



# Physical Education 11

## General Curriculum Outcomes

Students will be expected to

### Knowing

- A. demonstrate an understanding of the concepts that support human movement
- B. demonstrate a knowledge of the components and processes needed to develop and maintain a personal level of functional fitness

### Doing

- C. demonstrate motor skills in all movement categories using efficient and effective body mechanics
- D. participate regularly in a variety of activities that develop and maintain personal physical fitness
- E. demonstrate creativity in all movement categories

### Valuing

- F. demonstrate positive personal and social behaviours and interpersonal relationships
- G. demonstrate positive attitudes toward and an appreciation of physical activity through participation
- H. demonstrate awareness of career and occupational opportunities related to physical activities

## Specific Curriculum Outcomes

Students will be expected to

### Tactical and Strategic Game Play

- 1.1 apply effective tactics and techniques to invade an opponent's territory/space in offensive and defensive situations within an invasion/territory situation
- 1.2 apply effective tactics and techniques to send an object into open space so an opponent is unable to make a return within a net/wall situation
- 1.3 strike a ball so it eludes defenders within a batting/fielding situation
- 1.4 articulate the most effective offensive and defensive tactics within invasion/territory, net/wall, and batting/fielding games environments
- 1.5 apply progressive tactical principles in target games play
- 1.6 articulate the most effective techniques utilized while aiming at a target within the target games environments
- 1.7 identify games other than those addressed in this course to which specific skills and tactics are applicable and transferable

## **Life Skills through Sport**

- 2.1 demonstrate effective communication and interpersonal skills in game settings, and effectively connect these skills to life outside of physical education
- 2.2 demonstrate effective decision-making skills and critical thinking skills in game settings, and effectively connect these skills to life outside of physical education
- 2.3 demonstrate effective coping and self-management skills while in game settings, and effectively connect these skills to life outside of physical education

## **Sport in Society**

- 3.1 identify social injustices in Canadian sport and articulate steps that would help address each of the injustices they identify
- 3.2 identify potential careers in sport and investigate related career pathways
- 3.3 recognize the importance of using inclusive language (related to such constructs as gender, sexuality, race, and ability) in sport and throughout life

# Physically Active Living 11

## General Curriculum Outcomes

Students will be expected to

### Knowing

- A. demonstrate an understanding of the concepts that support human movement
- B. demonstrate a knowledge of the components and processes needed to develop and maintain a personal level of functional fitness

### Doing

- C. demonstrate motor skills in all movement categories using efficient and effective body mechanics
- D. participate regularly in a variety of activities that develop and maintain personal physical fitness
- E. demonstrate creativity in all movement categories

### Valuing

- F. demonstrate positive personal and social behaviours and interpersonal relationships
- G. demonstrate positive attitudes toward and an appreciation of physical activity through participation
- H. demonstrate awareness of career and occupational opportunities related to physical activities

## Specific Curriculum Outcomes

Students will be expected to

### Active Lifelong Pursuits

- 1.1 demonstrate competence in a variety of lifelong physical activities
- 1.2 demonstrate competence in a variety of modes of active transportation, applying appropriate safety procedures and exploring opportunities and challenges
- 1.3 lead an active game in a natural setting that would be inclusive of and appeal to all ages and abilities, and explain the value of play in leisure time throughout the lifespan
- 1.4 experience and reflect upon diverse lifelong outdoor recreation activities, as environmentally conscious participants

### Community Participation

- 2.1 demonstrate awareness of the range of human and physical resources, including natural and built environments, supportive of physical activity, sport, and recreation in the community, region, and province
- 2.2 identify barriers and solutions to participation in their physical activity interests in regard to cost, time, and access based upon a projected disposable income

- 2.3 locate, access, and participate at the moderate to vigorous intensity level in a new physical activity experience, structured or unstructured, available in their community
- 2.4 facilitate a learning experience that promotes active, healthy living within their school and/or community
- 2.5 apply their understanding of fair play and monitor their own behaviour in a variety of physical activities

### **Personal Fitness and Goal Setting**

- 3.1 assess their personal level of health-related physical fitness
- 3.2 develop a fitness plan using a goal-setting approach
- 3.3 demonstrate an understanding of health-related fitness components and how to use them to improve personal fitness levels
- 3.4 apply the principles of training within a personal fitness plan and analyze how these principles can help to improve or maintain personal fitness levels
- 3.5 set goals to increase skill level in a physical activity of choice and monitor, document, and reflect on progress over time

### **Healthy Living**

- 4.1 explain the role that healthy eating and physical activity play in enhancing mental health, disease prevention, and addiction prevention
- 4.2 identify community resources that address and enhance mental health, and recognize harms associated with delayed treatment of mental illness
- 4.3 examine consumer rights and critically analyze issues related to health and fitness services and products
- 4.4 investigate a health issue of relevance to youth, including its impact personally, regionally, and globally

# Physics 11 / Advanced Physics 11

## General Curriculum Outcomes

### STSE

1. Students will develop an understanding of the nature of science and technology, of the relationships between science and technology, and of the social and environmental contexts of science and technology.

### Skills

2. Students will develop the skills required for scientific and technological inquiry, for solving problems, for communicating scientific ideas and results, for working collaboratively, and for making informed decisions.

### Knowledge

3. Students will construct knowledge and understandings of concepts in life science, physical science, and Earth and space science, and apply these understandings to interpret, integrate, and extend their knowledge.

### Attitudes

4. Students will be encouraged to develop attitudes that support the responsible acquisition and application of scientific and technological knowledge to the mutual benefit of self, society, and the environment.

## Specific Curriculum Outcomes

**Note:** Students in Advanced Physics 11 will be expected to achieve the outcomes for Physics 11 as well as those for Advanced Physics 11.

Students will be expected to

### **Kinematics (15%) (Advanced, 10%)**

#### Presenting Vectors

- identify the frame of reference for a given motion and to distinguish fixed and moving frames (325-7)
- identify and investigate questions that arise from practical problems/issues involving motion (212-1)

#### Vector Analysis

- use vectors to represent position, displacement, velocity, and acceleration (325-5)
- analyze and describe vertical motion using the principles of kinematics (116-2)

### Algebraic Problem Solving

- analyze word problems, solve algebraically for unknowns, and interpret patterns in data (325-2)

## Dynamics (22%) (Advanced, 18%)

### Dynamics Introduction

- analyze the influence of society on scientific and technological endeavours in dynamics (117-2)
- describe and evaluate the design of technological solutions and the way they function, using scientific principles (116-6)
- analyze natural and technological systems to interpret and explain their structure and dynamics (116-7)
- use vectors to represent forces (325-5)

### Newton's Laws

- apply Newton's laws of motion to explain inertia and the relationships among force, mass, and acceleration (325-8)
- design an experiment identifying and controlling major variables (212-3)
- evaluate and select appropriate instruments for collecting evidence and appropriate processes for problem solving, inquiring, and decision making (212-8)
- carry out procedures controlling the major variables and adapting or extending procedures where required (213-2)
- use instruments effectively and accurately for collecting data (213-3)
- compile and display evidence and information, by hand or computer, in a variety of formats, including diagrams, flow charts, tables, graphs, and scatter plots (214-3)
- interpret patterns and trends in data and infer or calculate linear and non-linear relationships among variables (214-5)
- analyze and describe examples where knowledge of the dynamics of bodies was enhanced or revised as a result of the invention of a technology (116-2)
- explain how a major scientific milestone revolutionized thinking in dynamics (115-3)

### Momentum Introduction

- describe the functioning of technology devices based on principles of momentum (116-5)

## Momentum and Energy (35%) (Advanced, 30%)

### Conservation of Momentum

- apply quantitatively the law of conservation of momentum to one-dimensional collisions and explosions (326-3)

### Work, Power, and Efficiency

- analyze quantitatively the relationships among force, distance, and work (325-9)
- analyze quantitatively the relationships among work, time, and power (325-10)
- design and carry out an experiment to determine the efficiency of various machines (212-3, 213-2, 213-3, 214-7)

## Transformation, Total Energy, and Conservation

- analyze quantitatively the relationships among mass, speed, and thermal energy, using the law of conservation of energy (326-1)
- describe quantitatively mechanical energy as the sum of kinetic and potential energies (326-5)
- compare empirical and theoretical values of total energy and account for discrepancies (214-7)
- analyze quantitatively problems related to kinematics and dynamics using the mechanical energy concept (326-6)
- analyze common energy transformation situations using the closed system work-energy theorem (326-7)
- analyze and describe examples where technological solutions were developed based on scientific understanding (116-4)
- determine the percentage efficiency of energy transformation (326-8)
- design an experiment, select and use appropriate tools, carry out procedures, compile and organize data, and interpret patterns in the data to answer a question posed regarding the conservation of energy (212-3, 212-8, 213-2, 214-3, 214-5, 214-11, 326-4)
- distinguish between problems that can be solved by the application of physics-related technologies and those that cannot (118-8)
- determine which laws of conservation, momentum, and energy are best used to analyze and solve particular real-life problems in elastic and inelastic interactions (326-4)

## Technological Implications

- analyze and describe examples where energy- and momentum-related technologies were developed and improved over time (115-5, 116-4)
- describe and evaluate the design of technological solutions and the way they function using principles of energy and momentum (116-6)
- explain the importance of using appropriate language and conventions when describing events related to momentum and energy (114-9)

## Waves (28%) (Advanced, 22%)

### Fundamental Properties

- describe the production, characteristics, and behaviours of longitudinal and transverse mechanical waves (327-1)
- formulate operational definitions of major variables (212-7)
- select and integrate information from various print and electronic sources (213-7)
- analyze, from a variety of perspectives, the risks and benefits to society and to the environment when applying scientific knowledge or introducing a particular technology (118-2)
- analyze natural and technological systems to interpret their structure and dynamics (116-7)
- analyze society's influence on scientific and technological endeavours (117-2)
- construct and test a prototype of a device and troubleshoot problems as they arise (214-14)
- analyze why and how a particular technology was developed and improved over time (115-5)
- apply the universal wave equation to explain and predict the behaviour of waves (327-2)
- implement appropriate sampling procedures and evaluate the relevance, reliability, and adequacy of data and data collection methods in wave experiments (213-1, 214-8)
- apply the laws of reflection and the laws of refraction to predict wave behaviour (327-7)
- state a prediction and a hypothesis about wave behaviour based on available evidence and background information (212-4)

## Sound Waves and Electromagnetic Radiation

- apply the laws of reflection and the laws of refraction to predict wave behaviour (327-7)
- explain qualitatively and quantitatively the phenomena of wave interference, diffraction, reflection and refraction, and the Doppler-Fizeau effect (327-8)
- compare and describe the properties of electromagnetic radiation and sound (327-5)
- describe how sound and electromagnetic radiation, as forms of energy transfer, are produced and transmitted (327-6)
- analyze and describe examples where scientific understanding was enhanced as a result of the invention of a technological device (116-2)

## Advanced Physics 11 Outcomes

### In-depth Treatment (completed within the units)

- use vectors to represent position, displacement, velocity, and acceleration (325-5)
- identify and investigate questions that arise from practical problems/issues involving motion (212-1)
- analyze word problems, solve algebraically for unknowns, and interpret patterns in data (325-2)
- design an experiment, select and use appropriate tools, carry out procedures, compile and organize data, and interpret patterns in the data to answer a question posed regarding the conservation of energy (212-3, 212-8, 213-2, 214-3, 214-5, 214-11, 326-4)
- analyze quantitatively the relationships among mass, speed, kinetic energy, and heat using the law of conservation of energy (326-1)
- apply quantitatively the law of conservation of momentum to one-dimensional collisions and explosions (326-3)
- design and carry out an experiment to determine the efficiency of various machines (212-3, 213-2, 213-3, 214-7)
- describe the production, characteristics, and behaviours of longitudinal and transverse mechanical waves (327-1)

### Literature Search and Report (5%)

- develop and explain a time line of light (AP-01)
- outline the past/present scientific discoveries and match with the time line (AP-02)

### Investigation: An Independent Study/Experiment (15%)

- gain information through modelling and guidance on the processes involved in scientific research and development (AP-05)
- construct a hands-on, self-directed experience and generate a report for public presentation (AP-06)



# Production Technology 11 and 12

## Unifying Concepts

Students will be expected to demonstrate

- A. an understanding of the function of production technology in historical contexts and modern society
- B. the ability to analyze, critique, and evaluate the application and outputs of a variety of production technology methods
- C. an understanding of the major resources used for production
- D. an understanding of the impact of production technology on individuals, society, and the environment
- E. consideration of others during independent and collaborative activities
- F. an understanding of workplace health and safety requirements

## Specific Curriculum Outcomes

Students will be expected to

### Unit 1: Production and Humans

- 1.1 describe the role and value of production and identify basic and advanced human needs
- 1.2 compare and judge the advantages and disadvantages of hand and mass production techniques
- 1.3 explain the highlights of the industrial revolution and their impact on production and society
- 1.4 recount and interpret contemporary developments in the field of production
- 1.5 describe and demonstrate the general principles of the organization of production
- 1.6 define, demonstrate, and apply the basic technology system used in production
- 1.7 specify and communicate the major impacts of production on society, economy, culture, and the environment
- 1.8 identify the needs and preferences of users reflected in contemporary products
- 1.9 recognize potential conflicts between the needs of individuals and of society

### Unit 2: Resources for Production

- 2.1 define the major categories of resources used for production
- 2.2 explain the general structure of materials and describe major material properties
- 2.3 specify and communicate the personnel involved in the production technology team
- 2.4 list and explain the basic tools and machines used in production
- 2.5 select production tools, machines, and equipment appropriate to the task at hand and use them safely, accurately, and economically
- 2.6 describe the general organization of business involved with production, including capital and financing, management, and research development
- 2.7 explain how people are an important resource who need to be trained, organized, and motivated for roles in production
- 2.8 demonstrate that in production the control of stock is important

### Unit 3: Manufacturing

- 3.1 explain how designs for the production of an item can be granted a patent
- 3.2 demonstrate awareness of the competition that surrounds the development of inventions and the control of patents
- 3.3 define the major types of manufacturing
- 3.4 plan a total sequence for the production of a product
- 3.5 demonstrate basic manufacturing processes during the production of a quality product
- 3.6 explain and demonstrate various ways of packaging/promoting and selling a product
- 3.7 define acceptable tolerances for manufacturing
- 3.8 resolve conflicting demands to produce an optimum solution
- 3.9 develop and implement plans for the packaging, promotion, and sale of at least one product
- 3.10 explain that goods may be designed to be produced singly or in quantity and that this affects what each item costs
- 3.11 devise methods of production that show a comprehensive understanding of tools, materials, equipment, and processes

### Unit 4: Product Analysis

- 4.1 analyze and evaluate products produced by different methods of manufacturing such as handcrafted, custom, mass, CIM, etc.
- 4.2 apply critical thinking skills for developing and evaluating ideas
- 4.3 define the conceptual framework associated with the design problem-solving process
- 4.4 demonstrate the application of the design problem-solving process during the production of numerous products
- 4.5 control quality effectively during the production of a product
- 4.6 perform regular tasks on a manufactured product
- 4.7 be aware that the appearances of products and their relationship to their environment is important to the consumer
- 4.8 use techniques, processes, and resources creatively to achieve a high-quality product that matches the specifications

### Unit 5: Construction Production

- 5.1 identify the features relevant to small- and large-scale construction production projects
- 5.2 design, plan, and complete a custom production project
- 5.3 identify and use the materials, tools, machines, and techniques used in construction production
- 5.4 overcome obstacles when making by applying knowledge of materials components, tools, equipment, and processes to change working practice

### Unit 6: Computers and Manufacturing

- 6.1 describe and demonstrate the basic operation of a computer
- 6.2 demonstrate and use a computer to support production manufacturing in a variety of ways as follows:
  - for the management of production
  - for research and development
  - to assist the promotion and sale of a product
  - for planning production
  - for the control of manufacturing/production
- 6.3 save, restore, and print products of computer applications listed above

**Unit 7: Future Production and Careers**

- 7.1 identify and distinguish the advantages and disadvantages of new materials for use in production technology
- 7.2 describe and discuss the impact of production on resources available, the environment, and human beings
- 7.3 display and develop the personal qualities and attitudes beneficial to careers in the production and job applications
- 7.4 identify the careers available in the area of production technology
- 7.5 work as a member of a team in a production enterprise

# Technical Reading and Writing 11

The curriculum outcomes for Technical Reading and Writing 11 have natural connections with the general curriculum outcomes of English language arts (see *Atlantic Canada English Language Arts Curriculum, Grades 10–12*). The language arts outcomes pertinent to the Technical Reading and Writing 11 outcomes are shown below with the appropriate connections made.

*Students will be expected to communicate information and ideas effectively and clearly, and to respond personally and critically.* (Technical Reading and Writing 11, Curriculum Outcome 4)

*Students will be expected to interact with sensitivity and respect, considering the situation, audience, and purpose.* (Technical Reading and Writing 11, Curriculum Outcome 4)

*Students will be expected to select, read, and view with understanding a range of literature, information, media, and visual texts.* (Technical Reading and Writing 11, Curriculum Outcome 1)

*Students will be expected to interpret, select, and combine information using a variety of strategies, resources, and technologies.* (Technical Reading and Writing 11, Curriculum Outcome 1)

*Students will be expected to create texts collaboratively and independently, using a variety of forms for a range of audiences and purposes.* (Technical Reading and Writing 11, Curriculum Outcomes 2 and 3)

*Students will be expected to use a range of strategies to develop effective writing and other ways of representing and to enhance their clarity, precision, and effectiveness.* (Technical Reading and Writing 11, Curriculum Outcome 2)

## Learning Outcomes

Students will be expected to

1. read and interpret written and visual technical text, applying appropriate strategies and responding in ways that indicate understanding of the text
2. create and present technical documents
3. collaborate and consult with others, as well as work independently, in completing technical communications tasks
4. speak and listen in small group, whole class, and presentation contexts

## Specific Curriculum Outcomes

Students will be expected to

- 1.1 distinguish between technical text and literary text
- 1.2 apply appropriate strategies to read a range of technical text
- 1.3 interpret flow charts, schematics, graphs, charts, tables, drawings, illustrations, videotext, and Web sites
- 1.4 complete tasks that require interpretation of technical text

- 2.1 use planning tools, such as graphic organizers, in carrying out technical communication projects
  - 2.2 write summaries, reports, and articles
  - 2.3 write correspondence, including letters, memos, and e-mail
  - 2.4 prepare instructions, lists, and descriptions
  - 2.5 create graphs, charts, and tables
  - 2.6 create flow charts
  - 2.7 prepare drawings, illustrations, diagrams, and schematics
  - 2.8 integrate print and visual text in technical documents and present them
  - 2.9 revise, edit, and evaluate the effectiveness of their own and others' technical documents
- 
- 3.1 work in assigned roles in teams to perform technical communication tasks
  - 3.2 demonstrate the behaviours expected in small group work to perform technical communications tasks
- 
- 4.1 use appropriate speaking behaviours when presenting technical text orally
  - 4.2 apply their understanding of audience, purpose, and situation in technical speaking situations
  - 4.3 apply listening skills in both small- and large-group technical communications

# Tourism 11

## General Curriculum Outcomes

Students will be expected to

- A. demonstrate an understanding of the history and development of the tourism industry
- B. demonstrate a knowledge of the essential skills and knowledge needed to embark on a tourism career path
- C. explore occupations and issues relating to transportation, hospitality, and attractions
- D. explore occupations and issues relating to tourism activities, travel trade, and tourism services
- E. explore current trends in and potential growth avenues of the tourism industry including principles of tourism planning and development

## Specific Curriculum Outcomes

Students will be expected to

### Module 1: Introduction to Tourism

- A1 demonstrate an understanding and appreciation of ideas and beliefs about the tourism industry
- A2 demonstrate a knowledge of the growth and development of tourism in global, national, and provincial contexts
- A3 describe the cultural, social, economic, and political forces underlying the growth and development of various periods in the history of travel and tourism
- A4 identify the impact of some trends upon the tourism industry
- A5 analyze and reflect critically on images and beliefs of tourists
- A6 identify how economic and non-economic factors have influenced leisure and business travel over time
- A7 analyze the Nova Scotia tourism industry to identify major tourist markets
- A8 analyze and assess factors that have an impact (both positive and negative) on the tourism industry

### Module 2: Career Explorations

- B1 identify and describe the eight sectors of tourism
- B2 demonstrate an understanding of the businesses and services that are associated with each sector
- B3 demonstrate an awareness of career opportunities in each sector
- B4 identify and describe the range of occupations in each sector of the tourism industry to gain an understanding of tourism career paths
- B5 demonstrate an understanding of the occupational standards expected of tourism professionals
- B6 identify education and training required for specific careers in the tourism industry
- B7 demonstrate the requisite skills to apply and interview for a job
- B8 describe and demonstrate techniques of effective workplace communication
- B9 demonstrate an understanding of the importance of cross-cultural communication in the workplace
- B10 demonstrate a knowledge of workplace health and safety regulations and precautions
- B11 identify equity and diversity issues in the workplace

- B12 demonstrate problem-solving strategies to resolve conflicts between workplace personnel and with customers

### **Module 3: Transportation, Hospitality, and Adventure Tourism/Recreation**

- C1 demonstrate an understanding of accommodation businesses and services and related occupations and career paths
- C2 identify and critically analyze recent innovations and/or topical issues related to the sector
- C3 demonstrate an understanding of various types of food and beverage operations, businesses, and services and related occupations and career paths
- C4 investigate recent innovations, changes, and/or topical issues pertaining to the sector
- C5 demonstrate an understanding of transportation operations, businesses, and services and related occupations and career paths
- C6 identify, critically analyze, and report on recent innovations, changes, and/or topical issues related to one of the transportation operations
- C7 identify the scope of the adventure/recreation and eco-tourism sector and the businesses and services associated with the sector
- C8 determine how adventure/recreation and eco-tourism have an impact on tourism markets in developing countries and in Nova Scotia

### **Module 4: Travel Trade, Events and Conferences, and Attractions**

- D1 demonstrate an understanding of the businesses and operations associated with the travel trade and of related occupations and career paths
- D2 research and critically analyze changes and innovations in the sector
- D3 demonstrate an understanding of the events and conferences sector and related occupations, including potential career paths
- D4 describe the scope of the attractions sector and related occupations, including potential career paths
- D5 describe the scope of the tourism services sector and related occupations, including potential career paths

### **Module 5: The Future of Tourism and Tourism Planning**

- E1 demonstrate an understanding of tourism growth factors
- E2 investigate world problems that could potentially have an impact on the tourism industry
- E3 identify the basic elements of tourism planning
- E4 demonstrate an understanding of the importance of tourism planning
- E5 research and critically analyze the impact of tourism development
- E6 demonstrate an understanding of career opportunities associated with the planning and development of tourism projects
- E7 research trends, issues, and innovations in tourism planning and development

# Transportation Trades 11

Students will be expected to

## Cluster 1: Transportation Trades Realities

1. demonstrate an understanding of the nature of work and working conditions in the transportation trades
2. identify the work of Automotive Service Technician, Heavy Duty Equipment Technician, Motorcycle Mechanic, Motor Vehicle Body Repairer, Partsperson, Recreation Vehicle Service Technician, Transport Trailer Technician, Truck and Transport Mechanic and the roles and responsibilities of people working in those trades
3. demonstrate an ability to sequence tasks
4. recognize established work specifications in the transportation trades and perform work meeting those specifications
5. model the employability skills required for successful employment in the transportation trades
6. produce appropriate artifacts for their LifeWork Portfolio to demonstrate learning throughout Transportation Trades 11

## Cluster 2: Safety

7. identify and understand the importance of reporting safety risks and hazards in the workplace
8. demonstrate an understanding of, and apply, workplace health and safety practices and procedures in various work situations
9. properly use and maintain personal protective equipment
10. demonstrate knowledge of how to use tools and equipment safely

## Cluster 3: Measurement and Calculation for Transportation Trades

11. interpret trades-related specifications, graphs, and measurements
12. demonstrate an ability to estimate length, area, volume, mass, and time
13. perform trades-related calculations
14. demonstrate the ability to measure values using various systems of measurement

## Cluster 4: Tools and Materials of the Transportation Trades

15. demonstrate an ability to use and interpret trades-related documents, specifications, and drawings
16. demonstrate an ability to use and maintain tools and equipment in a safe, accurate, and appropriate manner
17. demonstrate the ability to identify, use, store, and properly dispose of materials and hazardous products in a safe, responsible, and sustainable manner



# Visual Arts 11

## General Curriculum Outcomes

Students will be expected to

### Creating, Making, and Presenting

1. explore, challenge, develop, and express ideas using the skills, language, techniques, and processes of the arts.
2. create and/or present, collaboratively and independently, expressive products in the arts for a range of audiences and purposes.

### Understanding and Connecting Contexts of Time, Place, and Community

3. demonstrate critical awareness of and value the role of the arts in creating and reflecting culture.
4. respect the contributions of individuals and cultural groups to the arts in local and global contexts and value the arts as a record of human experience and expression.
5. examine the relationship among the arts, societies, and environments.

### Perceiving and Responding

6. apply critical thinking and problem solving strategies to reflect on and respond to their own and others' expressive work.
7. understand the role of technologies in creating and responding to expressive works.
8. analyze the relationship between artistic intent and the expressive work.

## Specific Curriculum Outcomes

Students will be expected to

CM 1.1 develop and realize artworks demonstrating skilful knowledge of formal design principles

CM 1.2 explore intrinsic properties of art media to express specific intent

CM 1.3 sustain a concept through diverse approaches and art media

CM 1.4 demonstrate the ability to articulate understanding of formal design principles

CM 1.5 refine the art-making process through personal skill development from concept to finish

CM 2.1 investigate, create, and employ signs and their signifiers (symbols) to communicate contemporary issues and/or personal meaning through a variety of media

CM 2.2 critically engage visual, spatial, and temporal concepts through various contexts and media

CM 2.3 make critical and articulate judgments when collaboratively sorting, arranging, and displaying artworks

CM 2.4 encourage peers to express individual approaches to and opinions of aesthetic forms in collaborative learning environments

- UC 3.1 reflect on the impact that an everyday visual context has on personal expression
- UC 3.2 explore the links between visual arts and the student's personal environment
- UC 3.3 continue to develop an understanding of how visual arts contribute to the creation of culture
- UC 3.4 actively engage in art advocacy
- UC 3.5 investigate the ways in which artists explore social and artistic issues
- UC 3.6 give voice to personal concerns through visual expression
  
- UC 4.1 explore and share a developed appreciation for the diversity of art and artifacts from individuals and various cultures
- UC 4.2 incorporate in their personal artwork visual images that are inspired by a variety of cultural, socio-economic, and national origins
- UC 4.3 articulate through various texts how artists and the arts inform, define, and cause us to question and reflect
- UC 4.4 analyze personal understanding of how individual and societal values affect their own response to visual arts
- UC 4.5 research to create images that communicate the influence of local, national, and global artists from a variety of cultural and historical contexts
- UC 4.6 recognize and respond to artworks from different cultures and periods
  
- UC 5.1 create artwork that is informed by other arts disciplines
- UC 5.2 analyze and demonstrate an understanding of how personal, social, cultural, and physical environments interact
- UC 5.3 generate artwork that demonstrates an understanding of the elements of art and principles of design as they exist in art and in the natural and built environments
- UC 5.4 examine and debate the moral, ethical, and legal issues related to the creation of artworks
- UC 5.5 explore the functions and ethics of how various societies use the arts
  
- PR 6.1 develop an art vocabulary in order to facilitate evaluation and interpretation of artworks
- PR 6.2 continue to engage in the critical process to develop informed, aesthetic responses
- PR 6.3 recognize strategies by which visual art and design problems can be resolved
  
- PR 7.1 knowledgeably practise safety and demonstrate responsibility in the proper use of materials and tools
- PR 7.2 continue to develop skills in making informed judgments about the use of various media and technological processes, considering their ability to convey meaning
- PR 7.3 analyze and respond to the direct influence expanding technology has had and continues to have on the individual and society
  
- PR 8.1 recognize the evolving interaction between a concept and its execution in personal artwork and the works of others
- PR 8.2 demonstrate an awareness of how consideration of the intended audience affects and impacts on an artwork

# Workplace Health and Safety 11

## General Curriculum Outcomes

Students will be expected to

1. apply the knowledge, skills, attitudes, and awareness needed to identify healthy workplaces, to make informed decisions about safety risks in the workplace, and to initiate appropriate action.
2. apply the knowledge, skills, and attitude needed to identify and appropriately respond to workplace hazards.

## Specific Curriculum Outcomes

Students will be expected to

### Module 1: Fundamentals of Workplace Health and Safety

- 1.1 identify the characteristics of a healthy work environment and recognize the impact of unsafe work practices
- 1.2 identify the impact of interpersonal relationships on workplace health and safety and demonstrate strategies for appropriate interaction
- 1.3 demonstrate and apply understanding of the major components of the Nova Scotia Occupational Health and Safety Act, including employer and worker rights and responsibilities for workplace health and safety
- 1.4 apply learnings about healthy and safe work environments to their home and school
- 1.5 show commitment to a culture of workplace safety and recognition that injury is preventable

### Module 2: Workplace Hazards—Awareness and Control

- 2.1 demonstrate understanding of the five main types of workplace hazards and their four main contributing factors
- 2.2 demonstrate understanding of each of the three components of WHMIS—training, labels, and Material Safety Data Sheets (MSDS)—through activity-based application to at least one type of workplace
- 2.3 demonstrate understanding of hazard control, including the role of reporting and personal protective equipment (PPE)
- 2.4 show understanding of root cause analysis to identify workplace hazards and investigate workplace incident and injury
- 2.5 show strategies for safe and effective response to workplace hazards and emergency situations through exercising safety rights and responsibilities

# Yoga 11

## General Curriculum Outcomes

Students will be expected to

### Knowing

- A. demonstrate an understanding of the concepts that support human movement
- B. demonstrate a knowledge of the components and processes needed to develop and maintain a personal level of functional fitness

### Doing

- C. demonstrate motor skills in all movement categories using efficient and effective body mechanics
- D. participate regularly in a variety of activities that develop and maintain personal physical fitness
- E. demonstrate creativity in all movement categories

### Valuing

- F. demonstrate positive personal and social behaviours and interpersonal relationships
- G. demonstrate positive attitudes toward and an appreciation of physical activity through participation
- H. demonstrate awareness of career and occupational opportunities related to physical activities

## Specific Curriculum Outcomes

Students will be expected to

### Proper Breathing and Asana Practice

- 1.1 demonstrate foundational standing and balance postures with proper alignment
- 1.2 demonstrate foundational seated postures with proper alignment
- 1.3 demonstrate foundational restorative postures with proper alignment
- 1.4 demonstrate the sun salutation sequence with proper alignment, integrating breath, postures, and movement
- 1.5 apply effective breathing techniques to their yoga practice
- 1.6 demonstrate an understanding of anatomy and physiology as they apply to the intentional integration of breath, postures, and movement within the practice of yoga
- 1.7 identify asanas specific to their desired health benefits and create a yoga practice to use outside of class time

## **The Origins and Philosophy of Yoga**

- 2.1 demonstrate an understanding of the eight limbs of ashtanga practice
- 2.2 apply their understanding of yogic text and principles to their daily lives and yoga practice
- 2.3 distinguish among the four forms of yoga to find the practice most suited to their personality

## **Integrating a Mindful Practice**

- 3.1 analyze their own eating patterns with respect to healthy and mindful eating practices
- 3.2 explore relaxation techniques to observe thoughts and to manage emotions and stress, and reflect on those techniques which are most effective for them
- 3.3 apply the principles of yoga in a personal way outside of yoga practice



**Grade 12**





# Accounting 12

## Unifying Concepts

As a result of their learning experiences in Accounting 12, students will be expected to

1. complete the accounting cycle for a merchandising company in accordance with Generally Accepted Accounting Principles
2. journalize transactions using the appropriate special journals
3. prepare, analyze, and interpret financial statements
4. analyze a company's liquidity, solvency, and return on investment by applying the components of financial statement analysis
5. distinguish the accounting elements of various forms of business ownership
6. investigate and learn about the various career opportunities available in the accounting professions and discover how accounting relates to all career fields.

## Specific Curriculum Outcomes

Students will be expected to

### Module 1: The Accounting Cycle for a Merchandising Company

- 1.1 record transactions for merchandising accounts under the periodic inventory method and the perpetual inventory method
- 1.2 calculate and journalize transactions that involve GST and PST, or HST
- 1.3 prepare journal entries related to bank credit card transactions
- 1.4 apply the matching principle in determining adjusting entries for bad debts, uncollectible accounts, accrued revenues and expenses, and unearned revenue
- 1.5 complete a work sheet for a merchandising company using the perpetual and/or the periodic inventory systems
- 1.6 complete the final steps in the accounting cycle for a merchandising company using a perpetual and a periodic inventory system

### Module 2: Journalizing Using Special Journals

- 2.1 record and prove transactions in a columnar journal and post to the appropriate ledgers
- 2.2 record and prove transactions in the Purchases Journal, Sales Journal, Cash Receipts Journal, and Cash Payments Journal and post to the appropriate ledgers

### Module 3: Payroll Accounting

- 3.1 calculate and prepare employee payroll deductions
- 3.2 complete a payroll register and record payroll entries in the general journal

**Module 4: Financial Analysis**

- 4.1 determine the financial stability of a business by analyzing comparative financial statements, condensed statements, and trend analysis
- 4.2 evaluate a company's ability to meet its financial obligations using ratio analysis, comparison with similar businesses, and analysis of non-financial factors
- 4.3 explain the purpose of the budget and compare budget and actual results

**Module 5: Forms of Business Ownership**

- 5.1 explain each partner's share of equity by preparing a statement of changes in partners' equity
- 5.2 distinguish the accounting elements particular to a corporation

**Module 6: Careers in Accounting**

- 6.1 acquire employability skills and attitudes needed for life and work experiences
- 6.2 investigate career opportunities related to accounting
- 6.3 develop and maintain a LifeWork Portfolio

# Advanced Music 12

## General Curriculum Outcomes

Students will be expected to

### Creating, Making, and Presenting

1. explore, challenge, develop, and express ideas using the skills, language, techniques, and processes of the arts
2. create and/or present, collaboratively and independently, expressive products in the arts for a range of audiences and purposes

### Understanding and Connecting Contexts of Time, Place, and Community

3. demonstrate critical awareness of and value the role of the arts in creating and reflecting culture
4. respect the contributions of individuals and cultural groups to the arts in local and global contexts and value the arts as a record of human experience and expression
5. examine the relationship among the arts, societies, and environments

### Perceiving and Responding

6. apply critical thinking and problem solving strategies to reflect on and respond to their own and others' expressive work
7. understand the role of technologies in creating and responding to expressive works
8. analyze the relationship between artistic intent and the expressive work

## Specific Curriculum Outcomes

Students will be expected to

- CM 1.1 demonstrate leadership, through ensemble music-making, in the selection, preparation, and presentation of music
- CM 1.2 through individual and/or small ensemble music-making, demonstrate skills in the preparation of a formal recital/performance
- CM 1.3 apply creatively their knowledge of musical techniques and technologies in composition and performance
- CM 1.4 interpret written scores to communicate, through performance, a range of thoughts, images, and feelings
- CM 1.5 use with fluency the written language of music as a means toward life-long musical independence and enjoyment
  
- CM 2.1 improvise and compose increasingly complex music using a range of sound sources, applying appropriate music notation skills, techniques, and forms
- CM 2.2 demonstrate the intrinsic fusion of skills, concepts, and feelings through performing and creating for specific audiences and purposes
- CM 2.3 present or perform, in a formal setting, a cohesive body of work

- UC 3.1 demonstrate critical awareness of and value for the various roles that music plays, both locally and globally
- UC 3.2 plan for long-term involvement in music-related vocations and avocations
- UC 3.3 demonstrate critical awareness of music from other cultures and times as it connects with the contemporary music environment and the music in their own lives
- UC 3.4 analyze, understand, and value the influence of music in creating and reflecting culture
  
- UC 4.1 celebrate and value the musical contributions of individuals to their community
- UC 4.2 respect the contribution of cultural groups to music in the global community
- UC 4.3 through their own music-making, demonstrate critical awareness of the power of music to reflect universal ideas and feelings
  
- UC 5.1 analyze and make decisions about the relationships between music and other arts
- UC 5.2 demonstrate critical awareness of the relationship between music and society and music and the natural environment
  
- PR 6.1 apply in-depth knowledge and understanding of processes to address challenges and make decisions during the music-making process
- PR 6.2 analyze and respond personally to an extended variety of musical styles, forms, and genres
- PR 6.3 evaluate their own musical insights and aesthetic responses in the context of other critical commentary
  
- PR 7.1 use the expressive potential of a range of technologies during creative music-making activities
- PR 7.2 demonstrate an understanding of the relationship between technical skill and expressive qualities of a variety of sound sources
- PR 7.3 make decisions, during their creative music-making, based on the relationship between technologies of sound production/reproduction and personal response
  
- PR 8.1 reflect critically on meanings, ideas, and values associated with particular music compositions and performances
- PR 8.2 demonstrate an understanding, during their music-making, of the ways in which the intended audience affects the musical work
- PR 8.3 interpret the relationship between intention and outcome in others' work
- PR 8.4 make informed decisions about their expressive musical work in light of their own artistic intent, using available technology and feedback from others

# Audio Recording and Production 12

## Unifying Concepts

- A. Students acquire a broad understanding of the background and issues related to audio recording and production.
- B. Students develop skills in the processes of creating recordings and providing support for live sound events.
- C. Students design and manipulate recordings to create a variety of finished products.
- D. Students design, plan, and complete a recording project that synthesizes the audio recording and production skills they have acquired.

## Specific Curriculum Outcomes

Students will be expected to

### Module 1: Principles of Sound

- 1.1 demonstrate an understanding of the language of electronics as it relates to audio
- 1.2 explore recordings in a critical manner using musical and recording terminology and techniques
- 1.3 determine the acoustic characteristics of a wide range of sound sources and environments
- 1.4 demonstrate an understanding of the evolution of recording technology and its impact on culture
- 1.5 demonstrate an understanding of hearing, audio safety, and general workplace safety as it pertains to the recording and live sound reinforcement industries
- 1.6 explore various music and recording industry career paths in audio production

### Module 2: Technology and Sound (Capture)—Machines, Mics, and Connections

- 2.1 demonstrate an understanding of recording procedures for a wide variety of live and recorded situations
- 2.2 demonstrate an understanding of basic sound system components including cabling, mixing boards, amplifiers, main speakers, monitors, and communication systems
- 2.3 design and set up a variety of sound systems for various applications including live performance and recording
- 2.4 work co-operatively with organizations in the school and community that can benefit from live sound reinforcement or recording services

### Module 3: Audio Production and Manipulation

- 3.1 manage acoustic environments using equalization
- 3.2 apply techniques of signal and dynamic processing
- 3.3 apply the techniques of editing to an audio recording
- 3.4 apply the techniques of mixing and mastering to an audio recording
- 3.5 demonstrate an understanding of MIDI

**Module 4: Collaborative Project and Personal Portfolio**

- 4.1 analyze and develop a project plan, including the definition, scope, roles, resources, steps, and deadlines for a solution
- 4.2 demonstrate the collaborative skills and behaviours required to work with others
- 4.3 identify, locate, and evaluate information, resources and equipment to build and deploy a solution
- 4.4 test, refine, and present the solution
- 4.5 reflect on the solution, process, and learning

# Biology 12

## General Curriculum Outcomes

### STSE

1. Students will develop an understanding of the nature of science and technology, of the relationships between science and technology, and of the social and environmental contexts of science and technology.

### Skills

2. Students will develop the skills required for scientific and technological inquiry, for solving problems, for communicating scientific ideas and results, for working collaboratively, and for making informed decisions.

### Knowledge

3. Students will construct knowledge and understandings of concepts in life science, physical science, and Earth and space science, and apply these understandings to interpret, integrate, and extend their knowledge.

### Attitudes

4. Students will be encouraged to develop attitudes that support the responsible acquisition and application of scientific and technological knowledge to the mutual benefit of self, society, and the environment.

## Specific Curriculum Outcomes

Students will be expected to

### **Maintaining Dynamic Equilibrium II (20%) (Advanced, 16%)**

#### **Nervous System: Neurons and Structure**

- explain how different plant and animal systems maintain homeostasis (317-1)
- identify the role of some compounds, such as water, glucose, and ATP, commonly found in living systems (314-2)
- design an experiment to investigate and collect data on aspects of the nervous system and identify specific variables involved (212-6)
- analyze the nervous system and compile and organize data to interpret its structure and dynamics (116-7, 213-5)

### **Influences on the Nervous System**

- evaluate the impact of viral, bacterial, genetic, and environmental diseases on an organism's homeostasis (317-4)
- analyze how and why technologies and drugs developed and improved over time can affect homeostasis (115-5, 317-7)
- evaluate and describe examples of treatments and technologies for visual and auditory functions (116-4, 317-5)

### **Endocrine System: Maintaining Homeostasis**

- explain how different plant and animal systems maintain homeostasis (317-1)
- identify and describe the structure and function of important biochemical compounds, including protein and steroid hormones (314-3)
- explain the critical role of enzymes in cellular metabolism (314-4)
- design and do an experiment, identify variables, and compile and organize data on selected aspects of the endocrine system (212-6, 213-5)

### **Endocrine System: Feedback Mechanisms**

- analyze homeostatic phenomena to identify the feedback mechanisms involved (317-2)
- analyze contributions, including Canadian, to science and technology and how these have improved over time (117-11, 115-5)

## **Reproduction and Development (24%) (Advanced, 19%)**

### **Cell Division**

- design, perform, compile data, and evaluate experiments on plant materials, using instruments effectively, controlling major variables, and selecting appropriate processes (212-3, 213-3, 212-8, 213-5)
- describe in detail mitosis and meiosis (313-2)
- investigate, analyze, and communicate genetic techniques, giving examples from organized data, that use technologies that have been developed based on cells (116-2, 116-3, 116-7, 213-5, 215-2)
- evaluate the physiological and ethical consequences of medical treatments such as radiation therapy and chemotherapy (317-5)

### **Reproductive Systems: Regulation and Technologies**

- analyze and describe the structure and function of female and male mammalian reproductive systems (313-3)
- identify and apply criteria, including potential applications, chemicals, and diseases, to explain the human reproductive cycles (214-9, 214-18, 313-4)
- select and integrate information from various sources and explain current reproductive technologies for plants and animals (231-7, 313-5)
- distinguish between scientific questions and technological problems to evaluate the use of reproductive technologies for humans (115-1, 313-6)



## Embryonic Differentiation and Development

- explain the human reproductive cycles, including analyzing examples of the effects of technology and science on reproduction (313-4, 116-2)

## Genetic Continuity (40%) (Advanced, 35%)

### Molecular Level

- summarize the discoveries, including the role of evidence, that led to the modern concept of the gene (315-1, 114-2)
- identify and describe the roles of chromosomes in the transmission of hereditary information from one cell to another (315-2)
- explain how the current model of DNA replication, the structure of DNA and RNA, and protein synthesis revolutionized thinking in scientific communities (315-4, 315-5, 115-3)
- describe and predict the effects of genetic mutations on a cell's information, including protein synthesis, phenotypes, and heredity (315-6, 315-7)

### Mendelian Genetics

- using Mendelian genetics, state a prediction, perform, and interpret patterns and trends in genetic data of monohybrid and dihybrid crosses and explain how the data supports or refutes the situation (212-4, 214-5, 315-3, 214-12)

### Implications

- explain the circumstances that lead to genetic diseases (315-8)
- analyze the risks and benefits to society and the environment and construct arguments concerning the use of genetic engineering, using examples and evidence from various perspectives (118-2, 315-9, 118-6)
- analyze, describe, and evaluate genetics-based technology development, design, and solutions (116-4, 116-6)
- explain and analyze, from a variety of perspectives, the risks and benefits of the influence of the Human Genome Project (315-10, 117-2)
- investigate, perform, and defend a position or course of action on genetic modification, integrating various sources and science- and technology-based careers (215-5, 117-7, 213-7)

## Evolution, Change, and Diversity (16%) (Advanced, 10%)

### Evidence and Mechanisms

- describe and evaluate scientific peer review and evidence that have changed evolutionary concepts and feeds the debates on gradualism and punctuated equilibrium (114-5, 316-1, 316-2)
- explain and analyze the roles of evidence, theories, and paradigms as these are tested, and subsequently restricted, revised, or replaced (114-2, 115-7, 116-2)

### Implications

- identify questions to investigate, collect information, and construct arguments to support the development and diversity of living organisms, using examples and evidence (212-1, 213-6, 118-6)
- outline evidence and arguments pertaining to the origin, development, and diversity of living organisms on Earth and identify new questions that arise from what was learned (316-4, 214-17)

# Business Management 12

## Learning Outcomes

As a result of their learning experiences in Business Management 12, students will be expected to

1. demonstrate a clear understanding of the business environment in which Canadian firms currently operate and identify the variables and complexities that affect managerial decision making
2. demonstrate a clear understanding of the manager's role and recognize their own and others' management characteristics and potential
3. demonstrate an understanding of the role of technology and its application to management
4. demonstrate communication and interpersonal skills required in the modern work environment
5. apply management principles to a wide range of enterprises and situations
6. articulate the impact of social, economic, and technological change on management attitudes and principles
7. identify opportunities to apply management concepts and principles to personal and career situations
8. working independently or with others, investigate and report on an issue in the work environment

## Specific Curriculum Outcomes

Students will be expected to

- 1.1 examine basic business functions and analyze their interdependence within a wide range of business ownership types
- 1.2 assess the current state of the business cycle and its impact on companies and managers today
- 1.3 analyze connections among legal, political, economic, environmental, and social issues
- 1.4 identify and explain the impact of external variables in the business environment that influence management decision making and strategy
- 1.5 apply business principles to specific scenarios and case studies
- 2.1 describe and explain the importance of each of the manager's functions, roles, and responsibilities
- 2.2 evaluate the appropriateness and effectiveness of various management styles in a variety of business settings
- 2.3 assess their own managerial characteristics
- 2.4 recognize, value, and draw upon the managerial qualities of others
- 3.1 demonstrate an understanding of the role of technology in business
- 3.2 demonstrate the ability to use technology in business research and presentations
- 3.3 use the Internet effectively for business research
- 3.4 identify the technology skills required by managers in varied organizations
- 3.5 identify opportunities to apply technology in different industry and business types
- 3.6 assess the future impact of technology in the workplace
- 4.1 present formal and informal written and verbal information in appropriate business format
- 4.2 demonstrate skills required to work productively as an individual and team member to solve business problems
- 4.3 provide and accept constructive feedback within a team situation

- 5.1 demonstrate an understanding of basic management strategies
  - 5.2 gather and interpret information to apply change management strategies to corporate, entrepreneurial, not-for-profit, and government environments
  - 5.3 develop and implement strategies to set and attain management goals in specific situations
  - 5.4 demonstrate effective planning
  - 5.5 develop strategies to deal with challenges and change
  - 5.6 make and apply informed decisions
  - 5.7 demonstrate the ability to reflect upon and learn from experience
  - 5.8 participate actively in planning, organizing, and conducting a school or community event
- 
- 6.1 describe the impact of globalism and the resultant changes in the competitive environment
  - 6.2 monitor the current economic and political environment globally and within Canada
  - 6.3 reflect critically on how social issues such as diversity, corporate social responsibility, and ethics are influencing the manager's role and style
  - 6.4 evaluate the impact of new concepts such as knowledge management, learning organizations, enterprise systems, and change management on the roles of managers and employees
- 
- 7.1 investigate a range of career opportunities
  - 7.2 determine the best personal fit for their skills within a business environment
  - 7.3 apply time, project, and change management concepts to personal and educational challenges
  - 7.4 develop e-portfolios to showcase personal attributes, skills, knowledge, and completed projects that identify and reflect progress toward achieving management and career goals
- 
- 8.1 develop and refine proposals
  - 8.2 identify information needs, then locate and evaluate resources
  - 8.3 share research and reflections
  - 8.4 set deadlines and develop work plans
  - 8.5 gather, organize, and synthesize information and ideas
  - 8.6 reflect on and assess their own learning and the learning of others
  - 8.7 use technology effectively to enhance their projects and presentations

# Business Technology 12

## Unifying Concepts

As a result of their learning experiences in Business Technology 12, students will be expected to

1. extend and apply their skills in document processing and desktop-publishing design
2. extend and apply their skills in creating and using spreadsheets to manage data and solve problems
3. use presentation software effectively and efficiently to organize and present ideas
4. create and manipulate data using a database management system
5. integrate software and explore and evaluate websites
6. explore the capabilities and limitations of current and emerging technologies

## Specific Curriculum Outcomes

Students will be expected to

### **Module 1: Advanced Document Processing / Desktop Publishing (25–30 hours)**

- 1.1 create professional looking documents using basic and advanced software features
- 1.2 develop and demonstrate desktop-publishing skills by applying advanced software features

### **Module 2: Advanced Spreadsheet Applications (20–25 hours)**

- 2.1 review the purpose, characteristics, and terminology associated with the use of spreadsheet application software
- 2.2 demonstrate an understanding of advanced spreadsheet concepts
- 2.3 create and format advanced charts to display information effectively

### **Module 3: Presentation Software (10–15 hours)**

- 3.1 identify the purpose, characteristics, and terminology associated with the use of presentation software
- 3.2 create, format, and edit slide presentations
- 3.3 enhance presentations using advanced features

### **Module 4: Database Management Systems (20–25 hours)**

- 4.1 identify the purpose, characteristics, and terminology associated with the use of database management systems
- 4.2 design and create database tables, forms, queries, and reports
- 4.3 retrieve and manipulate data to solve problems

**Module 5: Software Integration and Website Exploration/Evaluation (20 hours)**

- 5.1 integrate word processing, spreadsheet, database, and presentation software to solve a variety of business simulations or case studies
- 5.2 explore the principles of effective website design
- 5.3 explore and analyze content credibility of websites

**Module 6: Careers in Accounting**

- 6.1 explore practices used to protect computer data
- 6.2 investigate practices used to protect personal online identity
- 6.3 research emerging technologies

# Calculus 12

## General Curriculum Outcomes

- A. Students will demonstrate number sense and apply number-theory concepts.
- B. Students will demonstrate operation sense and apply operation principles and procedures in both numeric and algebraic situations.
- C. Students will explore, recognize, represent, and apply patterns and relationships, both informally and formally.
- D. Students will demonstrate an understanding of and apply concepts and skills associated with measurement.
- E. Students will demonstrate spatial sense and apply geometric concepts, properties, and relationships.
- F. Students will solve problems involving the collection, display, and analysis of data.
- G. Students will represent and solve problems involving uncertainty.

## Specific Curriculum Outcomes

Students will be expected to

### Limits and Continuity

- A1 apply, understand, and explain average and instantaneous rates of change and extend these concepts to secant line and tangent line slopes
- B1 calculate and interpret average and instantaneous rate of change
- B2 calculate limits for function values and apply the properties with and without technology
- B3 remove removable discontinuities by extending or modifying a function
- B4 apply the properties of algebraic combinations and composites of continuous functions
- C1 identify the intervals upon which a given function is continuous and understand the meaning of a continuous function
- C2 understand the development of the slope of a tangent line from the slope of a secant line
- C3 find the equations of the tangent and normal lines at a given point

### Derivatives

- A2 demonstrate an understanding of the definition of the derivative
- A3 demonstrate an understanding of implicit differentiation and identify situations that require implicit differentiation
- B5 find where a function is not differentiable and distinguish between corners, cusps, discontinuities, and vertical tangents
- B6 derive, apply, and explain power, sum, difference, product and quotient rules
- B7 apply the chain rule to composite functions
- B8 use derivatives to analyze and solve problems involving rates of change
- B9 apply the rules for differentiating the six trigonometric functions
- B10 (optional) apply the rules for differentiating the six inverse trigonometric functions
- B11 calculate and apply derivatives of exponential and logarithmic functions
- B12 (optional) apply Newton's method to approximate zeros of a function

- B13 estimate the change in a function using differentials and apply them to real world situations
- B14 solve and interpret related rate problems

### More Applications of Derivatives

- B15 demonstrate an understanding of critical points and absolute extreme values of a function
- B16 find the intervals on which a function is increasing or decreasing
- B17 solve application problems involving maximum or minimum values of a function
- C5 apply the First and Second Derivative Tests to determine the local extreme values of a function
- C6 determine the concavity of a function and locate the points of inflection by analyzing the second derivative
- B18 apply rules for definite integrals
- B19 apply the Fundamental Theorem of Calculus
- B20 compute indefinite and definite integrals by the method of substitution
- B21 (optional) apply integration by parts to evaluate indefinite and definite integrals
- B22 solve problems in which a rate is integrated to find the net change over time
- C8 understand the relationship between the derivative and the definite integral as expressed in both parts of the Fundamental Theorem of Calculus
- C9 construct antiderivatives using the Fundamental Theorem of Calculus
- C10 find antiderivatives of polynomials,  $e^{kx}$ , and selected trigonometric functions of  $kx$
- D1 apply and understand how Riemann's sum can be used to determine the area under a polynomial curve
- D2 demonstrate an understanding of the meaning of area under the curve
- D3 express the area under the curve as a definite integral
- D4 compute the area under the curve using numerical integration procedures
- D5 apply integration to calculate areas of regions in a plane
- B23 (optional) solve a differential equation of the form  $dy/dx = g(x)b(y)$ , in which the variables are separable
- B24 (optional) solve problems involving exponential growth and decay
- B25 (optional) apply Euler's method to find approximate solutions to differential equations with initial values
- C11 (optional) construct slope fields using technology and interpret them as visualizations of differential equations
- D6 (optional) apply integration (by slices or shells) to calculate volumes of solids

### The Definite Integral and its Applications

- B18 apply rules for definite integrals
- B19 apply the Fundamental Theorem of Calculus
- B20 compute indefinite and definite integrals by the method of substitution
- B21 (optional) apply integration by parts to evaluate indefinite and definite integrals
- B22 solve problems in which a rate is integrated to find the net change over time
- C8 understand the relationship between the derivative and the definite integral as expressed in both parts of the Fundamental Theorem of Calculus
- C9 construct antiderivatives using the Fundamental Theorem of Calculus
- C10 find antiderivatives of polynomials,  $e^{kx}$ , and selected trigonometric functions of  $kx$
- D1 apply and understand how Riemann's sum can be used to determine the area under a polynomial curve
- D2 demonstrate an understanding of the meaning of area under the curve
- D3 express the area under the curve as a definite integral
- D4 compute the area under the curve using numerical integration procedures

- D5 apply integration to calculate areas of regions in a plane
- B23 (optional) solve a differential equation of the form  $dy/dx = g(x)h(y)$ , in which the variables are separable
- B24 (optional) solve problems involving exponential growth and decay
- B25 (optional) apply Euler's method to find approximate solutions to differential equations with initial values
- C11 (optional) construct slope fields using technology and interpret them as visualizations of differential equations
- D6 (optional) apply integration (by slices or shells) to calculate volumes of solids

### **Techniques of Integration (optional)**

- B23 (optional) solve a differential equation of the form  $dy/dx = g(x)h(y)$ , in which the variables are separable
- B24 (optional) solve problems involving exponential growth and decay
- B25 (optional) apply Euler's method to find approximate solutions to differential equations with initial values
- C11 (optional) construct slope fields using technology and interpret them as visualizations of differential equations
- D6 (optional) apply integration (by slices or shells) to calculate volumes of solids



# Canadian Families 12

## Learning Outcomes

Students will be expected to

1. explore the mosaic of Canadian families through historical, present, future, and cultural perspectives
2. recognize the factors that contribute to family well-being
3. analyze the parenting skills, qualities, and responsibilities of families within Canadian society
4. explore the various issues encountered by family members supporting the emerging adult
5. examine the roles and responsibilities of individuals and society as family members age
6. investigate and examine the impact of issues that affect families

## Specific Curriculum Outcomes

Students will be expected to

### Unit 1: Images of Canadian Families

- 1.1 reflect on the roles and responsibilities of families
- 1.2 analyze the demographic trends of families and predict the implications for Canadian families and society
- 1.3 explore how Canadian families and Canadian society influence each other
- 1.4 develop a definition of family within the context of Canadian society
- 1.5 identify the possible stages of an individual's family life cycle

### Unit 2: The Foundation of Family Well-Being

- 2.1 explore the components and dynamics of which healthy personal relationships are comprised
- 2.2 identify factors of healthy personal relationships that might evolve into a family entity
- 2.3 analyze the trends of committed relationships and marriage as well as predict the implications for families in Canadian society
- 2.4 identify the spectrum of behaviours, qualities, and values that are foundational to healthy families and recognize their impact on setting family priorities
- 2.5 identify how personal and family wellness impacts an individual's ability to be a resilient member of Canadian society
- 2.6 recognize the benefits of contributing to family and community
- 2.7 identify and promote support systems within the community

### Unit 3: Expanding Families

- 3.1 analyze how the trends in family size influence Canadian families and society
- 3.2 explore the decisions involved in becoming a parent and nurturing children
- 3.3 identify the needs of children and how the needs can be met by the family unit
- 3.4 recognize changes in personal identity, relationships, expectations, and family life cycle as a result of parenting

- 3.5 explore how the role of parenting is shared within Canadian society
- 3.6 identify community/social support systems for families with children

#### **Unit 4: Transition to Independence**

- 4.1 analyze demographic trends of youth transitioning to adulthood and predict the implications for Canadian families and society
- 4.2 recognize the needs of and skills required by the emerging adult
- 4.3 apply Maslow's hierarchy to family needs through this transition
- 4.4 identify the role of family in developing citizenship skills
- 4.5 identify support resources for both the family and the emerging adult

#### **Unit 5: Families in Later Life**

- 5.1 analyze demographic trends of family members transitioning to later life and predict the implications for Canadian families and society
- 5.2 demonstrate an understanding of the complexities of aging
- 5.3 recognize attitudes of families towards seniors depending on family dynamics and culture
- 5.4 identify the community supports for the aging family

#### **Unit 6: Independent Study Project**

- 6.1 identify issues impacting families
- 6.2 complete an independent study project on a family related issue that reflects an understanding of family dynamics and development
- 6.3 reflect on and respond to issues shared by other students

# Canadian Literature 12

## General Curriculum Outcomes

Students will be expected to

1. select and read, with understanding, a range of Canadian literature
2. respond personally and critically to a range of Canadian literature, applying their understanding of language, form, and genre
3. demonstrate an understanding of identity, diversity, and voice as portrayed in Canadian literature, including their own writing

## Specific Curriculum Outcomes

Students will be expected to

- 1.1 select and read a range of Canadian literature including texts that support their special interests
- 1.2 experience poetry, short and long prose, and drama in Canadian literature
- 1.3 demonstrate knowledge about the geographical, historical, social, and cultural contexts of literary texts
  
- 2.1 explore and reflect on personal connections to Canadian literature
- 2.2 articulate and justify points of view about texts
- 2.3 examine how responses and interpretations reflect different reader perspectives
- 2.4 reflect on what their own responses reveal about their personal values and attitudes
- 2.5 examine how texts work to reveal and produce values, identities, and positions
- 2.6 describe, discuss, and evaluate the language, ideas, and other significant characteristics of a variety of texts and genres
  
- 3.1 identify recurring themes, values, and attitudes in texts
- 3.2 examine the reasons for and effects of a particular point of view
- 3.3 explore texts by entering imaginatively into the lives and situations of characters
- 3.4 explore and examine characters' development and characters' understanding of themselves

# Chemistry 12 / Advanced Chemistry 12

## General Curriculum Outcomes

### STSE

1. Students will develop an understanding of the nature of science and technology, of the relationships between science and technology, and of the social and environmental contexts of science and technology.

### Skills

2. Students will develop the skills required for scientific and technological inquiry, for solving problems, for communicating scientific ideas and results, for working collaboratively, and for making informed decisions.

### Knowledge

3. Students will construct knowledge and understandings of concepts in life science, physical science, and Earth and space science, and apply these understandings to interpret, integrate, and extend their knowledge.

### Attitudes

4. Students will be encouraged to develop attitudes that support the responsible acquisition and application of scientific and technological knowledge to the mutual benefit of self, society, and the environment.

## Specific Curriculum Outcomes

**Note:** Students in Advanced Chemistry 12 will be expected to achieve the outcomes for Chemistry 12 as well as those for Advanced Chemistry 12.

Students will be expected to

### Thermochemistry (20%) (Advanced, 15%)

#### Thermochemistry STSE

- analyze why scientific and technological activities take place in a variety of individual and group settings (117-6)
- analyze from a variety of perspectives the risks and benefits to society and the environment by applying thermochemistry (118-2)
- distinguish between questions that can be answered using thermochemistry and those that cannot, and between problems that can be solved by technology and those that cannot (118-8)
- compare the molar enthalpies of several combustion reactions involving organic compounds (324-7)

- write and balance chemical equations for combustion reactions of alkanes, including energy amounts (324-1)
- propose courses of action on social issues related to science and technology, taking into account an array of perspectives, including that of sustainability (118-10)

### Experiments with Energy Changes

- define endothermic reaction, exothermic reaction, specific heat, enthalpy, bond energy, heat of reaction, and molar enthalpy (324-2)
- calculate and compare the energy involved in changes of state in chemical reactions (324-3)
- design a thermochemistry experiment identifying and controlling major variables (212-3)
- work co-operatively with team members to develop and carry out thermochemistry experiments (215-6)
- evaluate and select appropriate instruments for collecting evidence and appropriate processes for problem solving, inquiring, and decision making (212-8)
- determine experimentally the changes in energy of various chemical reactions (324-6)
- analyze the knowledge and skills acquired in their study of thermochemistry to identify areas of further study related to science and technology (117-9)
- propose alternative solutions to solving energy problems and identify the potential strengths and weaknesses of each (214-15)

### Thermochemistry and Potential Energy

- illustrate changes in energy of various chemical reactions, using potential energy diagrams (324-5)
- compile and display evidence and information on heats of formation in a variety of formats, including diagrams, flow charts, tables, and graphs (214-3)

### Bonding and Hess's Law

- calculate the changes in energy of various chemical reactions using bond energy, heats of formation, and Hess's Law (324-4)
- apply one of the methods of predicting heats of reactions to your experimentally determined values (214-6)
- analyze and describe examples where technologies were developed based on understanding thermochemistry (116-4)

### Science Decisions Involving Thermochemistry

- describe the importance of peer review in the development of their knowledge about thermochemistry (114-5)
- use library and electronic research tools to collect information on a given topic (213-6)
- select and integrate information from various print and electronic sources or from several parts of the same source (213-7)
- identify multiple perspectives that influence a science-related decision or issue involving their thermochemistry project (215-4)

## **Solutions, Kinetics, and Equilibrium (35%) (Advanced, 30%)**

### **Concentration, Properties, and Solubility**

- compile and organize solution data, using appropriate formats and data treatments to facilitate interpretation of solubility (213-5)
- determine the molar solubility of a pure substance in water (323-6)

### **Solubility and Precipitates**

- explain the variations in the solubility of various pure substances, given the same solvent (323-7)
- use the solubility generalizations to predict the formation of precipitates (323-8)
- identify and explain sources of error and uncertainty (214-10)
- identify and describe science- and technology-based careers related to solutions and equilibrium (117-7)

### **Kinetics and Rate of Reaction**

- identify, through experiments and graphing, factors that affect the rate of the reaction (ACC-1)
- implement appropriate sampling procedures (213-1)

### **Collision Theory, Reaction Mechanisms, and Catalysts**

- describe collision theory and its connection to factors involved in altering reaction rates (ACC-2)
- describe a reaction mechanism and catalyst's role in a chemical reaction (ACC-3)

### **Equilibrium**

- compile and organize data, using appropriate formats and data treatments to facilitate interpretation of the data (213-5)
- define the concept of equilibrium as it pertains to solutions (323-3)

### **Le Châtelier's Principle and Equilibrium Constant**

- explain how different factors affect solubility, using the concept of equilibrium (323-5)
- develop appropriate sampling procedures for equilibrium expressions (212-9)
- explain solubility, using the concept of equilibrium (323-4)

### **Equilibrium Applications**

- analyze and describe examples where scientific understanding was enhanced or revised as a result of the invention of a technology (116-2)
- analyze and describe examples where technologies were developed based on scientific understanding (116-4)

## **Acids and Bases (25%) (Advanced, 20%)**

### **Properties and Definitions of Acids and Bases**

- describe and apply classification systems and nomenclature used in acids and bases (214-1)
- describe various acid-base definitions up to the Brønsted-Lowry definition (320-1)

- explain how acid-base theory evolves as new evidence and laws and theories are tested and revised, or replaced (115-7)
- explain the roles of evidence, theories, and paradigms in acid-base theories (114-2)

### Acid/Base Reactions

- predict products of acid-base reactions (320-2)
- identify new questions or problems that arise from what was learned (214-17)
- explain the importance of communicating the results of acid-base reactions using appropriate language and conventions (114-9)

### Using the Equilibrium Concept with Acids and Bases

- identify a line of best fit on a scatter plot and interpolate or extrapolate based on the line of best fit (214-4)
- select and use apparatus and materials safely (213-8)
- demonstrate a knowledge of WHMIS standards by selecting proper techniques for handling and disposing of materials (213-9)
- state a prediction and a hypothesis based on available evidence and background information (212-4)
- compare strong and weak acids and bases using the concept of equilibrium (320-3)
- calculate the pH of an acid or a base given its concentration, and vice versa (320-4)

### Indicators and Acids and Bases

- explain how acid-base indicators function (320-7)
- analyze and describe examples where acid-base understanding was enhanced as a result of using titration curves (116-2)

### Acid/Base Titrations

- determine the concentration of an acid or base solution using stoichiometry (320-6)
- use instruments effectively and accurately for collecting titration data (213-3)
- interpret patterns and trends in data, and infer or calculate relationships among variables from titration data (214-5)
- work co-operatively with team members to develop and carry out a plan for a titration experiment, and troubleshoot problems as they arise (215-6)
- evaluate and select appropriate instruments for collecting evidence and appropriate processes for titrations (212-8)
- select and use appropriate numeric, symbolic, graphical, and linguistic modes of representation to communicate ideas, titrations, and results (215-2)

### H<sup>+</sup>, OH<sup>-</sup>, and Le Châtelier

- describe the interactions between H<sup>+</sup> ions and OH<sup>-</sup> ions using Le Châtelier's principle (320-5)
- analyze society's influence on acid and base scientific and technological endeavours (117-2)
- construct arguments to support a decision using examples and evidence and recognizing various perspectives (118-6)
- identify and describe science- and technology-based careers related to acids and bases (117-7)

## **Electrochemistry (20%) (Advanced, 15%)**

### **Oxidation and Reduction**

- identify questions to investigate that arise from practical problems and issues on redox (212-1)
- distinguish between scientific questions and technological problems (115-1)
- define oxidation and reduction experimentally and theoretically (322-1)

### **Redox and Half-Reactions**

- compare oxidation-reduction reactions with other kinds of reactions (322-3)
- write and balance half-reactions and net reactions (322-2)

### **Electrochemical and Electrolytic Cells**

- describe and evaluate the design of chemical cells and the way they function, including the technological and scientific principles (116-6)
- define problems regarding experimental designs for cells and evaluate the processes used in problem solving and decision making (215-7, 212-2)
- illustrate and label the parts of electrochemical and electrolytic cells and explain how they work (322-4)
- select and use apparatus and materials safely for electrochemistry experiments (213-8)
- evaluate a personally designed and constructed cell on the basis of criteria they have developed themselves (214-16)
- design an experiment identifying and controlling major variables (212-3)
- formulate operational definitions of major variables (212-7)

### **Redox Reactions with Standard Reduction Potentials**

- predict whether oxidation-reduction reactions are spontaneous based on their reduction potentials (322-5)
- predict the voltage of various electrochemical cells (322-6)
- compare theoretical and experimental reduction potential values and account for discrepancies (214-7)
- evaluate the reliability of data and data collection methods involving reduction potentials (214-8)

### **Energy Efficiency of Cells**

- compare electrochemical and electrolytic cells in terms of energy efficiency, electron flow/transfer, and chemical change (322-7)
- explain the processes of electrolysis and electroplating (322-8)
- evaluate the design of a technology and the way it functions on the basis of a variety of criteria that they have identified themselves (118-4)
- explain how electrical energy is produced in a hydrogen fuel cell (322-9)
- analyze natural and technological systems to interpret and explain their structure and dynamics (116-7)
- identify and evaluate potential applications of findings (214-18)



## Advanced Chemistry 12 Outcomes

### In-depth Treatment (completed within the units)

- calculate and compare the energy involved in changes in state in chemical reactions (324-3)
- analyze the knowledge and skills acquired in their study of thermochemistry to identify areas of further study related to science and technology (117-9)
- calculate the changes in energy of various chemical reactions using bond energy, heats of formation, and Hess's Law (324-4)
- determine the molar solubility of a pure substance in water (323-6)
- describe a reaction mechanism and catalyst's role in a chemical reaction (ACC-3)
- describe and apply classification systems and nomenclature used in acids and bases (214-1)
- describe various acid-base definitions up to the Brønsted-Lowry definition (320-1)
- calculate the pH of an acid or base given its concentration, and vice versa (320-4)
- predict whether oxidation-reduction reactions are spontaneous based on their reduction potentials (322-5)
- explain the process of electrolysis and electroplating (322-8)

### Literature Search and Report (5%)

- collect, organize, edit, and present a summary of current information related to a specific topic (AC-03)
- write a report as a formal research paper (AC-04)

### Investigation: An Independent Study/Experiment (15%)

- collaborate on and investigate an independent research project (AC-07)
- maintain a research log, including personal reflection and data collection (AC-08)
- use technology and apply skills effectively to communicate results publically (AC-09)

# Communications Technology 12

## General Curriculum Outcomes

Students will be expected to

1. design, develop, evaluate, and articulate technological solutions
2. evaluate and manage technological systems
3. demonstrate an understanding of the history and evolution of technology, and of its social and cultural implications
4. demonstrate an understanding of current and evolving careers and of the influence of technology on the nature of work
5. demonstrate an understanding of their personal responsibility in determining the future

## Specific Curriculum Outcomes

Students will be expected to

### **Module 1: Fundamentals of Communications Technology (mandatory threading outcomes)**

- 1.8 investigate modern and future forms of communication and predict futuristic career options in communications technology
- 1.9 generate a digital professional portfolio representing a collection of advanced work completed throughout the course using the design process
- 1.10 design, create, and transport solutions to design problems that can entertain a variety of target audiences using a variety of electronic communications tools
- 1.11 examine and analyze solutions to communications technology problems
- 1.12 create a design improvement to the life-cycle analysis of an electronic communication device
- 1.13 establish a safe practice policy for one or more communication technology processes within the classroom laboratory

### **Module 2: Digital Photography (mandatory module)**

- 2.5 control light using advanced manual settings of a camera and existing light photography methods
- 2.6 demonstrate an understanding of photojournalism
- 2.7 demonstrate an understanding of manipulating raw images from cameras that support it
- 2.8 practice a variety of professional applications of photography

Choose three modules of the following six.

### **Module 3: Technical Design**

- 3.4 demonstrate an understanding of basic plan views and elevation views of an object or structure
- 3.5 use mechanical and technical communication language and symbols to create and illustrate a digital solid model
- 3.6 create advanced geometric constructions through digital techniques

### **Module 4: Graphic Design**

- 4.6 design, create, and transport digital images for specific communication purposes
- 4.7 distinguish between vector and raster objects
- 4.8 solve visual communication problems using appropriate elements, colours, typography, and principles of design

### **Module 5: Web Publishing**

- 5.5 plan, design, create, and publish a web site to a network in a school-based Intranet
- 5.6 create and write web-based forms
- 5.7 develop motion graphics and presentations for web use

### **Module 6: Video Production**

- 6.5 create, edit, and distribute web appropriate video
- 6.6 capture high-quality sound for a video
- 6.7 incorporate narration or voice-over into a video
- 6.8 incorporate dramatic lighting into a video

### **Module 7: Broadcasting**

- 7.6 demonstrate an understanding of how satellite technology affects them
- 7.7 communicate a message through script writing for specific broadcasting applications
- 7.8 demonstrate an understanding of broadcasting frequencies and bandwidth
- 7.9 use and operate broadcasting equipment to produce a broadcast or series of broadcasts for a specific purpose

### **Module 8: Animation**

- 8.4 create a storyboard to plan and communicate an animation sequence
- 8.5 create a two-dimensional (2-D) or three-dimensional (3-D) digital animation that has a purpose and message
- 8.6 insert sound into a digital animation

# Computer Programming 12

## Unifying Concepts

Students will be expected to

1. understand and apply the basic skills and processes of problem solving using computer programming
2. identify problems, select effective strategies, and plan solutions
3. apply programming techniques to develop solutions to a range of problems
4. work collaboratively to define and solve a realistic problem by creating a solution

## Specific Curriculum Outcomes

Students will be expected to

### Module 1: Problem Solving in Computer Programming

- 1.1 demonstrate an understanding of the role of number systems in data storage
- 1.2 apply mathematical concepts, including Boolean logic and operators
- 1.3 define a problem in explicit terms using object-orientated analysis
- 1.4 identify and outline strategies to solve a range of problems
- 1.5 apply a range of problem-solving skills
- 1.6 demonstrate an understanding of ethical, moral, and legal issues in information technology
- 1.7 investigate a range of related career opportunities

### Module 2: Fundamentals of Programming

- 2.1 demonstrate an understanding of the syntax and features of a programming language
- 2.2 identify and frame problems
- 2.3 demonstrate an understanding of how data structures are used to solve problems
- 2.4 use appropriate methods and terms to develop a plan to solve a problem
- 2.5 apply and plan to solve a problem using a programming language
- 2.6 demonstrate an understanding of the effectiveness of other people's programs and documentation

### Module 3: Applied Problem Solving

- 3.1 work individually and collaboratively to develop program tools, components, and strategies to create solutions
- 3.2 create a user interface using effective design principles
- 3.3 apply input/output operations
- 3.4 apply data-manipulation techniques
- 3.5 apply data-formatting principles
- 3.6 apply error-handling techniques/validation

## **Module 4: Project Development**

- 4.1 analyze a problem
- 4.2 develop a project plan, including definition, scope, roles, resources, steps, and deadlines, for a solution
- 4.3 demonstrate the collaborative skills and behaviours required to work with others
- 4.4 identify information needs and locate, evaluate, and select resources
- 4.5 build and deploy a solution
- 4.6 create documentation associated with the project
- 4.7 test and refine the solution
- 4.8 present the solution
- 4.9 reflect on the solution, the process, and their own learning
- 4.10 explore various educational and career paths in information technology fields

# Drama 12: Theatre Arts

## General Curriculum Outcomes

Students will be expected to

### Creating, Making, and Presenting

1. explore, challenge, develop, and express ideas using the skills, language, techniques, and processes of the arts
2. create and/or present, collaboratively and independently, expressive products in the arts for a range of audiences and purposes

### Understanding and Connecting Contexts of Time, Place, and Community

3. demonstrate critical awareness of and value the role of the arts in creating and reflecting culture
4. respect the contributions of individuals and cultural groups to the arts in local and global contexts and value the arts as a record of human experience and expression
5. examine the relationship among the arts, societies, and environments

### Perceiving and Responding

6. apply critical thinking and problem solving strategies to reflect on and respond to their own and others' expressive work
7. understand the role of technologies in creating and responding to expressive works
8. analyze the relationship between artistic intent and the expressive work

## Specific Curriculum Outcomes

Students will be expected to

CM 1.1 express, develop, challenge, and communicate ideas through their participation in theatrical production, as actors, writers, directors, technicians, and other production team members

CM 1.2 improvise and create original script that reveals character and theme based on personal experience, heritage, imagination, literature, and history

CM 2.1 develop and refine theatrical production for presentation

CM 2.2 demonstrate that theatrical production is a collaborative effort of the entire production team, respecting the ideas and contributions of everyone involved

CM 2.3 develop and apply individual skills within the production team

UC 3.1 demonstrate an understanding of historical and cultural influences on theatrical production

UC 3.2 analyze selected career opportunities by identifying the necessary skills and training required

UC 3.3 analyze, understand, and value the influence of drama in creating and reflecting culture

- UC 4.1 demonstrate an understanding of the role of drama as a record of human experience as it connects to their own lives
- UC 4.2 use cultural, historical, and political information to solve problems and make dramatic choices, articulating reasons for their choices
- UC 4.3 respect the integrity of various cultural groups and their contribution to drama in the global community
  
- UC 5.1 interpret and perform theatrical work that promotes and challenges their own ideas and the ideas of others, the community, and society
- UC 5.2 demonstrate an understanding of the importance of physical space and technology in creating environments for theatrical production
- UC 5.3 demonstrate an understanding of how drama clarifies and influences issues and events in local and global contexts
- UC 5.4 demonstrate an understanding that theatrical production integrates all art forms
  
- PR 6.1 explore, present, and evaluate solutions to a range of problems relating to theatrical production
- PR 6.2 review and critique presentations and interpretations of dramatic works, using appropriate terminology
- PR 6.3 demonstrate the interdependence of all elements of theatrical production
  
- PR 7.1 analyze and make choices about different media for dramatic effect and articulate reasons for their choices
- PR 7.2 select, use, and critique a range of technical elements and technologies in their theatrical productions
  
- PR 8.1 analyze the responsibilities of all members of the production team in relation to the author's intentions
- PR 8.2 observe and reflect on an actor's performance, and compare the portrayal to the intended role
- PR 8.3 compare the ways in which theatre, dance, visual arts, and music can be used to realize artistic intent

# English 12 / English/Communications 12

## English 12: African Heritage /

## Advanced English 12

### General Curriculum Outcomes

Students will be expected to

#### Speaking and Listening

1. speak and listen to explore, extend, clarify, and reflect on their thoughts, ideas, feelings, and experiences
2. communicate information and ideas effectively and clearly, and to respond personally and critically
3. interact with sensitivity and respect, considering the situation, audience, and purpose

#### Reading and Viewing

4. select, read, and view with understanding a range of literature, information, media, and visual texts
5. interpret, select, and combine information using a variety of strategies, resources, and technologies
6. respond personally to a range of texts
7. respond critically to a range of texts, applying their understanding of language, form, and genre

#### Writing and Other Ways of Representing

8. use writing and other ways of representing to explore, clarify, and reflect on their thoughts, feelings, experiences, and learnings; and to use their imaginations
9. create texts collaboratively and independently, using a variety of forms for a range of audiences and purposes
10. use a range of strategies to develop effective writing and other ways of representing and to enhance their clarity, precision, and effectiveness

### Specific Curriculum Outcomes

**Note:** Students in Advanced English 12 courses are required to achieve the outcomes for English 12 in addition to the outcomes for Advanced English 12.

Students will be expected to

- 1.1 examine others' ideas and synthesize what is helpful to clarify and expand on their own understanding
- 1.2 ask discriminating questions to acquire, interpret, analyze, and evaluate ideas and information
- 1.3 articulate, advocate, and justify positions on an issue or text in a convincing manner, showing an understanding of a range of viewpoints
- 1.4 listen critically to analyze and evaluate concepts, ideas, and information



- 2.1 interact in both leadership and support roles in a range of situations, some of which are characterized by complexity of purpose, procedure, and subject matter
- 2.2 adapt language and delivery for a variety of audiences and purposes in informal and formal contexts, some of which are characterized by complexity of purpose, procedure, and subject matter
- 2.3 respond to a wide range of complex questions and directions
- 2.4 reflect critically on and evaluate their own and others' uses of language in a range of contexts, recognizing elements of verbal and nonverbal messages that produce powerful communication
  
- 3.1 consistently demonstrate active listening and concern for the needs, rights, and feelings of others
- 3.2 demonstrate how spoken language influences and manipulates, and reveals ideas, values, and attitudes
- 3.3 address the demands of a variety of speaking situations, making critical language choices, especially of tone and style
  - express individual voice, enabling them to remain engaged, but be able to determine whether they will express themselves or remain silent
  
- 4.1 select texts to support their learning needs and range of special interests
- 4.2 read widely and experience a variety of literary genre and modes from different provinces and countries, and world literature from different literary periods
- 4.3 articulate their understanding of ways in which information texts are constructed for particular purposes
- 4.4 use the cueing systems and a variety of strategies to construct meaning in reading and viewing complex and sophisticated print and media texts
- 4.5 articulate their own processes and strategies in exploring, interpreting, and reflecting on sophisticated texts and tasks
  
- 5.1 access, select, and research, in systematic ways, specific information to meet personal and individual learning needs
  - use the electronic network and other sources of information, in ways characterized by complexity of purpose, procedure, or subject matter
  - evaluate their research processes
  
- 6.1 make informed personal responses to increasingly challenging print and media texts and reflect on their responses
  - make connections between their own values, beliefs, and cultures and those reflected in literary and media texts
  - analyze thematic connections among texts and articulate an understanding of the universality of many themes
  - demonstrate a willingness to explore diverse perspectives to develop or modify their points of view
  
- 6.2 articulate and justify points of view about texts and text elements
  - interpret ambiguities in complex and sophisticated texts
  
- 7.1 critically evaluate the information they access
- 7.2 show the relationships among language, topic, purpose, context, and audience
  - note the relationship of specific elements of a particular text to elements of other texts
  - describe, discuss, and evaluate the language, ideas, and other significant characteristics of a variety of texts and genres

- 7.3 respond critically to complex and sophisticated texts
  - examine how texts work to reveal and produce ideologies, identities, and positions
  - examine how media texts construct notions of roles, behaviour, culture, and reality
  - examine how textual features help a reader and viewer to create meaning of the texts
- 8.1 use writing and other ways of representing to explore, extend, and reflect on
  - their experiences with and insights into challenging texts and issues
  - the writing processes and strategies they use
  - their achievements as language users and learners
  - the basis for their feelings, values, and attitudes
- 8.2 use note-making strategies to reconstruct increasingly complex knowledge
  - explore the use of photographs, diagrams, storyboards, etc., in documenting experiences
- 8.3 make effective choices of language and techniques to enhance the impact of imaginative writing and other ways of representing
- 9.1 produce writing and other forms of representation characterized by increasing complexity of thought, structure, and conventions
- 9.2 demonstrate an understanding of the ways in which the construction of texts can create, enhance, or control meaning
  - make critical choices of form, style, and content to address increasingly complex demands of different purposes and audiences
- 9.3 evaluate the responses of others to their writing and media production
- 10.1 apply their knowledge of what strategies are effective for them as creators of various writing and other representations
- 10.2 use the conventions of written language accurately and consistently in final products
- 10.3 use technology effectively to serve their communication purposes
  - design texts that they find aesthetically pleasing and useful
- 10.4 demonstrate a commitment to the skilful crafting of a range of writing and other representations
- 10.5 integrate information from many sources to construct and communicate meaning

### **Advanced English 12 Outcomes (Draft)**

- AE1.1 practise effective speaking and listening skills to examine and reflect on the thought embodied in the spoken language of others
- AE1.2 demonstrate in their interactions an understanding of the cultural and critical reasons for their own viewpoint and those of others
- AE2.1 articulate the elements needed for effective participation in various learning contexts (large groups, small groups)
- AE2.2 listen critically and respond thoughtfully to complex questions, concepts, ideas, and information
- AE2.3 manipulate language to communicate ideas and demonstrate an understanding of how this manipulation produces more powerful communication
- AE2.4 demonstrate fluency in communicating in formal contexts dependent on purpose and audience
- AE2.5 exhibit extended vocabulary and verbal expression

- AE3.1 describe the impact of subtle differences in word choices and tone
- AE3.2 demonstrate ability to engage in discussions about complex and controversial issues
- AE3.3 recognize the power of formal and informal language as it relates to race, gender, culture, and class (e.g., primary and secondary discourses)
- AE4.1 select texts independently to supplement those used in the classroom
- AE4.2 select challenging texts to support their learning needs and special interests
- AE4.3 select texts to increase their range of interest
- AE4.4 refine and extend their own processes and strategies in exploring, interpreting, and reflecting on sophisticated texts and tasks
- AE5.1 critically evaluate information, assessing the suitability, reliability, and credibility of language, form, genre, and source
- AE5.2 understand and appreciate the expectations of research ethics
- AE6.1 investigate reasons for their responses to texts as individuals and as members of a socio-cultural group
- AE7.1 evaluate the political, social, cultural, and emotional connotations embedded in language
- AE7.2 evaluate and respond to the artful use of language in a variety of texts
- AE8.1 demonstrate an understanding of the value of writing to extend thinking
- use metacognition to extend thinking and reflect on the writing process
  - understand that writing is a way of thinking deeply
- AE8.2 demonstrate an understanding of the value of other ways of representing to reflect insightful understandings of texts and issues
- AE8.3 demonstrate an understanding of the similarities and differences among challenging texts and issues
- AE8.4 communicate insight into and empathy for the diversity of the human experience
- AE9.1 effectively defend an interpretation of a text or issue
- AE9.2 develop, revise, and publish texts for purposes and audiences outside of the classroom
- AE10.1 create and support a scholarly thesis with appropriate evidence
- AE10.2 demonstrate proficiency in matters of correctness and stylistic choice in a range of genres or forms

# Entrepreneurship 12

## Learning Outcomes

Students will be expected to

1. demonstrate a clear understanding of entrepreneurship and recognize their own and others' entrepreneurial characteristics and potential
2. generate ideas and identify entrepreneurial opportunities
3. develop and implement strategies to set and attain entrepreneurial goals
4. demonstrate a basic understanding of the role of entrepreneurship in local, national, and international economies
5. plan, implement, and evaluate a business or venture
6. demonstrate an understanding of the role of technology and its application to entrepreneurship
7. demonstrate the personal qualities and characteristics of successful entrepreneurs

## Specific Curriculum Outcomes

Students will be expected to

### Understanding Entrepreneurship

- 1.1 articulate a broad notion of entrepreneurship
- 1.2 communicate and demonstrate some of the main characteristics of a successful entrepreneur
- 1.3 assess their own entrepreneurial characteristics
- 1.4 recognize, value, and draw upon, as appropriate, the entrepreneurial talents and skills of others
- 1.5 understand and develop characteristics that they identify as being necessary to their success
- 1.6 identify specific indicators of success in their own and others' ventures

### Opportunity Knocks

- 2.1 brainstorm ideas for business and venture opportunities
- 2.2 gather information, evaluate entrepreneurial ideas for a business or venture, and make informed decisions
- 2.3 use a variety of analytical tools to assess the financial viability of an entrepreneurial activity
- 2.4 select, evaluate, and defend appropriate research methods for assessing the feasibility of a business or venture
- 2.5 identify legal and ethical considerations that impact on a business or venture

### Paving the Way

- 3.1 demonstrate effective planning
- 3.2 demonstrate the ability to develop strategies to deal with challenges
- 3.3 make and implement informed decisions
- 3.4 demonstrate the ability to reflect on and learn from experience
- 3.5 demonstrate a clear understanding of the values of a business plan

## **Making Connections**

- 4.1 analyze connections among political, economic, environmental, and social issues
- 4.2 explore the impact of entrepreneurship on local, national, and international economies
- 4.3 reflect critically on ethical issues related to entrepreneurship activities
- 4.4 recognize the relationship among local, national, and international markets
- 4.5 identify the potential for local businesses or ventures in the global market
- 4.6 reflect critically on ethical issues related to entrepreneurship activities
- 4.7 identify trends that influence the marketplace

## **Diving In**

- 5.1 prepare and present a plan to implement a business or venture
- 5.2 identify the criteria for assessing and evaluating the success of a business or venture
- 5.3 demonstrate a creative, resourceful approach in seeking the resources to start a business or venture
- 5.4 identify alternative funding sources for a business or venture
- 5.5 implement a business or venture
- 5.6 track the finances involved in their business venture
- 5.7 apply basic business skills such as bookkeeping, accounting management, finance, and human resources
- 5.8 demonstrate a commitment to ethical behaviour when developing and operating a business or venture
- 5.9 explain the role of financial institutions in supporting businesses and ventures
- 5.10 review and reflect upon the business or venture experience
- 5.11 share with peers the results of the business or venture experience
- 5.12 negotiate assessment and evaluation of their business

## **Technology and Entrepreneurship**

- 6.1 demonstrate an understanding of the role of technology in business
- 6.2 demonstrate the ability to use technology in an entrepreneurial activity
- 6.3 identify opportunities in technology-related businesses
- 6.4 use the Internet for business purposes

## **Putting It All Together**

- 7.1 apply teamwork skills to solve a business problem
- 7.2 assess how personal attributes influence the success of a venture
- 7.3 establish and use criteria to evaluate group processes and their own roles and contributions to the group process
- 7.4 reflect critically on ethical issues related to entrepreneurship activities
- 7.5 identify the roles of leadership and teamwork in entrepreneurial activities
- 7.6 demonstrate collaboration and consultation with others in entrepreneurial activities

# Film and Video Production 12

## General Curriculum Outcomes

Students will be expected to

1. demonstrate a basic understanding of key aspects of film and television drama including roles and responsibilities of production team members
2. develop basic strategies for creating and critically reviewing films
3. examine cultural/historical influences on the local and national film industries, consider career opportunities, and collaborate with industry personnel
4. demonstrate their abilities, skills, and techniques in every aspect of the development of their own short films

## Specific Curriculum Outcomes

Students will be expected to

### Module 1: Fundamentals

- 1.1 describe the film process from pre-production, through production, to post-production
- 1.2 identify the roles and responsibilities of each member of the production team
- 1.3 demonstrate an understanding of the support that each production element lends to the entire creative endeavour
- 1.4 demonstrate an understanding of and ability to use basic screen production terminology
- 1.5 identify key elements of story as expressed in film
- 1.6 identify all the production elements in a short movie that require attention from production team members
- 1.7 demonstrate basic technical abilities with camera, sound, lighting, and editing
- 1.8 participate in the process of writing and shooting a short movie

### Module 2: Production Team Skills

- 2.1 explore a range of roles within the production team
- 2.2 demonstrate a working knowledge of the responsibilities of the producer, director, camera operator, sound/music technician, editor, and production designer
- 2.3 demonstrate specific functions within their assigned role(s)
- 2.4 analyze short scenes, character histories, and movie reviews in order to create their own works
- 2.5 analyze characters and scenes and work with actors in the role of director
- 2.6 demonstrate an understanding of the operation of a video camera and anticipate and convey any technical difficulties
- 2.7 operate sound equipment and record sound scores for scenes
- 2.8 express thoughts, experiences, and feelings through acting and collaborating with the creative production team
- 2.9 demonstrate a working knowledge of the editing process

### **Module 3: Film Industry and Careers**

- 3.1 develop an overview of film and video production in Nova Scotia and in the broader Canadian context
- 3.2 analyze the impact of provincial and national organizations on the industry
- 3.3 demonstrate a critical awareness of the social/cultural impact of film and television on today's society
- 3.4 explore various educational and career paths in film and television production available locally and nationally

### **Module 4: Film Development and Production**

- 4.1 demonstrate an understanding of the script-to-screen process from research to the final production
- 4.2 in their specific roles, manage logistical, creative, technical, and/or promotional aspects of a movie
- 4.3 demonstrate an understanding of story structure and the scriptwriting process
- 4.4 manage all logistical, creative, technical, and promotional aspects of the production of a film
- 4.5 interact with sensitivity to and respect for their own work and that of other team members
- 4.6 manipulate ideas, tools, and materials in expressing their understanding
- 4.7 bring personal meaning to and communicate discoveries by reflecting on their learnings at the end of each video assignment and at the end of the course

# Food Science 12

## Specific Curriculum Outcomes

Students will be expected to

### **Food Constituents (25%)**

#### **Food Constituents**

- 1.1 identify and describe science- and technology-based careers related to food science
- 1.2 analyze a food package ingredient listing

#### **Carbohydrates**

- 1.3 explain and describe the function/properties of other starches, including carbohydrates and cellulose, pectins, and gums

#### **Lipids**

- 1.4 identify and describe the properties and functions of lipids

#### **Proteins**

- 1.5 describe the structure of proteins found in various foods, including essential amino acids

#### **Water and Other Constituents in Food**

- 1.6 summarize the functions of water in food preparation and food development
- 1.7 explain the functions and basic properties of emulsifiers, organic acids, vitamins, enzymes, antioxidants, colour, and flavour
- 1.8 design an experiment, identify specific variables, and perform it

### **Preservation Factors (25%)**

#### **Food Microbiology and Food Safety: Fermentation Microbiology**

- 2.1 explain how the metabolism of microorganisms introduce new desirable flavours, ingredients, and physical properties to the foods

#### **Food Microbiology and Food Safety: Preservation Microbiology**

- 2.2 explain food spoilage in terms of the growth of microorganisms (appearance of off-flavours, off-odours, slime, visible growth)
- 2.3 describe the role that processing and food additives play in eliminating, inhibiting, or delaying the growth of spoilage microorganisms



**Food Microbiology and Food Safety: Food Safety Microbiology**

- 2.4 explain simple measures that can be taken to keep foods safe
- 2.5 explain how viruses, bacteria, moulds, and parasites can cause disease

**Evolution of Food Preservation**

- 2.6 explain practical methods of food preservation

**Cooling**

- 2.7 explain the use of chilling and cold storage of fresh foods in terms of preservation

**Heating**

- 2.8 identify and give examples of the different types of high temperature cooking

**Fermentation**

- 2.9 describe the fermentation process and make a fermented product

**Drying Processing Techniques**

- 2.10 explain what water activity is, why it is important, and how it can be controlled

**Food Quality and Commodities (25%)****Food Commodities**

- 3.1 analyze the properties of specific food commodities
- 3.2 select and use different resources and materials to collect information about their commodity
- 3.3 devise and conduct an experiment on their commodity

**Food Quality**

- 3.4 identify psychological factors used to market and develop food products
- 3.5 collect and compare sensory data

**Product Development—Schemes and Stages**

- 3.6 explain how well a product is designed to meet consumer wishes

**Food Packaging (25%)****Food Packaging and Food Labels**

- 4.1 explain the functions and considerations for food packaging
- 4.2 identify and explain the information required for labels on food products made in Canada

**New Food Product**

- 4.3 design, develop, make, and present a food product identifying and anticipating major variables that may impact on the final quality of the product

# Food Studies and Hospitality 12

## Learning Outcomes

Students will be expected to

1. demonstrate knowledge of safety and sanitation procedures within the professional food service operation
2. understand and apply literacy and numeracy skills to professional food service operations
3. describe and apply their knowledge to the basic operation of a professional kitchen
4. demonstrate basic skills in food and beverage service
5. compare and contrast cooking methods as applied to various foods
6. recognize and apply the principles of good menu planning
7. research and relate to developments and/or trends in the food service industry
8. identify the life-work benefits of developing skills in food production

## Specific Curriculum Outcomes

Students will be expected to

### Unit 1: Food and Kitchen Safety

- 1.1 complete basic certification in first aid, food handling, and WHMIS
- 1.2 demonstrate safe work methods and proficiency in operating standard tools and equipment within a professional food service operation
- 1.3 develop teamwork skills within the food service operation
- 1.4 model and maintain professional deportment and personal hygiene while working in a food service operation
- 1.5 demonstrate an understanding of food intolerances in food preparation and service

### Unit 2: Kitchen Literacy and Numeracy

- 2.1 interpret, modify, and convert recipes
- 2.2 accurately use proper terminology and techniques when performing food measurement and conversions
- 2.3 have a basic knowledge of the cost of food as it relates to the recipe

### Unit 3: Professional Kitchen Organization

- 3.1 identify the various types of professional kitchen organizations and how they operate
- 3.2 effectively operate, maintain, and store kitchen tools and equipment

### **Unit 4: Food and Beverage Service**

- 4.1 recognize the connection between the production and service of food
- 4.2 identify and demonstrate different types of table settings and service
- 4.3 respond to customer needs in a professional manner
- 4.4 recognize the importance of menu knowledge
- 4.5 practise skills related to customer service

### **Unit 5: Fundamentals of Cooking**

- 5.1 recognize and use kitchen staples and ingredients
- 5.2 demonstrate time and resource management skills
- 5.3 demonstrate basic food preparation skills
- 5.4 demonstrate an understanding of the basic principles of cooking food
- 5.5 choose and apply appropriate cooking methods to various types of food
- 5.6 identify and practise healthy methods of food preparation
- 5.7 participate in sensory evaluation of food

### **Unit 6: Menu Planning**

- 6.1 identify different types of food service establishments and their corresponding menus
- 6.2 recognize the relationship between target clientele and menu offerings
- 6.3 recognize the factors that affect the selection of menu items

### **Unit 7: Food for Thought**

- 7.1 reflect on the factors that affect change in the food industry
- 7.2 demonstrate their knowledge of a food trend/development through research and presentation

### **Unit 8: Work Experience / Job Shadow / Co-operative Education**

- 8.1 participate in a work placement in the food hospitality industry
- 8.2 participate in career exploration activities related to the food hospitality industry
- 8.3 complete the appropriate reporting documents for their work placement as required by Department of Education *Community-Based Learning Policy and Guidelines*

# Français de base 10<sup>e</sup> à 12<sup>e</sup> année

Au fur et à mesure que les élèves progressent, tous les résultats d'apprentissages spécifiques seront accompli avec moins de besoin de soutien pédagogique, c'est-à-dire de manière indépendante. Veuillez vous référer aux tableaux des pages 20 à 23 du guide pédagogique *Français de base au secondaire 2<sup>e</sup> cycle – 2003* pour un aperçu global des résultats d'apprentissage spécifiques pour le français de base 10<sup>e</sup> à 12<sup>e</sup> année.

**RAG Communication :** L'élève devrait être capable de communiquer en français de façon efficace et devrait être capable d'interagir de façon appropriée dans une variété de situations reliées à ses besoins et à ses intérêts.

- 1.1 négocier pour comprendre
- 1.2 collaborer avec tout le monde
- 1.3 donner des conseils
- 1.4 initier, entretenir, démontrer qu'il écoute activement
- 1.5 encourager l'interlocuteur
- 1.6 conclure une conversation
- 1.7 organiser son discours de façon cohérente et cohésive
- 1.8 élaborer des descriptions et des comparaisons
- 1.9 présenter son point de vue de façon logique
- 1.10 défendre son point de vue
- 1.11 formuler ses opinions de façons diverses
- 1.12 persuader, argumenter
- 1.13 varier son niveau de langue selon l'auditoire
- 1.14 interviewer des pairs et des adultes
- 1.15 participer à des interviews
- 1.16 jouer des rôles
- 1.17 participer à des débats
- 1.18 participer à un groupe de discussion électronique
- 1.19 mener une discussion de classe
- 1.20 animer un atelier
- 1.21 chercher et évaluer de l'information
- 1.22 sélectionner de l'information pertinente
- 1.23 organiser l'information
- 1.24 interpréter et analyser de l'information
- 1.25 raconter des histoires
- 1.26 donner des comptes-rendus
- 1.27 donner des discours
- 1.28 respecter l'ordre des idées
- 1.29 respecter le sens
- 1.30 utiliser ses propres mots
- 1.31 écrire un journal de rétroaction
- 1.32 dessiner, mimer, dramatiser
- 1.33 planifier, organiser et évaluer un portfolio
- 1.34 composer des chansons, des poèmes
- 1.35 rédiger, par exemple, des annonces, des éditoriaux, des critiques, des lettres
- 1.36 prendre des notes
- 1.37 remplir des formulaires

- 1.38 écrire un journal de bord
- 1.39 faire des reportages
- 1.40 créer des affiches

**RAG Culture :** L'élève devrait être capable de démontrer une appréciation des cultures francophones tout en les comparant à sa propre culture et devrait être capable de démontrer une compréhension des liens entre la culture, la langue et l'identité dans le contexte multiculturel du Canada.

- 2.1 rédiger et présenter le profil d'un pays ou d'une région francophone
- 2.2 comparer d'autres régions francophones avec le Canada
- 2.3 faire une comparaison des perspectives adolescentes des milieux francophones et anglophones
- 2.4 s'entretenir avec quelqu'un au sujet de ses expériences culturelles
- 2.5 présenter une recherche sur la vie d'un francophone célèbre
- 2.6 présenter un rapport sur un aspect culturel de la francophonie
- 2.7 décrire un voyage à un lieu francophone
- 2.8 identifier des aspects multilingues et leurs contributions sur le plan local, provincial et national
- 2.9 faire l'association entre des dialectes et le français standard
- 2.10 se familiariser avec certaines expressions idiomatiques
- 2.11 démontrer un respect pour le niveau de langue approprié
- 2.12 repérer des faits culturels en visionnant une émission de télévision et en écoutant la radio
- 2.13 analyser des journaux francophones
- 2.14 démontrer une connaissance des écrivains canadiens français et québécois
- 2.15 décrire l'histoire du bilinguisme au Canada
- 2.16 expliquer des contributions du bilinguisme à la société canadienne

**RAG Formation langagière générale :** L'élève devrait être capable de choisir et de mettre en pratique des stratégies pour faciliter ses communications en français et pour faciliter son apprentissage.

- 3.1 démontrer sa connaissance des ressemblances et des différences entre le français et l'anglais
- 3.2 utiliser divers ouvrages de référence pour renforcer sa connaissance et son emploi de la langue française
- 3.3 utiliser diverses technologies de l'information et des communications pour faciliter sa communication, en particulier : utiliser différents logiciels; démontrer une compréhension des applications pratiques; évaluer, sélectionner et utiliser un éventail de technologies selon la situation
- 3.4 gérer sa propre expérience d'apprentissage, par exemple : chercher, trouver et planifier l'accès à des documents et à des fichiers électroniques; représenter son apprentissage à l'aide d'une gamme de formes médiatiques y incluant vidéo, audio, et multimédia
- 3.5 collaborer avec d'autres pour accomplir une tâche, en particulier : exprimer son appui aux autres; approfondir les idées des autres; savoir résoudre des conflits; arriver à une entente/un consensus; animer le groupe et faire avancer la discussion
- 3.6 formuler et vérifier des hypothèses
- 3.7 démontrer son appréciation de l'étude du français
- 3.8 utiliser des stratégies en vue de résoudre des problèmes

**RAG Langue :** L'élève devrait être capable de reconnaître et d'utiliser en contexte certains éléments du code linguistique pour faciliter ses communications en français.

- 4.1 se servir d'expressions qui facilitent son interaction, telles que des expressions pour exprimer son accord et son désaccord, des questions pour initier, clarifier, vérifier, et des expressions de politesse
- 4.2 se servir de différents temps des verbes appropriés, des adverbes, des adjectifs, des formes comparatives et superlatives, des connecteurs et des conjonctions pour décrire diverses situations

- 4.3 se servir du présent, du conditionnel, des pronoms emphatiques, des connecteurs, des expressions pour refuser, rejeter et contredire pour exprimer une opinion
- 4.4 se servir du passé composé, de l'imparfait, et du discours indirect pour narrer des événements au passé
- 4.5 utiliser les pronoms objets et relatifs, les conjonctions et les connecteurs dans des situations telles que de résumer les idées principales d'un texte
- 4.6 se servir de phrases simples et complexes aux temps appropriés, et utiliser des formes et des styles qui respectent différents auditoires dans des situations telles que de réagir de façon critique et créative

# Gàidhlig 12 / Gaelic 12

## General Curriculum Outcomes

1. Students will use Gaelic to communicate and interact effectively.
2. Students will create and experience works reflective of the Gaelic language and culture.
3. Students will demonstrate an appreciation and understanding of the Gaelic culture within Nova Scotia and the wider world.

## Specific Curriculum Outcomes

By the end of Gaelic 12, students will be expected to

### Communication

- 1.1 demonstrate the ability to communicate effectively in Gaelic
- 1.2 participate spontaneously in a conversation
- 1.3 engage, with confidence, in conversation with native speakers
- 1.4 engage in a variety of interactive activities to facilitate conversation and communication
- 1.5 interact with confidence in a classroom where Gaelic is the language spoken
- 1.6 differentiate between the various Gaelic dialects while using the local dialect
- 1.7 paraphrase and tell Gaelic stories from Nova Scotia
- 1.8 incorporate world issues into text and conversation
- 1.9 engage in the advanced use of linguistic elements and idioms to communicate effectively
- 1.10 demonstrate an understanding of complex language structures, using an advanced vocabulary and phrase bank
- 1.11 use Gaelic to express and justify understandings, opinions, and points of view
- 1.12 read and comprehend text that is abstract and removed from personal experience
- 1.13 make inferences based on implicit information drawn from text and provide justification for these inferences
- 1.14 translate from English to Gaelic and Gaelic to English
- 1.15 create, and possibly publish, a variety of texts such as prose, stories, songs, newsletters, plays, advertisements, and poetry
- 1.16 use process writing (i.e., pre-writing, drafting, revising, proofreading, and presenting) in all its forms
- 1.17 prepare and present detailed descriptions and narrations
- 1.18 create sophisticated texts, using technology and other available resources
- 1.19 describe the geography of Canada and identify significant global place names, especially those with a Gaelic connection
- 1.20 maintain a journal or notebook, highlighting long- or short-term goals



## Creative Works

- 2.1 create a variety of texts reflective of the language structures and vocabulary and expressions studied in Gaelic 12
- 2.2 develop a portfolio of texts created in Gaelic 12
- 2.3 share their language skills with other students and the community
- 2.4 develop and produce a public performance of Gaelic plays, skits, activities, and seanchas (stories and lore)
- 2.5 gain an understanding of events from the history of the Gaels or the contributions of famous Gaels from Canadian history by researching and roleplaying or dramatizing
- 2.6 conduct detailed research and prepare a paper on an assigned topic of a particular Gaelic issue (e.g., Ath-bheòthachadh na Gàidhlig ann an Canada)
- 2.7 produce a multimedia presentation based on a Gaelic cultural activity for private viewing
- 2.8 facilitate demonstrations of Gaelic music, arts, crafts, and dance in the school or community

## Culture

- 3.1 investigate the status of Gaelic within Nova Scotia, the rest of Canada, and Scotland
- 3.2 examine methods to preserve and promote the Gaelic language and culture and contribute to them
- 3.3 compare and contrast efforts being made to preserve and develop Gaelic worldwide, with particular emphasis on new developments
- 3.4 demonstrate an understanding of the contributions of Gaelic language and culture on the cultural mosaic of Nova Scotia and the rest of Canada
- 3.5 discuss the effects of changing economies, improved communication, religion, education, and the media on the development and preservation of a language, particularly Gaelic
- 3.6 examine employment, educational, and language-learning opportunities in the Gaelic world
- 3.7 discuss the role of the Gaels in the growth of Canada (e.g., political, economic, military, educational)
- 3.8 examine the role of culture on the growth of communities
- 3.9 compare the development of Gaelic regions, nationally and internationally (e.g., St. Ann's, Cape Breton; and Waipu, New Zealand)

# Geology 12

## Specific Curriculum Outcomes

Students will be expected to

### The Nature of Geology (10%)

#### You and Geology

- demonstrate an understanding of the nature of geology and what makes it unique as a science (360-2)
- give examples of how geology is interconnected and integrated with other sciences (360-3)
- describe and give examples of the major themes that unite the study of geology (360-4)
- demonstrate an understanding of how geological processes and resources impact our daily lives (360-1)
- provide examples of the relevance of mining to everyday materials used in our lives (117-5)
- communicate questions, ideas, and intentions, and receive, interpret, understand, support and respond to the ideas of others (215-1)

#### The Geologists

- describe and give examples of how geologists study the earth (360-9)
- illustrate how science attempts to explain natural phenomena (115-2)

#### Earth Systems

- describe and give examples of interrelationships between Earth's spheres (360-6)
- explain how a knowledge of geology might influence our decisions about how we use Earth's resources (360-7)
- identify questions to investigate that arise from practical problems and issues (212-1)
- define and delimit problems to facilitate investigation (212-2)
- identify some sources and types of geological information needed to examine issues of a societal/environmental nature (360-8)
- synthesize information from multiple sources and make inferences based on this information (215-3)

### Earth Materials (15%)

#### Crystallography

- construct a definition for a mineral and a rock and identify the features that characterize each (361-1)
- explain and give examples of basic chemical building blocks and atomic structures (atom, element, molecule, compound) (361-2)
- explain external crystal shape in terms of internal atomic arrangement (361-4)
- identify examples where scientific understanding was enhanced or revised as a result of the invention of a technology (116-1)
- identify examples where technologies were developed based on scientific understanding (116-3)

### Mineralogy

- classify common minerals according to their chemical and physical characteristics (330-3)
- compile and organize data, using appropriate formats and data treatments to facilitate interpretation of the data (213-5)

### Petrology

- classify and identify rocks according to their structure, texture and mineral composition (361-11)
- relate the formation of igneous, sedimentary and metamorphic rocks to the rock cycle (361-13)
- apply and assess alternative theoretical models for interpreting knowledge in a given field (214-6)

## Internal Processes (20%)

### Earth's Interior

- describe theories and evaluate the limits of our understanding of earth's internal structure (330-1)
- identify questions to investigate that arise from practical problems and issues (212-1)
- select and integrate information from various print and electronic sources or from several parts of the same source (213-7)
- identify and describe science and technology-based careers related to the science they are studying (117-7)
- identify instances in which science and technology are limited in finding answers to questions or the solution to problems (118-7)

### Plate Tectonics

- explain the roles of evidence, theories and paradigms in the development of scientific knowledge (114-2)
- explain how a major scientific milestone revolutionized thinking in the scientific communities (115-3)
- apply and assess alternative theoretical models for interpreting knowledge in a given field (214-6)
- explain how data support or refute the hypothesis of plate tectonics (214-12)
- describe examples of Canadian contributions to science and technology (117-10)
- explain the plate tectonic theory (362-6)

### Forces and Structures

- illustrate how science attempts to explain natural phenomena (115-2)
- describe the various forces (compressional, tensional, shear) which operate in the Earth and how these forces create faults, folds and mountains (362-3)
- describe the geologic activity associated with plate boundaries and relate this to the rock cycle (362-7)

## Surface Processes (20%)

### Weathering

- demonstrate a knowledge of WHMIS standards by selecting and applying proper techniques for handling and disposal of lab materials (213-9)
- communicate questions, ideas and intentions, and receive, interpret, understand, support and respond to the ideas of others (215-1)

- distinguish between weathering and erosion (363-1)
- describe the process of soil formation and identify the factors involved in the development of different soil types (363-4)

### **Erosion**

- compare the risks and benefits to society and the environment of applying scientific knowledge or introducing a technology (118-1)
- work cooperatively with team members to develop and carry out a plan, and troubleshoot problems as they arise (215-6)
- describe and explain the processes by which running water, glaciers, wind and waves cause erosion (363-6)

### **Deposition**

- propose a course of action on social issues related to science and technology, taking into account human and environmental needs (118-9)
- develop, present and defend a position or course of action based on findings (215-5)
- compare and contrast particle size, shape, and degree of sorting in fluvial, glacial and aeolian deposits (363-10)
- relate weathering, erosion and deposition of sediment to the rock cycle (363-5)

## **Historical Geology (15%)**

### **Geological Principles**

- explain how scientific knowledge evolves as new evidence comes to light (115-6)
- select and integrate information from various print and electronic sources or from several parts of the same source (213-7)
- synthesize information from multiple sources or from complex and lengthy texts and make inferences based on this information (215-3)
- determine the relative ages of different formations using the principles of uniformitarianism, superposition, original horizontality, original lateral continuity, cross-cutting relationships, and inclusions (364-2)

### **The Fossil Record**

- explain and describe the process of fossil formation (364-5)
- identify and describe science and technology-based careers related to the science they are studying (117-7)
- describe examples of Canadian contributions to science and technology (117-10)

### **Geological Time**

- define and differentiate between relative and absolute age dating (364-1)
- illustrate the geologic time scale and compare it to human time scales (332-4)
- communicate questions, ideas and intentions, and receive, interpret, understand, support and respond to the ideas of others (215-1)
- determine absolute age using the principles of radioactive decay (364-4)

## Environmental Geology (20%)

### Geological Hazards

- distinguish between scientific questions and technological problems (115-1)
- construct arguments to support a decision or judgement, using examples and evidence and recognizing various perspectives (118-6)
- identify questions to investigate that arise from practical problems and issues (212-1)
- propose alternative solutions to a given practical problem, identify the potential strengths and weaknesses of each, and select one as the basis for a plan (214-15)
- identify multiple perspectives that influence a science-related decision or issue (215-4)
- identify examples of geological hazards that impact on human settlement and ways in which humans have attempted to minimize the impact of these hazards (365-1)
- identify factors which influence people to live in geologically hazardous areas (365-3)
- apply geological knowledge to the analysis of a local environmental issue or problem (365-9)
- compare the risks and benefits to society and the environment of applying scientific knowledge or introducing a technology (118-1)
- propose a course of action on social issues related to science and technology, taking into account human and environmental needs (118-9)
- provide examples of how science and technology are an integral part of their lives and their community (117-5)
- describe the functioning of domestic and industrial technologies, using scientific principles (116-5)

### Resource Issues

- demonstrate an understanding that Earth's systems are complex and cyclic and that the Earth operates chiefly as a closed system (365-4)
- demonstrate an understanding of what is meant by a renewable and non-renewable resource and the concept of sustainable development (365-5)
- describe the functioning of domestic and industrial technologies, using scientific principles (116-5)
- identify and describe science and technology-based careers related to the science they are studying (117-7)
- select and use apparatus and materials safely (213-8)
- identify stratigraphy as a key element of environmental geology and describe some technologies used to acquire stratigraphic data (365-6)
- work cooperatively with team members to develop and carry out a plan and troubleshoot problems as they arise (215-6)
- apply geological knowledge to the analysis of a local environmental issue or problem (365-9)
- use library and electronic research tools to collect information on a given topic (213-6)
- propose a course of action on social issues related to science and technology, taking into account human and environmental needs (118-9)

### Waste Management

- compare the risks and benefits to society and the environment of applying scientific knowledge or introducing a technology (118-1)
- evaluate a personally designed and constructed device on the basis of criteria they have developed themselves (214-16)
- identify and describe the environmental problems associated with waste disposal and management (365-8)
- apply geological knowledge to the analysis of a local environmental issue or problem (365-9)

# Geomatics 12

## Unifying Concepts

Geomatics 12 will provide learning opportunities through which students become skilled, reflective, and critical creators and consumers of geomatics products. Specifically, students will

- A. develop a basic understanding of geomatics
- B. manage and manipulate data
- C. demonstrate an understanding of authentic applications of geographic information systems (GIS)
- D. apply knowledge and skills of GIS to query a social, political, environmental, or economic issue
- E. explore the career implications of geomatics
- F. be actively engaged in applying the geographic method of inquiry to a geomatics-based community project

## Specific Curriculum Outcomes

Students will be expected to

### Module 1: Exploration

- 1.1 investigate the definition and application of geotechnologies in the workplace and the range of career opportunities in geomatics
- 1.2 examine the historical evolution of geographic information system (GIS) software
- 1.3 identify a range of geotechnologies used to manipulate and assist in interpretation of data
- 1.4 demonstrate an understanding of the Geographic Method of Inquiry

### Module 2: Basic Skill Building

- 2.1 demonstrate an understanding of GIS software buttons and tools for map creation
- 2.2 manipulate data to generate thematic maps
- 2.3 manipulate data to generate graphs, charts, or tables
- 2.4 query data to define and solve a problem
- 2.5 use layout functions to customize and display information
- 2.6 apply a hotlink feature to launch other media
- 2.7 apply geomatic skills to a social, political, economic, or environmental issue-based project

### Module 3: Advanced Skill Building and Application

- 3.1 using various sources of geographic data, demonstrate data acquisition to create a theme layer
- 3.2 actively engage in collecting, geocoding, and mapping the community features
- 3.3 manipulate acquired data for querying using buffering, clipping, and joining
- 3.4 select and map the best site for a new home, business, or community service
- 3.5 map and analyze risk zones within a local community
- 3.6 identify authentic applications of a map or product

## **Module 4: Applied Geomatics Project**

- 4.1 develop and document a project plan for an applied geomatics project
- 4.2 pose the geographic question
- 4.3 identify, evaluate, and acquire geographic resources
- 4.4 manipulate data to produce thematic representations or maps
- 4.5 analyze, synthesize, and summarize the geographic information
- 4.6 present, defend, and act upon project interpretations
- 4.7 develop an e-portfolio that documents their completed project
- 4.8 develop employability skills

# Global Geography 12 / Advanced Global Geography 12

## General Curriculum Outcomes

Students will be expected to

### **Citizenship, Power, and Governance**

- A. demonstrate an understanding of the rights and responsibilities of citizenship and the origins, functions, and sources of power, authority, and governance

### **Individuals, Societies, and Economic Decisions**

- B. demonstrate the ability to make responsible economic decisions as individuals and as members of society.

### **People, Place, and Environment**

- C. demonstrate an understanding of the interactions among people, places, and the environment

### **Culture and Diversity**

- D. demonstrate an understanding of culture, diversity, and world view, recognizing the similarities and differences reflected in various personal, cultural, racial, and ethnic perspectives.

### **Interdependence**

- E. demonstrate an understanding of the interdependent relationship among individuals, societies, and the environment—locally, nationally, and globally—and the implications for a sustainable future.

### **Time, Continuity, and Change**

- F. demonstrate an understanding of the past and how it affects the present and the future.

## Specific Curriculum Outcomes

**Note:** The Specific Curriculum Outcomes (SCOs) for Global Geography 12 are printed in roman (plain) style. *The Specific Curriculum Outcomes (SCOs) for Advanced Global Geography 12 include those printed in roman style (for Global Geography 12) as well as those printed in italics (for Advanced Global Geography 12 only).*



Students will be expected to

### **Unit 1: The Global Geographer**

- 1.1 formulate predictions about geographic issues by manipulating raw data using computer-based technology (e.g. GIS, spreadsheets, web-browsers, and presentation software)
- 1.2 identify key concepts, skills, and problem solving and analytical methods used by geographers (through analysis of the preceding outcome)
- 1.3 illustrate an argument as to how the world arrived at its current state at the beginning of the 21st century, using the discipline of geography
- 1.4 examine all issues from multiple perspectives and with regard to the experiences of youth
- 1.5 plan, conduct, and present a research project, independently or collaboratively, using the skills and methods of geography/*plan, research, present, and defend a formal problem-based research project using the skills and methods of geography*
- 1.6 *research a global issue from the perspective of geography and at least two other disciplines*

### **Unit 2: The Planet Earth**

- 1.1 demonstrate an understanding of the earth as a unique planet for human life
- 1.2 evaluate the planetary state of health
- 1.3 examine/*analyze* the global distribution of ecosystems
- 1.4 investigate the relationship between natural disasters and humans

### **Unit 3: Population**

- 3.1 demonstrate an understanding of/*evaluate* various measures of Quality of Life
- 3.2 explain patterns of population distributions and densities
- 3.3 interpret aspects of global population, using vital statistics as tools
- 3.4 analyze the implications of growth, distributions, and densities

### **Unit 4: Resources and Commodities**

- 4.1 analyze factors that affect the global production and distribution of food
- 4.2 analyze factors that affect the global distribution and consumption of water
- 4.3 examine contemporary global patterns of industrialization and resource extraction
- 4.4 examine/*evaluate* the effects of industrialization on quality of life throughout the world

### **Unit 5: Urbanization**

- 5.1 identify patterns of urbanization
- 5.2 evaluate models of urban structure in developed and developing countries
- 5.3 explain/*extrapolate* trends regarding the growth and decline of cities
- 5.4 illustrate strategies to improve urban environments

### **Unit 6: Culture and Politics**

- 6.1 *analyze the distribution of different cultural groups in the world*
- 6.2 *investigate the extent to which the environment has been/is affected by cultural attitudes and practices*
- 6.3 *examine the evolution of the contemporary global political pattern*
- 6.4 *analyze the spatial disjunctions between political, cultural, and other patterns*

# Global History 12 / Advanced Global History 12

## General Curriculum Outcomes

Students will be expected to

### **Citizenship, Power, and Governance**

- A. demonstrate an understanding of the rights and responsibilities of citizenship and the origins, functions, and sources of power, authority, and governance

### **Individuals, Societies, and Economic Decisions**

- B. demonstrate the ability to make responsible economic decisions as individuals and as members of society.

### **People, Place, and Environment**

- C. demonstrate an understanding of the interactions among people, places, and the environment

### **Culture and Diversity**

- D. demonstrate and understanding of culture, diversity, and world view, recognizing the similarities and differences reflected in various personal, cultural, racial, and ethnic perspectives.

### **Interdependence**

- E. demonstrate an understanding of the interdependent relationship among individuals, societies, and the environment—locally, nationally, and globally—and the implications for a sustainable future.

### **Time, Continuity, and Change**

- F. demonstrate an understanding of the past and how it affects the present and the future.

## Specific Curriculum Outcomes

**Note:** The Specific Curriculum Outcomes (SCOs) for Global History 12 are printed in roman (plain) style. *The Specific Curriculum Outcomes (SCOs) for Advanced Global History 12 include those printed in roman style (for Global History 12 as well) as well as those printed in italics (for Advanced Global History 12 only).*

Global History 12 is a course that critically investigates and analyzes how the world arrived at its current state at the beginning of the 21st century, using the discipline of history.

Students will be expected to

### **Unit 1: The Global Historian**

- 1.1 formulate and support a hypothesis as to how the world arrived at its current state at the beginning of the 21st century, using the discipline of history
- 1.2 illustrate an understanding of the concept of interdependence
- 1.3 apply skills and methods appropriate to the discipline of history
- 1.4 examine all issues from multiple perspectives and with regard to the experiences of youth
- 1.5 design and conduct a research project, independently or collaboratively, using methods appropriate to history/*plan, research, write, and defend a formal thesis-directed research paper using the historical method*
- 1.6 *investigate the inter-relatedness of history and literature or the arts*

### **Unit 2: The Dynamics of Geo-Political Power**

- 2.1 demonstrate an understanding of factors that contributed to the start of the “Cold War” between the “East” and “West”
- 2.2 explain/*investigate* how tensions between “East” and “West” influenced events in the post-World War II world
- 2.3 evaluate the extent to which at least two “Cold War” events exhibit characteristics of the “East-West” conflict
- 2.4 formulate and support a hypothesis regarding the geo-political future of the world
- 2.5 *debate a resolution regarding the legacy of the “Cold War” in the contemporary world*

### **Unit 3: The Challenge of Economic Disparity**

- 3.1 examine an issue that illustrates the economic disparity between “North” and “South”
- 3.2 demonstrate an understanding of forces that contributed to, and contribute to, the economic disparity between “North” and “South”
- 3.3 evaluate different approaches/*formulate and support a plan* to address global economic disparity
- 3.4 analyze the correlation between wealth and power
- 3.5 *analyze the extent and nature of the economic disparity which exists within countries of the “North”*

### **Unit 4: The Pursuit of Justice**

- 4.1 demonstrate an understanding of the events and forces that have shaped contemporary conceptions of justice
- 4.2 investigate a global event that has raised fundamental questions of justice
- 4.3 formulate and support a hypothesis regarding the examples of genocide that have occurred, and continue to occur, through the 20th and 21st centuries
- 4.4 describe/*analyze* approaches to, and barriers to, achieving greater universal justice
- 4.5 *investigate issues and questions of justice raised by self-determination movements*

### **Unit 5: Societal Change**

- 5.1 investigate an example of a technological development that illustrates the close relationship between technological change and societal change
- 5.2 examine/*investigate* an event or movement, not driven by technological change, that has brought about significant societal change

- 5.3 evaluate the ethical and moral implications of technological development and societal change
- 5.4 *predict a future technological innovation, consequential societal change, and resulting ethical and moral issues*
- 5.5 illustrate the interdependence of societal change, justice, economic disparity, and geo-political power

# Global Politics 12 / Advanced Global Politics 12

**Note:** This course is an eligible credit for the global studies requirement for graduation. The Specific Curriculum Outcomes (SCOs) for Global Politics12 are printed in roman (plain) style. *The Specific Curriculum Outcomes (SCOs) for Advanced Global Politics12 include those printed in roman style (for Global Politics12 as well) as well as those printed in italics (for Advanced Global Politics12 only).*

Students will be expected to

## Global Citizen

- 1.1 critically investigate contemporary global political issues
- 1.2 design and conduct a research project, either independently or collaboratively, that addresses a global political issue/*plan, research, write a formal thesis-directed research paper*
- 1.3 explore and engage in an issue relating to active citizenship

## Unit 1: Political Systems

- 2.1 examine/Investigate a range of global political ideologies (communism, fascism, capitalism, socialism, democracy)
- 2.2 examine the organization and operation of various political systems (structure and function of governments—various)
- 2.3 *evaluate the ethical and moral implications of various political systems*

## Unit 2: Canadian System

- 3.1 examine the historical roots of the Canadian political system (British parliamentary, parties, common law, French civil code, BNA – Constitutional development)
- 3.2 demonstrate an understanding, where applicable, of the structure and roles of the executive, legislative, and judicial branches of Canadian federal, provincial, territorial, First Nations, and municipal governments
- 3.3 investigate/*analyze* the divisions of power in Canada among federal, provincial, territorial, First Nations, and municipal governments (jurisdictional powers)
- 3.4 explore the electoral systems and processes for the Canadian federal, provincial, territorial, First Nations, and municipal governments (political parties/ideologies)

## Unit 3: Comparative Politics

- 4.1 explore various contemporary global governing systems (U.S. and others, dictatorial and democratic, etc.)
- 4.2 compare and contrast the Canadian and U.S. governing systems
- 4.3 compare and contrast the Canadian and U.S. electoral systems
- 4.4 *compare and contrast global governing systems, excluding Canada and the United States*

## Unit 4: International Relations

- 5.1 explore the foundations of global interconnectedness
- 5.2 describe the organizations that govern relations among nations (United Nations, Nato, IMF, World Trade, World Bank)
  
- 5.3 examine the influence of cultural beliefs on global politics (religion, economic practices, environmentalism etc.)
- 5.4 examine/*analyze* the changing role of media/technology on global politics
- 5.5 *investigate obstacles to international relations (cultural differences, ideologies, etc.)*

# Health and Human Services 12

**Note:** Health and Human Services 12 may be either an open or an academic credit. The specific curriculum outcomes identified by an asterisk (\*) may be omitted by students who wish to receive the Open Credit.

## Learning Outcomes

Students will be expected to

1. identify the personal traits relevant to the helping careers associated with the health and human services field
2. identify the role of volunteers in the health and human services field
3. demonstrate an awareness of the social and health care systems and how to access the services they provide
4. identify career opportunities in the health and human services field
5. understand the need for caregivers to maintain personal and professional skills

## Specific Curriculum Outcomes

Students will be expected to

### Unit 1: Overview of the Helping Field

- 1.1 demonstrate an understanding of the nature of helping careers
- 1.2 identify their personal traits that make them suitable for working in the helping careers
- 1.3 identify the factors that influence the health of a community
- 1.4 explain the relationship between personal wellness and the determinants of community health
- 1.5 identify the components of personal wellness
- 1.6 develop a plan for personal wellness
- 1.7 understand the impact of health and human service practitioners on personal wellness throughout the life cycle
- 1.8\* identify the determinants of health and report on how they influence the health of a community

### Unit 2: Volunteer Experience

- 2.1 demonstrate an understanding of the important role of the volunteer in society
- 2.2 describe the roles and responsibilities of volunteers in the human services field
- 2.3\* analyze and explain the difference between volunteering and community service
- 2.4 participate in a volunteer placement in their home community
- 2.5 gain experience volunteering in a position that supports their community
- 2.6\* communicate the benefits gained through their volunteer placement

### **Unit 3: Health and Human Systems: A Systems Approach**

- 3.1\* identify and report on the demographic trends that have an impact on the need for health and human services
- 3.2 identify services in the community
- 3.3 demonstrate how to access services in the community
- 3.4 describe the role of an advocate in the human services system

### **Unit 4: Career Connections and Pathways**

- 4.1 identify specific career opportunities in health and human services in their community
- 4.2 develop skills in career exploration
- 4.3\* compare and contrast the differences in education opportunities and how they relate to occupations
- 4.4 identify lifelong career connections
- 4.5 identify career opportunities in the helping field
- 4.6 maintain a LifeWork Portfolio

### **Unit 5: Personal and Professional Skills**

- 5.1\* demonstrate an understanding of professionalism in the health and human services domain
- 5.2 reflect on their progress in maintaining their plan for personal wellness
- 5.3 develop strategies for addressing health and human service-related values
- 5.4 identify effective communication skills specific to health and human services
- 5.5 demonstrate an understanding for the need to work as a team to provide support
- 5.6\* develop and share your understanding of the role of an advocate



# Housing and Design 12

## Learning Outcomes

Students will be expected to

1. collect and reflect on artifacts that exemplify their skill development as prescribed in the Housing and Design curriculum outcomes
2. identify life-work benefits of developing skills related to housing and living environments
3. analyze the functions of housing and the factors affecting decisions about living spaces
4. explore the innovations in planning and development of housing ecosystems
5. develop an awareness of the process involved in planning and analyzing physical living spaces
6. identify and explore the elements and principles of design and their application in housing and interior design

## Specific Curriculum Outcomes

Students will be expected to

### Unit 1: The Housing and Design Skills Portfolio

- 1.1 maintain and share a portfolio of artifacts reflective of knowledge, skills, and understandings developed throughout Housing and Design 12
- 1.2 plan, produce, and present an innovative housing and design project that reflects personal expression, technological skills, and resource management

### Unit 2: Career Options Related to Housing and Living Environments

- 2.1 analyze how an understanding of the art, science, and technology of housing can contribute to the exploration of possible career opportunities as well as being a knowledgeable housing consumer
- 2.2 analyze the career paths related to housing in Nova Scotia, reporting on the education/training, skills required and the nature of the work involved
- 2.3 identify the entrepreneurial opportunities in the housing and design industry in Nova Scotia, reporting on how the skills required might be developed
- 2.4 complete a community based learning experience related to a career path in housing

### Unit 3: Living Spaces—Choices and Decisions

- 3.1 identify and reflect on the functions of housing
- 3.2 assess how personal priorities, space, roles, cost, life cycle, and lifestyle are factors in the selection of living spaces
- 3.3 evaluate the impact of external influences on personal housing decisions

## **Unit 4: Innovations in Housing Ecosystems**

- 4.1 analyze the impact of technology on the housing environment today
- 4.2 compare and contrast trends that espouse sustainable housing ecosystems
- 4.3 investigate the scope and skills required for maintenance and upkeep of living spaces
- 4.4 analyze design components and their impact on the operation of a healthy home for self and environment
- 4.5 critique the ecological impact of urban/community planning, landscaping, and architecture on housing options

## **Unit 5: Components of Housing Design and Layout**

- 5.1 match housing needs, wants, and resources with available housing options
- 5.2 read and interpret floor plans for efficiency of layout and design
- 5.3 develop manual and technological skills in creating floor plans in both two and three dimensions
- 5.4 develop a consumer awareness of the mandatory requirements in the design and construction process
- 5.5 become knowledgeable about local available resources and support for new renovation technologies in our Nova Scotia economy

## **Unit 6: Interior Design**

- 6.1 apply the principles of design to creating functional, universal, and aesthetically pleasing spaces for home and work
- 6.2 demonstrate how design elements are used in the application of the principles of interior design
- 6.3 develop an awareness of furnishing, textiles, material necessary in making a home liveable for its dweller
- 6.4 collaborate in the development of a remodelling or renovation proposal for a living or work space to accommodate the needs and wants of a potential client in Nova Scotia

# Information and Communication Technology Integration 10–12

## Outcome Components

*Students will demonstrate expected performance levels in five IT-based learning outcome areas within the context of essential graduation learnings and outcomes specified for the public school program as a whole.*

## Key-Stage Curriculum Outcomes

By the end of grade 12, in addition to the grade 9 outcomes, students will be expected to

### Basic Operations and Concepts (BOC)

- Concepts and skills associated with the safe, efficient operation of a range of information and communication technologies.

BOC 12.1 (relates to 9.1–9.4) use a wide variety of technology, demonstrate a clear understanding of technological applications, and consistently apply appropriate technology to solve curriculum problems

BOC 12.2 (relates to 9.5) demonstrate an ability to assess the application of technology to solve problems, particularly to evaluate significant effects which estimations, program flaws and human error have on any given solution

BOC 12.3 (relates to 9.6) demonstrate facility with the specialized vocabulary associated with the technology they use

BOC 12.4 (relates to 9.7) take personal responsibility for their safe and ergonomic use of technology for learning

### Social, Ethical, and Human Issues (SEHI)

- The understanding associated with the use of ICT, which encourages in students a commitment to pursue personal and social good, particularly to build and improve their learning environments and to foster stronger relationships with their peers and others who support their learning.

SEHI 12.1 (relates to 9.1–9.4) behave ethically and with accuracy as they generate and distribute information about themselves, others, and curriculum topics under study

SEHI 12.2 (relates to 9.2) articulate an informed and critical understanding of mass media, popular culture and electronic information environments; their techniques; and the effects of those techniques

SEHI 12.3 (relates to 9.1–9.4) critically analyze the impacts of evolving technologies on themselves, societies, and the environment

SEHI 12.4 (relates to 9.2–9.4) demonstrate habits of perception, analysis, judgment and selectivity as they contribute to society through the discerning and critical use and creation of information resources and technology

- SEHI 12.5 (relates to 9.3, 9.4) act responsibly when faced with ethical issues that arise from their use of information and ICT and perspectives
- SEHI 12.6 (relates to 9.5) demonstrate an appreciation of the role of technology-related careers in the larger community and assess technology-related career opportunities within the context of their personal values and needs
- SEHI 12.7 (relates to 9.8) follow the *Public School Program Network Access and Use Policy*

### **Productivity Tools and Software (PTS)**

- The efficient selection and use of ICT to perform tasks such as
    - the exploration of ideas
    - data collection
    - data manipulation, including the discovery of patterns and relationships
    - problem solving
    - the representation of learning
- PTS 12.1 (relates to 9.1) use electronic planning software to support the development and analysis of efficient, personal study and research plans independently
- PTS 12.2 (relates to 9.2, 9.6) evaluate, select, and use the following to learn and to represent curriculum concepts under study: specialized software, including computer-based simulations; and measuring, sampling and recording devices, including complex calculators
- PTS 12.3 (relates to 9.3, 9.4) write and represent their research using the structures, features, conventions, and techniques of specialized publication and presentation formats with growing fluency
- PTS 12.4 (relates to 9.4, 9.5) evaluate, select and use a range of media, and information and communication technology, to create, edit, and publish their work independently
- PTS 12.5 (relates to PTS 9.6 and RPSD 9.2) create electronic charts, tables and graphs; and design, create, and manipulate spread sheets and databases, as part of the process of collecting, analyzing, and displaying data independently

### **Communications Technology (CT)**

- Specific, interactive technology use supports student collaboration and sharing through communication.
- CT 12.1 (relates to 9.1) use language, in a range of aural, print, media and electronic forms to explore and express their perceptions, feelings, ideas and attitudes; refine their thinking; and interact, negotiate, and collaborate with others in order to build their understanding
- CT 12.2 (relates to 9.1, 9.2) critically apply technological skills in a range of electronic, visual, and print media for formal and informal communication
- CT 12.3 (relates to 9.1) design and create electronic documents to accomplish curricular tasks
- CT 12.4 (relates to CT 9.3) discover, share and reflect upon their own and others' cultures, values, and understandings as they are expressed in electronic and other formats
- CT 12.5 (relates to 9.1–9.3) use multimedia hardware and authoring software to develop non-linear, interactive presentations
- CT 12.6 (relates to 9.3) assess the value and application of information and communication technology in personal and career-related pursuits

**Research, Problem Solving, and Decision Making (RPSD)**

- Students' organization, reasoning, and evaluation of their learning rationalize their use of information and communication technology.
- RPSD 12.1 (relates to 9.1) select appropriate devices and software to collect data, solve problems and note patterns; to make logical decisions and draw conclusions; and to present results, with general supervision
- RPSD 12.2 (relates to 9.4) identify, evaluate, and compare the quality, congruencies, discrepancies, omissions, biases, and perspectives of information content of print, media, and electronic resources
- RPSD 12.3 (relates to 9.3–9.8) evaluate and organize ideas and information from a wide range of media and a variety of sources to meet their curriculum needs efficiently and independently
- RPSD 12.4 (relates to 9.7) identify the strengths and limitations of different approaches to research, and select those approaches which efficiently meet their learning needs
- RPSD 12.5 (relates to 9.4–9.8) contribute to the development of criteria for selecting a research topic, and, based on those criteria, define and complete a research task efficiently
- RPSD 12.6 (relates to 9.9) accurately record and cite, using academically accepted formats and standards, sources of information contributing to their research

# In-School Component of Co-operative Education 10–12

## Specific Curriculum Outcomes

Students will be expected to

### Module 1: Career Planning

- 1.1 identify and use strategies to determine appropriate, realistic education and career plans
- 1.2 demonstrate understanding of and actively participate in the career-building process

### Module 2: Preparing for the Workplace

- 2.1 demonstrate workplace readiness by identifying and assessing personal traits, values, strengths and weaknesses, abilities, and employability skills
- 2.2 demonstrate an understanding of workplace hierarchies, relationships, etiquette, and confidentiality

### Module 3: Workplace Health and Safety

- 3.1 demonstrate an understanding of the major components of the Nova Scotia *Occupational Health and Safety Act* and *Regulations*, including employer and employee rights and responsibilities for workplace health and safety
- 3.2 demonstrate an understanding of the five main types of workplace hazards and their four main contributing factors
- 3.3 demonstrate an understanding of hazard control, including the role of reporting workplace hazards, and the use of personal protective equipment (PPE)
- 3.4 demonstrate an understanding of the components of Workplace Hazardous Materials Information System (WHMIS)—training, labels, and Material Safety Data Sheets (MSDS)

# International Baccalaureate

All IB course credits are grade 12 credits regardless of whether a student completes the course in grade 11 or grade 12. However, on transcripts to universities, the IB courses will be included as both grade 11 and grade 12 courses with no credit recorded in grade 11, unless the student writes the final examination in that grade.

## IB Biology SL

Students will be expected to

BIO1: gain an understanding of scientific study and creativity within a global context including the following concepts:

- Appreciating the importance and limitations associated with science and scientists in modern and historical context.
- Demonstrating and applying an understanding of the body of knowledge, methods, and techniques that characterize science and technology.
- Understanding relationships between scientific disciplines.
- Developing and demonstrating an understanding of the scientific method of inquiry.
- Demonstrating an understanding of scientific facts and concepts, scientific methods and techniques, scientific terminology, and methods of presenting scientific information.
- Developing the ability to critically analyze, evaluate, and synthesize scientific information.
- Comprehending the need for, and the value of, effective collaboration and communication as part of the scientific process.
- Being aware of the moral, ethical, social, economic, and environmental implications of using science and technology in society.

BIO2: formulate and apply experimental and investigative science techniques that include the capacity to

- understand experimental design including creation of hypotheses, research questions, and predicted results
- construct, analyze, evaluate, and communicate experiment results using proper scientific communication terminology and scientific methods
- demonstrate knowledge of scientific investigation and experimentation using proper safety procedures and laboratory rules
- participate in, and demonstrate the skills of, collegiality, co-operation, perseverance and responsibility appropriate for scientific investigation and problem solving
- develop a strong foundational understanding of the nature of science including
  - > statistical analysis
  - > cells
  - > chemistry of life
  - > genetics
  - > ecology and evolution
  - > human health and physiology

BIO3: successfully complete three written external exams

BIO4: successfully complete classroom tests, lab assignments and reports, and written exercises for internal assessment that emphasizes laboratory skills and reporting

BIO5: successfully complete a group 4 project that develops personal skills in communication collaboration and problem solving

## IB Biology HL

Students at HL are required to study some topics in greater depth, to study additional topics and to study extension material of a more demanding nature than the common topics. The distinction between SL and HL is one of breadth and depth.

## IB Chemistry SL

Students will be expected to

CHEM1: gain an understanding of scientific study and creativity within a global context, including the following concepts:

- Appreciating the importance and limitations associated with science and scientists in modern and historical context.
- Demonstrating and applying an understanding of the body of knowledge, methods, and techniques that characterize science and technology.
- Understanding relationships between scientific disciplines.
- Developing and demonstrating an understanding of the scientific method of inquiry.
- Demonstrating an understanding of scientific facts and concepts, scientific methods and techniques, scientific terminology, and methods of presenting scientific information.
- Developing the ability to critically analyze, evaluate, and synthesize scientific information.
- Comprehending the need for, and the value of, effective collaboration and communication as part of the scientific process.
- Being aware of the moral, ethical, social, economic, and environmental implications of using science and technology in society.

CHEM2: formulate and apply experimental and investigative science techniques that include the capacity to

- understand and apply experimental design including creation of hypotheses, research questions, and predicted results
- construct, analyze, evaluate, and communicate experiment results using proper scientific communication terminology and scientific methods
- demonstrate knowledge of scientific investigation and experimentation using proper safety procedures and laboratory rules
- participate in, and demonstrate the skills of, collegiality, co-operation, perseverance, and responsibility appropriate for scientific investigation and problem solving
- develop a strong foundational understanding of the nature of science including
  - > quantitative chemistry
  - > atomic structure
  - > periodicity
  - > bonding
  - > energetics
  - > kinetics
  - > equilibrium
  - > acids and bases
  - > oxidation and reduction
  - > organic chemistry
  - > measurement and data processing

CHEM3: successfully complete three written papers



- CHEM4: successfully complete classroom tests, lab assignments and reports, and written exercises  
CHEM5: successfully complete a group 4 project

## IB Chemistry HL

Students at HL are required to study some topics in greater depth, to study additional topics, and to study extension material of a more demanding nature than the common topics. The distinction between SL and HL is one of breadth and depth.

## IB Economics

All Group 3 subjects study individuals and societies; exploring the interaction between humans and their environment in time and place. Economics is a Group 3 course.

All Group 3 courses

- encourage the systematic and critical study of
  - human experience and behaviour
  - economic and social environments
  - history and development of social and cultural institutions
- recognize, critically analyze, and evaluate theories, concepts, and arguments about the nature and activities of the individual and society
- collect, describe, and analyze, data to test hypotheses, interpret data
- promote recognition of the importance of learning to enrich both personal life and understanding of one's own culture and other cultures
- facilitate understanding that human attitudes and beliefs are extremely diverse and the study of society requires an appreciation of diversity
- tolerance of various points of view and a recognition that the issues, context, and methodologies are subject to personal interpretation with no correct or incorrect answer

## IB Economics SL and HL

Students will be expected to

- ECON1: develop an understanding and knowledge of economic concepts and theories such as microeconomics, macroeconomics, and international and development economics  
ECON2: apply economic theory to a range of circumstances and a variety of situations  
ECON3: analyze information using economic concepts and theories  
ECON4: evaluate concepts and theories based on different economic perspectives  
ECON5: communicate understanding of topics and concepts through two written examination papers  
ECON6: analyze, describe, and apply economic theory using four published news items based on real-world situations to create a portfolio  
ECON7: produce a commentary on current event must focus on a different sections of the syllabus

## IB Economics HL

The theme of internationalism has a broader perspective than SL, with emphasis on the complex, two-way process of cultural interaction and the processes of adaptation, adoption, or resistance by societies.

Students will be expected to

ECON8: understand and apply knowledge of global economics

ECON9: recognize, examine, and evaluate topics related to global economics

ECON10: produce three written papers

ECON11: create a portfolio of four commentaries

## IB English Literature SL

Students will be expected to

ENG1: engage in independent literary criticism in a manner that reveals a personal response to world literature

ENG2: apply techniques of literary criticism to selected works, such as a poem, a novel, an essay, a biography, or a journalistic writing of literary merit

ENG3: approach works in an independent manner that reveals a personal response to literature

ENG4: express ideas with clarity coherence, conciseness, precision and fluency, in both written and oral language appropriate for the study of literature and an appreciation of the need for effective choice of register and style in both written and oral communication

ENG5: develop a sound approach to literature through consideration of the works studied

ENG6: convey knowledge both of the similarities and differences between literary works from different ages and/or cultures

ENG7: analyze and comment on the language, content structure, meaning, and significance of both familiar and unfamiliar pieces of writing

ENG8: develop an awareness of the effects of structure, technique, and style as employed by authors

ENG9: effectively structure ideas and arguments, both orally and in writing, in a sustained and logical way, and to support them with precise and relevant examples

ENG10: plan and produce a 10–15-minute oral commentary from one of the literary works studied to be assessed externally

ENG11: complete a written commentary featuring techniques of literary criticism on selected works in a final examination

ENG12: complete one essay question in a final examination on a group of works studied (one in translation, two written originally in English, related by genre)

ENG13: complete a 1000–1500-word world literature assignment based on at least two works of world literature studied with a formal introduction, main body and conclusion, and that focuses on aspects such as narrative techniques, characterization, portrayal of society in the work studies, international perspectives on common human problems, or cross-cultural perspectives on the artist's role in society

## IB English Literature HL

HL students will be expected to master all of the outcomes listed for the SL course (ENG1–ENG13), and in addition, to

ENG14: apply the skills and knowledge to two additional topics in the syllabus

ENG15: complete an additional world literature assignment chosen from one of three alternatives

## IB Extended Essay

Students will be expected to

EE1: independently plan and pursue a research project with intellectual initiative and insight

EE2: formulate a precise research question

EE3: employ a research methodology that includes

- an understanding and correct use of sources
- correctly citing all sources
- locating relevant and appropriate evidence from books, articles, websites and, if germane, his or her own research
- evaluating and synthesizing evidence from relevant sources
- summarizing and arriving at conclusions
- structuring a reasoned argument in response to the research question on the basis of the material gathered
- periodic correspondence with a teacher advisor

EE4: use the terminology and language appropriate to the subject with skill and understanding

EE5: plan and produce an abstract that summarizes the major points in the essay

EE6: demonstrate a comprehensive understanding of the essay in a concluding interview (viva voce) with the Extended Essay supervisor

## IB French Ab Initio SL

Students will be expected to

FRI1: Achieve communicative competence in a variety of everyday situations.

- Develop four primary language skills in an integrated manner through listening, speaking, reading, and writing
- In a limited range of situations, communicate information and basic ideas clearly and effectively.
- Understand and accurately use the language in spoken form, in a limited range of situations.
- Understand and accurately use the language in written form, in a limited range of situations.
- Understand and use a limited range of vocabulary and grammar.
- Understand differences between their own culture and the culture of the language that they are learning.
- Create a foundation, and recognize the idea that language is more than a school course, and encourage further independent study of the language.

## IB French B SL

“B” level language courses are for students who have some previous experience of learning the language.

Prerequisite for B SL Language courses.

- Has 2–5 years experience in the language
- Has not been taught other subjects in the language
- Taught the language in a country where it is not the dominant or native language
- A beginner or near beginner who lives in a country where the language is spoken

Students will be expected to

- FRE 1: understand and use the language in a variety of contexts and purposes  
FRE 2: appreciate and understand different perspectives of people from other cultures through study of texts and social interaction  
FRE 3: create foundation for further study  
FRE 4: appreciate the relationship between languages and cultures  
FRE 5: communicate clearly and effectively in a range of situations
- FRE 6: understand and use accurately a range of vocabulary in common usage  
FRE 7: express ideas with general clarity and some fluency  
FRE 8: structure arguments in a generally clear, coherent, and convincing manner  
FRE 9: comprehend and respond appropriately to written and spoken material of average difficulty  
FRE 10: assess some subtleties of the language in a range of forms, styles, and registers  
FRE 11: show an awareness of, and sensitivity to, some elements of the culture related to the language studied  
FRE 12: successfully complete two written exams that demonstrate reading and writing skills  
FRE 13: successfully complete an oral assessment

## IB French B HL

“B” level language courses are for students who have some previous experience of learning the language.

Prerequisite for B HL Language courses.

- Has 4–5 years experience in the language
- Has not been taught other subjects in the language
- Has been taught the language in a country where target language is not the dominant or native language

Students will be expected to

- FRE 14: understand and use the language in a variety of contexts and purposes  
FRE 15: appreciate and understand different perspectives of people from other cultures through study of texts and social interaction  
FRE 16: create foundation for further study  
FRE 17: appreciate the relationship between languages and cultures  
FRE 18: communicate clearly and effectively in a wide range of situations

- FRE 19: understand and use accurately a wide range of vocabulary  
FRE 20: express ideas with general clarity and fluency  
FRE 21: structure arguments in a generally clear, coherent, and convincing manner  
FRE 22: comprehend and respond appropriately to written and spoken material of moderate complexity  
FRE 23: assess some subtleties of the language in a wide range of forms, styles, and registers  
FRE 24: show an awareness of, and sensitivity to, some elements of the culture related to the language studied  
FRE 25: successfully complete two written exams that demonstrate reading and writing skills  
FRE 26: successfully complete oral assessment

## IB Geography SL and HL

All group 3 subjects study individuals and societies; exploring the interaction between humans and their environment in time and place. Geography is a group 3 course.

Aims of all group 3 courses:

- 5.1 Encourage the systematic and critical study of
- human experience and behaviour
  - economic and social environments
  - history and development of social and cultural institutions
- Recognize, critically analyze, and evaluate theories, concepts, and arguments about the nature and activities of the individual and society.
  - Collect, describe, and analyze data to test hypotheses and interpret data.
  - Promote recognition of the importance of learning to enrich both personal life and understanding of one's own culture and other cultures.
  - Facilitate understanding that human attitudes and beliefs are extremely diverse and the study of society requires an appreciation of diversity.
  - Tolerance of various points of view and a recognition that the issues, context, and methodologies are subject to personal interpretation with no correct or incorrect answer.

Students will be expected to

- GEO 1: recognize and understand the interrelationships between people, places, spaces, and the environment (physical surrounding)  
GEO 2: understand and apply knowledge of core themes of patterns and change  
GEO 3: analyze and apply knowledge of geographic concepts and themes  
GEO 4: recognize, examine, and evaluate geographic concepts, theories, and perceptions  
GEO 5: identify and interpret geographic patterns and processes in unfamiliar information, data, and cartographic material  
GEO 6: understand how theories and concepts are recognized and understood within particular contexts  
GEO 7: recognize and apply methodologies appropriate for geographic fieldwork  
GEO 8: select, use and apply the prescribed geographic skills in appropriate context  
GEO 9: create properly formatted and structured written material using appropriate geographic terminology  
GEO 10: select, use, and apply techniques and skills appropriate to a geographic research question  
GEO 11: produce two written papers (2500 word max.)  
GEO 12: successful completion of two written exams

## IB Geography HL

The theme of global interactions has a broader perspective than SL, with emphasis on the complex, two-way process of cultural interaction and the processes of adaptation adoption, or resistance by societies.

Students will be expected to

- GEO 13: understand and apply knowledge of global interactions
- GEO 14: recognize, examine and evaluate topics related to global interactions
- GEO 15: produce three written papers (2500 word max.)
- GEO 16: successful completion of three written exams

## IB History SL

Students will be expected to

- HIS1: gain an understanding of relevant historical knowledge in the following areas of study:
  - social and cultural norms
  - religion
  - governing structures
  - warfare
  - the interconnectedness of world events; the influences of geography in world events
  - national foreign and domestic policies
  - economic theories and philosophy
- HIS2: understand and use a historical inquiry methodology that includes the ability to
  - evaluate, use, and understand primary and secondary historical sources
  - correctly cite historical sources
  - conduct historical research to locate relevant and appropriate evidence from books, articles, and appropriate websites
  - evaluate and synthesize evidence from both historical sources and background knowledge
  - recognize, explain, and analyze causes and consequences of historical events
  - relate events in history to a range of cultural and social dimensions
  - summarize and articulate conclusions
- HIS3: plan and produce a research paper using the knowledge and skills described in outcomes 1 and 2
- HIS4: demonstrate the ability to structure essay answers in a history examination using evidence to support relevant, balanced, and focused historical arguments as described in outcomes 1 and 2

## IB History HL

Higher level students will be expected to attain the outcomes for the SL (HIS1–HIS4) course, and, in addition,

- HIS5: gain an understanding of additional historical topics and demonstrate greater depth of understanding in the area of social and cultural impact of historical events

## IB History of Americas HL

Students will be expected to attain the outcomes for the IB History SL (HIS1–HIS4) course with particular emphasis on the application of these outcomes on the Americas, as well as the following:

HIS 6: gain an understanding of additional historical topics and demonstrate a depth of understanding in the area of the social and cultural impact of historical events on the Americas

## IB Math Studies SL

This course caters to students with varied backgrounds and abilities in math. It is designed to build confidence and encourage an appreciation of math in students who do not anticipate a need for math in their future studies.

Students will be expected to

- MTST1: exercise logical, critical, and creative thinking in the area of mathematics
- MTST2: interpret and solve a given problem using appropriate mathematical terms
- MTST3: organize and present information and data in specific forms (tabular, graphical, and/or diagrammatic)
- MTST4: formulate a mathematical argument and communicate it clearly
- MTST5: use appropriate mathematical strategies and techniques
- MTST6: demonstrate an understanding of the practical applications of mathematics and the appropriate use of mathematical modelling
- MTST7: use appropriate technological devices as mathematical tools
- MTST8: recognize patterns and structures in a variety of situations, and make generalizations
- MTST9: demonstrate an appreciation of the multiplicity of the cultural and historical perspectives of mathematics
- MTST10: understand both the significance and the reasonableness of results while demonstrating patience and persistence in problem solving
- MTST11: develop and use appropriate notation and terminology
- MTST12: appreciate the consequences arising from technological developments
- MTST13: transfer skills to alternative situations and to future developments

## IB Mathematics SL

Students will be expected to

- MTHS1: appreciate the multiplicity of historical and cultural perspectives of mathematics
- MTHS2: develop logical, critical, and creative thinking
- MTHS3: awareness of the historical and social contexts of the lives of mathematicians and mathematical discoveries
- MTHS4: interpret and solve mathematical problems using appropriate mathematical notation and terminology
- MTHS5: organize and present explanation and data in various forms (tabular, graphical, and diagrams)
- MTHS6: determine and apply correct mathematical strategies and techniques

- MTHS7: demonstrate an understanding of the processes necessary to obtain results
- MTHS8: recognize patterns and structures in a variety of contexts, and make generalizations
- MTHS9: recognize and apply an understanding of the practical applications of mathematics
- MTHS10: use appropriate technological devices as mathematics tools
- MTHS11: demonstrate an understanding of and appropriate uses of mathematical modelling
- MTHS12: create two portfolios based on different areas of the syllabus, representing two types of tasks  
1) mathematical investigation, 2) mathematical modelling

## IB Mathematics HL

This course caters to students with a good background in math. It is designed for students who will be expecting to include math as a major component of their university studies, either as a subject in its own right or within courses such as physics, engineering, and technology.

Students will be expected to

- MTHH1: exercise logical, critical, and creative thinking in the area of mathematics
- MTHH2: interpret and solve a given problem using appropriate mathematical terms
- MTHH3: organize and present information and data in specific forms (tabular, graphical, and/or diagrammatic)
- MTHH4: formulate a mathematical argument and communicate it clearly
- MTHH5: use appropriate mathematical strategies and techniques
- MTHH6: demonstrate an understanding of the practical applications of mathematics and the appropriate use of mathematical modelling
- MTHH7: use appropriate technological devices as mathematical tools
- MTHH8: recognize patterns and structures in a variety of situations and make generalizations
- MTHH9: demonstrate an appreciation of the multiplicity of the cultural and historical perspectives of mathematics
- MTHH10: understand both the significance and the reasonableness of results while demonstrating patience and persistence in problem solving
- MTHH11: develop and use appropriate notation and terminology
- MTHH12: appreciate the consequences arising from technological developments
- MTHH13: transfer skills to alternative situations and to future developments

## IB Music SL and HL

SL students must choose **one** of three options:

- creating (SLC)
- solo performing (SLS)
- group performing (SLG)

HL students are required to present **both** creating and solo performing and must submit more work for each of these components.

Students will be expected to

- MUS1: apply knowledge, understanding, and perception of music in relation to time, place, and cultures



- MUS2: appropriately use musical terminology to describe and reflect their critical understanding of music
- MUS3: provide a comparative analysis of music in relation to time, place, and cultures (HL students are also expected to demonstrate this in response to pieces not previously studied)
- MUS4: express creative skills through exploration, control, and development of musical elements (SLC, HL)
- MUS5: develop performance skills through solo music making (SLS, HL) or group music making (SLG)
- MUS6: apply critical-thinking skills through reflective thought of music in relation to time, place, and cultures
- MUS7: develop their knowledge and potential as musicians, both personally and collaboratively

## IB Physics SL

Students will be expected to

- PHY1: gain an understanding of scientific study and creativity within a global context including the following concepts:
- Appreciating the importance and limitations associated with science and scientists in modern and historical context.
  - Demonstrating and applying an understanding of the body of knowledge, methods, and techniques that characterize science and technology.
  - Understanding relationships between scientific disciplines.
  - Developing and demonstrating an understanding of the scientific method of inquiry.
  - Demonstrating an understanding of scientific facts and concepts, scientific methods and techniques, scientific terminology, and methods of presenting scientific information.
  - Developing the ability to critically analyze, evaluate, and synthesize scientific information.
  - Comprehending the need for, and the value of, effective collaboration and communication as part of the scientific process.
  - Being aware of the moral, ethical, social, economic, and environmental implications of using science and technology in society.
- PHY2: formulate and apply experimental and investigative science techniques that include the capacity to
- understand and apply experimental design including creation of hypotheses, research questions, and predicted results
  - construct, analyze, evaluate, and communicate experiment results using proper scientific communication terminology and scientific methods
  - demonstrate knowledge of scientific investigation and experimentation using proper safety procedures and laboratory rules
  - participate in, and demonstrate the skills of, collegiality, co-operation, perseverance and responsibility appropriate for scientific investigation and problem solving
  - develop a strong foundational understanding of the nature of science as it relates to the eight core areas as listed below:
    - > physics and physical measurement
    - > mechanics
    - > thermal physics
    - > oscillations and waves
    - > electric currents
    - > fields and forces

- > atomic and nuclear physics
- > energy, power, and climate change
- > demonstrate understanding of core curriculum and selected optional topics

PHY3: successfully complete three externally assessed written papers

PHY4: successfully complete all components of internal assessment (This includes all practical and experimental work as well as the Group 4 project.)

PHY5: successfully complete classroom tests, lab assignments and reports, and written exercises

## IB Physics HL

Students at HL are required to study some topics in greater depth, to study additional topics, and to study extension material of a more demanding nature than the common topics. The distinction between SL and HL is one of breadth and depth.

## IB Spanish Ab Initio SL

Students will be expected to

SPA1: Achieve communicative competence in a variety of everyday situations.

- Develop four primary language skills in an integrated manner through listening, speaking, reading, and writing
- In a limited range of situations, communicate information and basic ideas clearly and effectively.
- Understand and accurately use the language in spoken form, in a limited range of situations.
- Understand and accurately use the language in written form, in a limited range of situations.
- Understand and use a limited range of vocabulary and grammar.
- Understand differences between their own culture and the culture of the language that they are learning.
- Create a foundation, and recognize the idea that language is more than a school course, and encourage further independent study of the language.

## IB Theatre SL and HL

Students will be expected to

THE1: demonstrate a theoretical and practical knowledge of theatrical traditions from their own and different cultures

THE2: express an understanding of production elements and theatre practices

THE3: critically evaluate a range of diverse performances

THE4: create and present performances that will include a basic level of technical proficiency

THE5: reflect on their own development in theatre through continual self-evaluation and recording

THE6: acquire and apply research skills appropriate for the study and understanding of theatre

THE7: interpret play texts and other types of performance texts analytically and imaginatively

THE8: demonstrate initiative and perseverance in both individual and group projects

THE9: establish proficiency in more than one area of theatre technique through participation in a wide and varied range of theatre activities

- THE10: convey knowledge of different theatre traditions in their historical contexts
- THE11: display the confidence needed to explore, experiment, and to work individually and collaboratively on innovative projects that should challenge the established notions and conventions of theatre
- THE12: express an understanding of the dynamic, holistic, and evolving nature of theatre and the interdependencies of all aspects of this art form

In addition, HL students will be expected to

- THE13: evaluate the relevance of selected research sources to personal practice
- THE14: demonstrate an understanding of the complex processes of performance, from its initial conception to the impact the final result leaves on spectators

## IB Theory of Knowledge

Students will be expected to

- TOK1: demonstrate an understanding of the strengths and limitations of the various Ways of Knowing and of the methods used in the different Areas of Knowledge
- TOK2: demonstrate the ability to reason critically
- TOK3: make connections between personal experience and different Ways of Knowing and Areas of Knowledge
- TOK4: demonstrate an understanding of knowledge at work in the world
- TOK5: identify values underlying judgments and knowledge and knowledge claims pertinent to local and global issues
- TOK6: demonstrate an understanding that personal views, judgments, and beliefs may influence their own knowledge claims and those of others
- TOK7: use oral and written language to formulate and communicate ideas clearly
- TOK8: plan and produce an essay of 1200–1600 words on a prescribed title that is externally marked
- TOK9: plan and produce an internally assessed presentation to the class on a Theory of Knowledge topic chosen by the student that demonstrates a knowledge of the first seven outcomes

## IB Visual Arts HL and SL

Students will be expected to

- VA1: investigate past, present, and emerging forms of visual arts and engage in producing, appreciating, and evaluating these
- VA2: respond to and analyze critically and contextually the function, meaning, and artistic qualities of past, present, and emerging art, using the specialist vocabulary of visual arts
- VA3: develop an understanding of visual arts from a local, national, and international perspective
- VA4: cultivate and present independent ideas and practice, and explain the connections between these and the work of others
- VA5: explore and develop ideas and techniques for studio work through integrated contextual study and first-hand observations
- VA6: understand the importance of a close relationship between investigation and a purposeful, creative process in studio work

- VA7: produce personally relevant works of art that reveal evidence of exploration of ideas that reflect cultural and historic awareness and artistic qualities
- VA8: build confidence in responding visually and creatively to personal and cultural experiences
- VA9: maintain responsibility for the direction of their learning through the acquisition of effective working practices
- VA10: develop skills in, and sensitivity to, the creation of works that reflect active and individual involvement
- VA11: demonstrate technical competence and artistic qualities that challenge and extend personal boundaries (option A) and technical competence and self-direction (option B).

# Law 12

## Specific Curriculum Outcomes

Students will be expected to

### Unit I: Foundations of Justice and Law

- F1 apply research methods to legal issues
- F2 explain what law is and why laws are needed
- F3 investigate the historical roots of Canadian law
- F4 demonstrate an understanding of the law-making processes in Canada
- F5 analyze the impact of the *Canadian Charter of Rights and Freedoms* on the administration of justice and law in Canada

### Unit II: Criminal Law

- CR1 demonstrate an understanding of what constitutes a criminal offense in Canada
- CR2 describe the procedures and parties involved in bringing a criminal case to trial
- CR3 describe criminal trial principles and processes
- CR4 evaluate the objectives and effectiveness of various sentencing options
- CR5 investigate and assess how criminal law affects young people

### Unit III: Civil Law

- CI1 differentiate between civil law and criminal law
- CI2 analyze the role of law as it applies to torts and the relationship between tort law and young people
- CI3 analyze the role of law as it applies to contractual obligations as well as the implications of contractual obligations to young people
- CI4 analyze the relationship between law and family matters

### Unit IV: Other Areas of Law

**Note:** Teachers must select one from aboriginal law and at least any other 5 specific curriculum outcomes.

#### Aboriginal Law

- AB1 demonstrate an understanding of the legal impact of Aboriginal Rights and Treaty Rights
- AB2 analyze the legal effects of the *Indian Act* (1876) and the *Constitution Act* (1982) on Aboriginal peoples
- AB3 examine the importance and role of sentencing circles within Aboriginal communities

#### International Law

- IN1 demonstrate an understanding of how international law is made and applied
- IN2 analyze the effectiveness of international law

**Immigration Law**

- IM1 chart the immigration process as defined by current Canadian immigration law
- IM2 compare the current *Immigration and Refugee Protection Act* (2001) with previous immigration acts

**Human Rights Law**

- HR1 demonstrate an understanding of provincial, federal, and international human rights legislation
- HR2 evaluate the extent to which human rights in Canada are safeguarded today
- HR3 examine the development of human rights law in Canada by analyzing landmark cases and events

**Environmental Law**

- EV.1 demonstrate an understanding of the purposes and types of environment protection laws in Canada
- EV.2 evaluate the effectiveness of environmental laws in sustaining natural resources

**Employment Law**

- EM.1 demonstrate an understanding of the statutes that govern terms of employments
- EM.2 evaluate the extent to which Canadian law balances the rights of employers and employees

**Consumer Law**

- CO.1 demonstrate an understanding of the purposes and types of consumer protection laws in Canada
- CO.2 evaluate the effectiveness of consumer protection laws in Canada

**Media and Internet Law**

- MI.1 examine the role of contracts as they pertain to Internet commerce
- MI.2 analyze the evolving relationship between Canadian law and the Internet

# Math for the Workplace 12

## General Curriculum Outcomes

Students will be expected to

1. demonstrate a basic understanding of the mathematics required to complete measurement problems found in various trades
2. demonstrate a basic understanding of the mathematics required for three different career choices such as carpentry, welding, forestry, electrical, plumbing, power engineering, pipe fitting, steam fitting, interior decorating, metal working, machine technology, marine technology, auto mechanics, electronic technology, refrigeration, and masonry through a guided mini-project
3. demonstrate an understanding of ratio, rate, and proportion as they apply to specific career choices such as carpentry, welding, forestry, electrical, plumbing, power engineering, pipe fitting, steam fitting, interior decorating, metal working, machine technology, marine technology, auto mechanics, electronic technology, refrigeration, and masonry
4. demonstrate a strong understanding of the mathematics required for one career choice such as carpentry, welding, forestry, electrical, plumbing, power engineering, pipe fitting, steam fitting, interior decorating, metal working, machine technology, marine technology, auto mechanics, electronic technology, refrigeration, and masonry through a major project

## Specific Curriculum Outcomes

Students will be expected to

### Module 1: Measurement

- 1.1 demonstrate an understanding of the meaning and uses of accuracy and precision
- 1.2 use a measuring tape to measure tactile items in both imperial and SI units
- 1.3 identify the difference between length, area, and volume
- 1.4 demonstrate an understanding of the meaning and uses of significant figures
- 1.5 demonstrate an understanding of and be able to solve problems using dimensional analysis
- 1.6 identify, use, and convert among and between SI units and imperial units to measure and solve measurement problems
- 1.7 estimate distances by using a personal benchmark such as walking pace
- 1.8 demonstrate an understanding of and be able to solve problems using the Pythagorean Theorem

### Module 2: Mathematics in the Workplace Investigation

- 2.1 investigate a range of career opportunities to determine the best possible fit for their interests within the trades
- 2.2 demonstrate to others what type of mathematical knowledge is required to be successful at various career choices

- 2.3 demonstrate entry-level competence in the mathematics associated with the specific career choice a student has made
- 2.4 sketch and construct a model that will enable a student to show others some mathematics involved in a career interest

### **Module 3: Ratio, Rate, and Proportion**

- 3.1 calculate the dimensions of actual objects using blueprints with various scales
- 3.2 sketch and build representations of three-dimensional objects using a variety of materials and information about the objects
- 3.3 illustrate, explain, and express ratios, fractions, decimals, and percentages in alternative forms
- 3.4 find and calculate rates in practical applications such as pulse rate
- 3.5 estimate and calculate deductions taken from a pay stub as percent of gross earnings
- 3.6 sketch enlargements and reductions of objects using various scales
- 3.7 use the slope formula to solve trigonometric problems commonly found in industry

### **Module 4: Major Project: Math Preparation for the Workplace**

- 4.1 demonstrate to others what type of mathematical knowledge is required to be successful at their career choice
- 4.2 demonstrate competence in the mathematics associated with the specific career choice a student has made
- 4.3 prepare a detailed blueprint for, and construct a model that will enable a student to show others some mathematics involved in a specific career interest
- 4.4 visit a post-secondary institution that teaches the trade of interest for each student
- 4.5 visit a job-site situation that will provide an example of the career that each student has chosen to pursue



# Mathematics 12 / Advanced Mathematics 12

## General Curriculum Outcomes

- A. Students will demonstrate number sense and apply number-theory concepts.
- B. Students will demonstrate operation sense and apply operation principles and procedures in both numeric and algebraic situations.
- C. Students will explore, recognize, represent, and apply patterns and relationships, both informally and formally.
- D. Students will demonstrate an understanding of and apply concepts and skills associated with measurement.
- E. Students will demonstrate spatial sense and apply geometric concepts, properties, and relationships.
- F. Students will solve problems involving the collection, display, and analysis of data.
- G. Students will represent and solve problems involving uncertainty.

## Specific Curriculum Outcomes

The outcomes specific to the advanced-level course are indicated with (advanced) after the outcome number.

Students will be expected to

### Quadratics

- A3 demonstrate an understanding of the role of irrational numbers in applications
- A4 demonstrate an understanding of the nature of the roots of quadratic equations
- A7 describe and interpret domains and ranges using set notation
- A9 represent non-real roots of quadratic equations as complex numbers
- B1 demonstrate an understanding of the relationships that exist between arithmetic operations and the operations used when solving equations
- B10 derive and apply the quadratic formula
- B11 (advanced) analyze the quadratic formula to connect its components to the graphs of quadratic functions
- C1 model real-world phenomena using quadratic functions
- C3 sketch tables and graphs from descriptions and collected data
- C4 demonstrate an understanding of patterns that are arithmetic, power, and geometric, and relate them to corresponding functions
- C8 describe and translate between graphical, tabular, written, and symbolic representations of quadratic relationships
- C9 translate between different forms of quadratic equations
- C10 (advanced) determine the equation of a quadratic function using finite differences
- C15 relate the nature of the roots of quadratic equations and the  $x$ -intercepts of the graphs of the corresponding functions
- C22 solve quadratic equations

- C23 solve problems involving quadratic equations
- C29 analyze tables and graphs to distinguish between linear, quadratic, and exponential relationships
- C31 analyze and describe the characteristics of quadratic functions
- C32 demonstrate an understanding of how the parameter changes affect the graphs of quadratic functions
- F1 analyze, determine, and apply scatter plots and determine the equations for curves of best fit, using appropriate technology

### Rate of Change

- B4 (optional) calculate average rates of change
- C16 interpret solutions to equations based on context
- C17 (optional) demonstrate an understanding of the concept of rate of change in a variety of situations
- C18 (optional) demonstrate an understanding that the slope of a line tangent to a curve is the instantaneous rate of change of the curve at the point of tangency
- C27 (optional) approximate and interpret slopes of tangents to curves at various points on the curves, with and without technology
- C28 explore and describe the dynamics of change depicted in tables and graphs
- C30 (optional) describe and apply rates of change by analysing graphs, equations, and descriptions of linear and quadratic functions

### Exponential Growth

- A5 demonstrate an understanding of the role of real numbers in exponential and logarithmic expressions and equations
- A7 describe and interpret domains and ranges using set notations
- B1 demonstrate an understanding of the relationships that exist between arithmetic operations and the operations used when solving equations
- B2 demonstrate an understanding of the recursive nature of exponential growth
- B12 apply real number exponents in expressions and equations
- B13 solve systems of equations using inverse matrices
- C2 model real-world phenomena using exponential functions
- C3 sketch tables and graphs from descriptions and collected data
- C4 demonstrate an understanding of patterns that are arithmetic, power, and geometric and relate them to corresponding functions
- C11 describe and translate between graphical, tabular, written, and symbolic representations of exponential and logarithmic relationships
- C19 demonstrate an understanding, algebraically and graphically, that the inverse of an exponential function is a logarithmic function
- C24 solve exponential and logarithmic equations
- C25 solve problems involving exponential and logarithmic equations
- C29 analyze tables and graphs to distinguish between linear, quadratic, and exponential relationships
- C33 analyze and describe the characteristics of exponential and logarithmic functions

### Circle Geometry

- A5 demonstrate an understanding of the role of real numbers in exponential and logarithmic expressions and equations
- F1 analyze, determine, and apply scatter plots and determine the equations for curves of best fit, using appropriate technology
- D1 develop and apply formulas for distance and midpoint

- E3 (advanced) write the equations of circles and ellipses in transformational form and as mapping rules to visualize and sketch graphs
- E4 apply properties of circles
- E5 apply inductive reasoning to make conjectures in geometric situations
- E7 investigate, make, and prove conjectures associated with chord properties of circles
- E8 (advanced) investigate, make, and prove conjectures associated with angle relationships in circles
- E9 (advanced optional) investigate, make, and prove conjectures associated with tangent properties of circles
- E11 write proofs using various axiomatic systems and assess the validity of deductive arguments
- E12 demonstrate an understanding of the concept of converse
- E13 (advanced) analyze and translate between symbolic, graphical, and written representations of circles and ellipses
- E14 (advanced) translate between different forms of equations of circles and ellipses
- E15 (advanced) solve problems involving the equations and characteristics of circles and ellipses
- E16 (advanced) demonstrate the transformational relationship between the circle and the ellipse

### **Probability**

- A6 develop an understanding of factorial notation and apply it to calculating permutations and combinations
- B8 determine probabilities using permutations and combinations
- G1 develop and apply simulations to solve problems
- G2 demonstrate an understanding that determining probability requires the quantifying of outcomes
- G3 demonstrate an understanding of the fundamental counting principle and apply it to calculate probabilities of dependent and independent events
- G4 compare predicted and experimental results for familiar situations involving chance, using technology to extend the number of experimental trials
- G5 (advanced) determine conditional probabilities
- G7 distinguish between situations that involve combinations and permutations
- G8 develop and apply formulas to evaluate permutations and combinations
- G9 (advanced) demonstrate an understanding of binomial expansion and its connection to combinations
- G10 (advanced) connect Pascal's Triangle with combinatorial coefficients

# Mathematics Foundations 12

## General Curriculum Outcomes

- A. Students will demonstrate number sense and apply number-theory concepts.
- B. Students will demonstrate operation sense and apply operation principles and procedures in both numeric and algebraic situations.
- C. Students will explore, recognize, represent, and apply patterns and relationships, both informally and formally.
- D. Students will demonstrate an understanding of and apply concepts and skills associated with measurement.
- E. Students will demonstrate spatial sense and apply geometric concepts, properties, and relationships.
- F. Students will solve problems involving the collection, display, and analysis of data.
- G. Students will represent and solve problems involving uncertainty.

## Specific Curriculum Outcomes

Students will be expected to

### Patterns

- C4 demonstrate an understanding of patterns that are arithmetic, power, and geometric
- C5 determine and describe patterns and use them to solve problems
- C6 explore, describe, and apply the Fibonacci sequence
- C7 relate arithmetic patterns to linear relations
- C21 create and analyze scatter plots, and determine the equations for the curves of best fit using appropriate technology

### Quadratics

- A3 demonstrate an understanding of the role of irrational numbers in applications
- B1 demonstrate an understanding of the relationships that exist between arithmetic and the operations used when solving equations
- B3 apply the quadratic formula
- B9 perform operations on algebraic expressions and equations
- C1 model real-world phenomena using quadratic equations
- C5 determine and describe patterns and use them to solve problems
- C8 describe and translate between graphical, tabular, and written representations of quadratic relationships
- C12 describe and apply the characteristics of quadratic relationships
- C14 determine and interpret  $x$ -intercepts of quadratic functions
- C21 create and analyze scatter plots and determine the equations for curves of best fit, using appropriate technology
- C23 solve problems involving quadratic equations
- C29 analyze tables and graphs to distinguish between linear, quadratic, and exponential relationships
- E2 describe and apply symmetry

- F3 use curve-fitting to determine the equations of quadratic relationships
- F4 interpolate and extrapolate to predict and solve problems

### **Exponential Growth**

- A1 demonstrate an understanding of and apply zero and negative exponents
- A2 develop, demonstrate an understanding of, and apply properties of exponents
- A8 demonstrate an understanding of the exponential growth of compound interest
- B5 demonstrate an understanding of and apply compound interest
- B6 determine the amount and present value of annuities
- C5 determine and describe patterns and use them to solve problems
- C11 describe and translate between graphical, tabular, and written representations of exponential relationships
- C13 describe and apply the characteristics of exponential relationships
- C21 create and analyze scatter plots and determine the equations for curves of best fit, using appropriate technology
- C25 solve problems involving exponential equations
- C26 solve problems that require the application of compound interest
- C29 analyze tables and graphs to distinguish between linear, quadratic, and exponential relationships
- F2 use curve-fitting to determine the equations of exponential relationships
- F4 interpolate and extrapolate to predict and solve problems

### **Circle Geometry**

- D2 determine midpoints and the lengths of line segments using coordinate geometry
- E1 perform geometric constructions and analyze the properties of the resulting figures
- E2 describe and apply symmetry
- E5 apply inductive reasoning to make conjectures in geometric situations
- E6 explore, make conjectures about, and apply centres of circles
- E7 investigate and make and prove conjectures associated with chord properties of circles
- E8 investigate and make and prove conjectures associated with angle relationships in circles
- E10 present informal deductive arguments

### **Probability**

- A6 develop an understanding of factorial notation and apply it to calculating permutations and combinations
- B7 calculate probabilities to solve problems
- B8 determine probabilities using permutations and combinations
- G1 develop and apply simulations to solve problems
- G2 demonstrate an understanding that determining probability requires the quantifying of outcomes
- G3 demonstrate an understanding of the Fundamental Counting Principle and apply it to calculate probabilities of dependent and independent events
- G4 apply area diagrams and tree diagrams to interpret and determine probabilities of dependent and independent events
- G6 demonstrate an understanding of the difference between probability and odds
- G7 distinguish between situations that involve combinations and permutations
- G8 develop and apply formulas to evaluate permutations and combinations

# Multimedia 12

## Unifying Concepts

Students will be expected to

- A. create, manipulate, and critically reflect on digital and electronic images suitable for multimedia products
- B. create, manipulate, and critically reflect on digital and electronic time-based images suitable for multimedia products
- C. create, manipulate, and critically reflect on sound products suitable for multimedia products
- D. create, manipulate, and critically reflect on multimedia products as reflective members of a collaborative culture

## Specific Curriculum Outcomes

Students will be expected to

### Module 1: Creating and Manipulating Images

- 1.1 apply techniques and procedures needed to manipulate images (including text) in a range of media, including digital and electronic media
- 1.2 demonstrate an understanding of the cultural, historical, and emotional impact of other people's images by examining their form and content
- 1.3 demonstrate an awareness of the procedures involved in the production of images in a range of digital and electronic media
- 1.4 apply principles of art and design to create digital and electronic images
- 1.5 construct digital and electronic images which communicate ideas and concepts

### Module 2: Creating and Manipulating Motion Graphics

- 2.1 apply techniques and procedures needed to create motion graphics
- 2.2 demonstrate an understanding of the cultural, historical, and emotional impact of other people's motion graphics by examining their form and content
- 2.3 demonstrate an awareness of the procedures involved in the production of motion graphics in a range of digital and electronic media
- 2.4 apply principles of art and design to create motion graphics
- 2.5 constructed motion graphics which communicate ideas and concepts

### Module 3: Sound

- 3.1 create and manipulate sound products from a range of sources, including music, narration, and effects
- 3.2 demonstrate an understanding of the cultural, historical, and emotional impact of other people's sound products by examining their form and content; and relationship or potential relationship to other multimedia elements

- 3.3 demonstrate an awareness of the procedures involved in the production and application of sound products in a range of media
- 3.4 apply principles of art and design to create sound products
- 3.5 construct and manipulate sound products which communicate ideas and concepts

#### **Module 4: Collaborative Project and Personal Portfolio**

- 4.1 apply skills, principles, techniques, and processes of art and design to communicate ideas and concepts to an identified audience for an specified purpose
- 4.2 demonstrate an understanding of the cultural, historical, and emotional impact of other people's multimedia products by examining their form and content, audience and purpose
- 4.3 collaboratively create a customized multimedia authored project using software program(s) and external sources
- 4.4 independently select, organize and refine a range of multimedia products that illustrate learning throughout the course to create a multimedia-authored personal portfolio
- 4.5 explore various educational and career paths in multimedia-related fields

# Music 12

## General Curriculum Outcomes

Students will be expected to

### Creating, Making, and Presenting

1. explore, challenge, develop, and express ideas using the skills, language, techniques, and processes of the arts
2. create and/or present, collaboratively and independently, expressive products in the arts for a range of audiences and purposes

### Understanding and Connecting Contexts of Time, Place, and Community

3. demonstrate critical awareness of and value the role of the arts in creating and reflecting culture
4. respect the contributions of individuals and cultural groups to the arts in local and global contexts and value the arts as a record of human experience and expression
5. examine the relationship among the arts, societies, and environments

### Perceiving and Responding

6. apply critical thinking and problem solving strategies to reflect on and respond to their own and others' expressive work
7. understand the role of technologies in creating and responding to expressive works
8. analyze the relationship between artistic intent and the expressive work

## Specific Curriculum Outcomes

Students will be expected to

- CM 1.1 actively participate through individual or ensemble music-making in the selection, preparation, and presentation of music
- CM 1.2 use their knowledge of musical elements and technologies to shape creative expression through both composition and performance
- CM 1.3 interpret and represent a range of thoughts, images and feelings using and responding to non-verbal gestures
- CM 1.4 demonstrate an ability to decode musical notation and encode music as a means toward lifelong musical independence and enjoyment
  
- CM 2.1 improvise and compose increasingly complex music using a variety of sound sources, including vocal, instrumental, and electronic to express ideas, perceptions, and feelings
- CM 2.2 demonstrate the intrinsic fusion of skills, concepts, and feelings through performing and creating for a range of audiences and purposes
- CM 2.3 create and perform a wide range of musical styles, forms and genres, alone and collectively



- UC 3.1 analyze and evaluate the role of music in daily life
- UC 3.2 evaluate possibilities for ongoing involvement in music-related vocations and avocations
- UC 3.3 demonstrate an appreciation of music from a broad range of cultural and historical contexts
- UC 3.4 analyze, understand, and value the influence of music in creating and reflecting culture, both historical and present day
  
- UC 4.1 recognize the importance of the musical contributions of individuals to their communities
- UC 4.2 respect the contribution of cultural groups to music in the global community
- UC 4.3 demonstrate an understanding of the power of music to shape, express, and communicate ideas and feelings throughout history
  
- UC 5.1 analyze and make decisions about the relationship between music, other arts, and other subjects
- UC 5.2 analyze and make decisions about the relationship between music and society and music and the natural environment
  
- PR 6.1 analyze and apply the processes used to address challenges and make decisions while creating and performing music
- PR 6.2 analyze and respond personally to an extended variety of musical styles, forms, and genres
- PR 6.3 evaluate their own musical insights and aesthetic responses in the context of other critical commentary
  
- PR 7.1 select among available technologies to create and perform music that reflects a variety of moods, thoughts, and feelings
- PR 7.2 demonstrate an understanding of the relationship between technical skill and expressive qualities of sound sources
- PR 7.3 use a range of technologies to produce and reproduce sound that expresses personal thoughts and feelings
  
- PR 8.1 analyze how consideration of the intended audience affects the musical work
- PR 8.2 reflect critically on meanings, ideas, and values associated with particular music compositions and performances
- PR 8.3 interpret the relationship between intention and outcome in their own and others' work
- PR 8.4 analyze and make decisions about their own musical work, using available technology and feedback from others

# Other Languages 10–12 (Languages Template)

## Specific Curriculum Outcomes

Students will be expected to

### Communicating

- 1.1 exchange ideas and thoughts about areas of personal interest
- 1.2 give reasons and information to support points of view on various issues
- 1.3 express long- and short-term plans, goals, and intentions
- 1.4 interact in [Target Language] effectively and with some spontaneity in situations drawn from real life

### Acquiring Information

- 1.5 research, analyze, and use relevant information from several sources on a chosen topic to complete authentic tasks

### Experiencing Creative Works

- 1.6 view, listen to, and read creative works, and respond to them through drama, visual arts, music, and writing

### Understanding Culture and Society

- 1.7 give examples of how one is influenced by one's cultural experience
- 1.8 identify cultural content in [Target Language] resources
- 1.9 show cultural sensitivity in everyday situations through appropriate behaviour and language

# Physical Education Leadership 12

Students will be expected to

## Module 1: Defining Leadership

- 1.1 demonstrate an understanding of positive and effective leadership through leading physically active experiences in micro-teaching\* settings among peers and/or during Module 3
- 1.2 apply and critique various leadership skills through leading physically active experiences in micro-teaching settings among peers and/or during Module 3
- 1.3 apply and critique various leadership styles through leading physically active experiences in micro-teaching settings among peers, and to connect the knowledge to experiences outside of physical activity and beyond high school
- 1.4 identify and critique their own leadership styles and set goals and provide a rationale to maintain or modify current leadership styles

## Module 2: Effective Leaders

- 2.1 investigate characteristics of effective leaders in history and effective leaders from their past and critique them
- 2.2 apply effective verbal and non-verbal communication skills while serving as leaders through physically active micro-teaching settings among peers and/or during Module 3
- 2.3 apply knowledge of group dynamics while serving as leaders through leading physically active experiences in micro-teaching settings among peers and/or during Module 3
- 2.4 demonstrate an understanding of the planning, scheduling, and organization required to lead effectively during micro-teaching settings and/or during Module 3

## Module 3: Leading through Service

- 3.1 convey what service learning projects are, their benefits, and what service projects should not be
- 3.2 initiate a needs assessment for their leadership role within a group, and a needs assessment for the service learning project to be implemented
- 3.3 implement a service learning project in the community and continuously reflect on (and adjust as necessary) their leadership effectiveness throughout the project
- 3.4 demonstrate an understanding of the importance of inclusive language (related to such constructs as gender, sexuality, race, and ability) while serving as leaders
- 3.5 demonstrate an understanding of risk-management responsibilities when leading others
- 3.6 present a summary report of the service learning experience for future groups to learn from and build on
- 3.7 identify potential leadership opportunities beyond high school and determine how to explore such opportunities

\* micro-teaching: 3 to 4 students in a group

# Physics 12 / Advanced Physics 12

## General Curriculum Outcomes

### STSE

1. Students will develop an understanding of the nature of science and technology, of the relationships between science and technology, and of the social and environmental contexts of science and technology.

### Skills

2. Students will develop the skills required for scientific and technological inquiry, for solving problems, for communicating scientific ideas and results, for working collaboratively, and for making informed decisions.

### Knowledge

3. Students will construct knowledge and understandings of concepts in life science, physical science, and Earth and space science, and apply these understandings to interpret, integrate, and extend their knowledge.

### Attitudes

4. Students will be encouraged to develop attitudes that support the responsible acquisition and application of scientific and technological knowledge to the mutual benefit of self, society, and the environment.

## Specific Curriculum Outcomes

**Note:** Students in Advanced Physics 12 will be expected to achieve the outcomes for Physics 12 as well as those for Advanced Physics 12.

Students will be expected to

### **Force, Motion, Work, and Energy (55%) (Advanced, 45%)**

#### Dynamics Extension

- use vector analysis in two dimensions for systems involving two or more masses, relative motions, static equilibrium, and static torques (ACP-1)

### Collisions in Two Dimensions

- apply quantitatively the laws of conservation of momentum to two-dimensional collisions and explosions (326-3)
- determine in which real-life situations involving elastic and inelastic interactions the laws of conservation of momentum and energy are best used (326-4)

### Projectiles

- construct, test, and evaluate a device or system on the basis of developed criteria (214-14, 214-16)
- analyze quantitatively the horizontal and vertical motion of a projectile (325-6)

### Circular Motion

- describe uniform circular motion using algebraic and vector analysis (325-12)
- explain quantitatively circular motion using Newton's laws (325-13)

### Simple Harmonic Motion (SHM)

- identify questions, analyze, compile, and display evidence and information to investigate the development over time of a practical problem, issue, or technology (212-3, 214-3, 115-5)
- explain qualitatively the relationship between displacement, velocity, time, and acceleration for simple harmonic motion (327-2)
- explain quantitatively the relationship between potential and kinetic energies of a mass in simple harmonic motion (327-4)
- compile and organize data, using data tables and graphs, to facilitate interpretation of the data (213-5)

### Universal Gravitation

- explain qualitatively Kepler's first and second laws and apply quantitatively Kepler's third law (ACP-2)
- explain and apply the law of universal gravitation to orbital notations by using appropriate numeric and graphic analysis (215-2)
- distinguish between scientific questions and technological problems as applied to orbital situations (115-1)

### Fields (21%) (Advanced, 15%)

#### Magnetic, Electric, and Gravitational Fields

- explain the roles of evidence, theories and paradigms, and peer review in the development of the scientific knowledge associated with a major scientific milestone (114-2, 114-5, 115-3)
- communicate questions, ideas, and intentions, and receive, interpret, understand, support, and respond to the ideas of others (215-1)
- describe magnetic, electric, and gravitational fields as regions of space that affect mass and charge (328-1)
- describe magnetic, electric, and gravitational fields by illustrating the source and direction of the lines of force (328-2)
- describe electric fields in terms of like and unlike charges, and magnetic fields in terms of poles (328-3)

### Coulomb's Law

- define and delimit problems, estimate quantities, interpret patterns and trends in data, and infer or calculate the relationships among variables (212-2, 213-4, 214-5)
- compare Newton's law of universal gravitation with Coulomb's law, and apply both laws quantitatively (328-4)

### Electric Circuits (Optional)

- apply Ohm's law to series, parallel, and combination circuits (ACP-3)
- carry out procedures controlling the major variables, selecting and using instruments effectively, accurately, and safely, and adapting or extending procedures where required (213-2, 213-3, 213-8)
- state a prediction and a hypothesis based on available evidence and background information (212-4)
- design an experiment and identify specific variables (212-6)

### Electromagnetism and Electromagnetic Induction

- describe the magnetic field produced by a current in a long, straight conductor, and in a solenoid (328-6)
- analyze qualitatively the forces acting on a moving charge in a uniform magnetic field (328-5)
- analyze qualitatively electromagnetic induction by both a changing magnetic flux and a moving conductor (328-7)

### Generators and Motors

- compare and contrast the ways a motor and generator function, using the principles of electromagnetism (328-9)
- describe and compare direct current and alternating current (ACP-4)

### Waves and Modern Physics (12%) (Advanced, 10%)

#### Quantum Physics

- apply quantitatively the law of conservation of mass and energy using Einstein's mass-energy equivalence (326-9)
- explain how quantum physics evolved as new evidence came to light and as laws and theories were tested and subsequently restricted, revised, or replaced, and use library and electronic research tools to collect information on this topic (115-7, 213-6)
- describe how the quantum energy concept explains both black-body radiation and the photoelectric effect (327-9)
- explain qualitatively and apply the formula for the photoelectric effect (327-10)

#### Compton and de Broglie

- explain how a photon momentum revolutionized thinking in the scientific community (115-3)
- apply and assess alternative theoretical models for interpreting knowledge in a given field (214-6)
- explain quantitatively the Compton effect and the de Broglie hypothesis, using the laws of mechanics, the conservation of momentum, and the nature of light (329-1)

### Particles and Waves

- summarize the evidence for the wave and particle models of light (327-11)

### Bohr Atoms and Quantum Atoms

- explain quantitatively the Bohr atomic model as a synthesis of classical and quantum concepts (329-2)
- explain the relationship among the energy levels in Bohr's model, the energy difference between levels, and the energy of the emitted photons (329-3)
- use the quantum-mechanical model to explain naturally luminous phenomena (329-7)

### Radioactivity (12%) (Advanced, 10%)

#### Natural and Artificial Sources of Radiation

- describe sources of radioactivity in the natural and constructed environments (329-5)
- identify, analyze, and describe examples where technologies were developed based on scientific understanding, the design and function of these technologies as part of a community's life, and science- and technology-related careers (116-4, 116-6, 117-5, 117-7)
- use quantitatively the law of conservation of mass and energy using Einstein's mass-energy equivalence (326-9)
- select and integrate information from various print and electronic sources or from several parts of the same source (213-7)
- develop appropriate sampling procedures (212-9)
- select and use apparatus and materials safely (213-8)
- demonstrate a knowledge of WHMIS standards by selecting and applying proper techniques for handling and disposing of lab materials (213-9)

#### Radioactive Decay

- describe the products of radioactive decay and the characteristics of alpha, beta, and gamma radiation (329-4)
- analyze data on radioactive decay to predict half-life (214-2)

#### Fission and Fusion

- compare and contrast fission and fusion (329-6)
- analyze examples of Canadian contribution to a particular development of science and technology (115-5, 117-11)
- identify, develop, present, and defend a position or course of action based on identifying multiple perspectives that influence the issue, and on interpreting data and the relationship among variables (214-15, 215-4, 215-5)
- analyze and evaluate, from a variety of perspectives, using a variety of criteria, the risks and benefits to society and the environment of a particular application of scientific knowledge and technology (118-2, 118-4)

## Advanced Physics 12 Outcomes (Draft)

Specific curriculum outcomes are organized in four units. Each unit is organized by topic. Advanced Physics 11 and Advanced Physics 12 units and topics use Physics 11 and Physics 12 outcomes, but the following are done in more depth.

Students will be expected to

### **In-depth Treatment (completed within the units)**

*Force, Motion, Work, and Energy*

#### **Dynamics Extension**

- use vector analysis in two dimensions for systems involving two or more masses, relative motions, static equilibrium, and static torques (ACP-1)

#### **Projectiles**

- analyze quantitatively the horizontal and vertical motion of a projectile (325-6)

#### **Circular Motion, Simple Harmonic Motion, and Universal Gravitation (Advanced Outcome)**

- develop questions related to these topics (AP-09)

#### **Fields (Advanced Outcome)**

- apply Kirchoff 's laws of voltage and current to circuits with two sources of emf (AP-11)

*Waves and Modern Physics*

#### **Quantum Physics (Advanced Outcomes)**

- explain the design and results of the Michelson-Morley experiment (AP-12)
- explain how Einstein developed the special theory of relativity, and its implications (AP-13)
- explain qualitatively thought experiments on spontaneity and time dilation (AP-14)

### **Literature Search and Report (5%)**

- collect, organize, edit, and present a summary of current information related to a specific topic (AP-03)
- write a report as a formal research paper (AP-04)

### **Investigation: An Independent Study/Experiment (15%)**

- collaborate and investigate on an independent research project (AP-07)
- maintain a research log, including personal reflection and data collection (AP-08)
- use technology and other skills effectively to communicate their results publicly (AP-10)



# Pre-Calculus Mathematics 12

## General Curriculum Outcomes

- A. Students will demonstrate number sense and apply number theory concepts.
- B. Students will demonstrate operation sense and apply operation principles and procedures in both numeric and algebraic situations.
- C. Students will explore, recognize, represent, and apply patterns and relationships, both informally and formally.
- D. Students will demonstrate an understanding of and apply concepts and skills associated with measurement.
- E. Students will demonstrate spatial sense and apply geometric concepts, properties, and relationships.
- F. Students will solve problems involving the collection, display, and analysis of data.
- G. Students will represent and solve problems involving uncertainty.

## Specific Curriculum Outcomes

Students will be expected to

### Sequences and Series

- A1 demonstrate an understanding of recursive formulas
- A3 represent arithmetic and geometric sequences as ordered pairs and discrete graphs
- A4 represent a series in expanded form and using sigma notation
- B2 develop, analyze, and apply algorithms to generate terms in a sequence
- B3 develop, analyze, and apply algorithms to determine the sum of a series
- B4 apply convergent and divergent geometric series
- C1 model problem situations using discrete structures such as sequences and recursive formulas
- C12 demonstrate an understanding for the conceptual foundations of limit, the area under the curve, the rate of change, and the slope of the tangent line and their applications
- C18 demonstrate understanding for recursive formulas, and how recursive formulas relate to a variety of sequences
- C24 demonstrate an understanding of divergence and convergence
- C25 demonstrate an intuitive understanding of the concept of limit
- C26 investigate and apply the concept of infinity by examining sequences and series
- D2 demonstrate an understanding of how to approximate the area under a curve using limits
- E2 develop and evaluate mathematical arguments and proofs
- E3 prove using the principle of mathematical induction

## Developing a Function Toolkit Part I

- B1 describe the relationships between arithmetic operations and operations on rational algebraic expressions and equations
- B6 determine and apply the derivative of a function
- B7 derive and apply the power rule
- C2 model problem situations with combinations and compositions of functions
- C3 model real-world phenomena using polynomial functions and rational functions
- C5 use tables and graphs as tools to interpret expressions
- C7 demonstrate an understanding for slope functions and their connection to differentiation
- C10 analyze and solve polynomial, rational, irrational, absolute value, and trigonometric equations
- C11 analyze and solve polynomial, rational, and absolute value inequalities
- C12 demonstrate an understanding for the conceptual foundations of limit, the area under a curve, the rate of change, and the slope of the tangent line, and their applications
- C14 analyze relations, functions, and their graphs
- C15 determine the equations of polynomial and rational functions
- C19 investigate and interpret combinations and compositions of functions
- C20 factor polynomial equations
- C23 demonstrate an understanding for the conceptual foundations for limit, the area under a curve, rate of change, slope of a tangent line, and their applications
- C25 demonstrate an intuitive understanding of the concept of limit
- C27 represent complex numbers in a variety of ways
- E1 model real-world phenomena with a variety of functions/relations
- A2 determine, describe, and apply the value for “ $e$ ”

## Developing a Function Toolkit Part II

- B1 describe the relationships between arithmetic operations and operations on rational algebraic expressions and equations
- B6 determine and apply the derivative of a function
- C2 model problem situations with combinations and compositions of functions
- C3 model real-world phenomena using polynomial functions and rational functions
- C5 use tables and graphs as tools to interpret expressions
- C6 demonstrate an understanding for asymptotic behaviour
- C8 explore and describe the connections between quadratic equations and their inverses
- C10 analyze and solve polynomial, rational, irrational, absolute value, and trigonometric equations
- C11 analyze and solve polynomial, rational, and absolute value inequalities
- C12 demonstrate an understanding for the conceptual foundations of limit, the area under a curve, the rate of change, and the slope of the tangent line, and their applications
- C13 extend the understanding of exponential growth and decay through multiple contexts
- C14 analyze relations, functions, and their graphs
- C15 determine the equations of polynomial and rational functions
- C16 analyze the effect of parameter changes on the graphs of functions and express the changes using transformations
- C19 investigate and interpret combinations and compositions of functions
- C23 demonstrate an understanding for the conceptual foundations for limit, the area under a curve, rate of change, slope of a tangent line, and their applications
- C25 demonstrate an intuitive understanding of the concept of limit
- E1 model real-world phenomena with a variety of functions/relations

## Trigonometry

- A5 demonstrate an understanding for the use of, and need for, radian measure in the domain of trigonometric functions
- B8 derive and apply the general rotational matrix
$$\begin{pmatrix} \cos \theta & -\sin \theta \\ \sin \theta & \cos \theta \end{pmatrix}$$
- C2 model problem situations with combinations and compositions of functions
- C4 model situations with periodic curves
- C6 demonstrate an understanding for asymptotic behaviour
- C9 examine, interpret, and apply the relationship between trigonometric functions and their inverses
- C10 analyze and solve polynomial, rational, irrational, absolute value, and trigonometric equations
- C14 analyze relations, functions, and their graphs
- C16 analyze the effect of parameter changes on the graphs of functions and express the changes using transformations
- C17 explore and analyze the graphs of the reciprocal trigonometric functions
- C19 investigate and interpret combinations and compositions of functions
- C21 perform various transformations using multiplication of matrices
- C22 explore and verify trigonometric identities
- D1 describe and apply the connection between arc length and radian measure and apply radian measure

## Complex Numbers

- A6 explain the connections between real and complex numbers
- A7 translate between polar and rectangular representations
- B9 apply operations on complex numbers both in rectangular and polar form
- B10 develop and apply De Moiré's Theorem for powers
- C27 represent complex numbers in a variety of ways
- C28 construct and examine graphs in the complex and polar planes

# Production Technology 11 and 12

## Unifying Concepts

Students will be expected to demonstrate

- A. an understanding of the function of production technology in historical contexts and modern society
- B. the ability to analyze, critique, and evaluate the application and outputs of a variety of production technology methods
- C. an understanding of the major resources used for production
- D. an understanding of the impact of production technology on individuals, society, and the environment
- E. consideration of others during independent and collaborative activities
- F. an understanding of workplace health and safety requirements

## Specific Curriculum Outcomes

Students will be expected to

### Unit 1: Production and Humans

- 1.1 describe the role and value of production and identify basic and advanced human needs
- 1.2 compare and judge the advantages and disadvantages of hand and mass production techniques
- 1.3 explain the highlights of the industrial revolution and their impact on production and society
- 1.4 recount and interpret contemporary developments in the field of production
- 1.5 describe and demonstrate the general principles of the organization of production
- 1.6 define, demonstrate, and apply the basic technology system used in production
- 1.7 specify and communicate the major impacts of production on society, economy, culture, and the environment
- 1.8 identify the needs and preferences of users reflected in contemporary products
- 1.9 recognize potential conflicts between the needs of individuals and of society

### Unit 2: Resources for Production

- 2.1 define the major categories of resources used for production
- 2.2 explain the general structure of materials and describe major material properties
- 2.3 specify and communicate the personnel involved in the production technology team
- 2.4 list and explain the basic tools and machines used in production
- 2.5 select production tools, machines, and equipment appropriate to the task at hand and use them safely, accurately, and economically
- 2.6 describe the general organization of business involved with production including capital and financing, management, and research development
- 2.7 explain how people are an important resource who need to be trained, organized, and motivated for roles in production
- 2.8 demonstrate that in production, the control of stock is important

### Unit 3: Manufacturing

- 3.1 explain how designs for the production of an item can be granted a patent
- 3.2 demonstrate awareness of the competition that surrounds the development of inventions and the control of patents
- 3.3 define the major types of manufacturing
- 3.4 plan a total sequence for the production of a product
- 3.5 demonstrate basic manufacturing processes during the production of a quality product
- 3.6 explain and demonstrate various ways of packaging/promoting and selling a product
- 3.7 define acceptable tolerances for manufacturing
- 3.8 resolve conflicting demands to produce an optimum solution
- 3.9 develop and implement plans for the packaging, promotion, and sale of at least one product
- 3.10 explain that goods may be designed to be produced singly or in quantity and that this affects what each item costs
- 3.11 devise methods of production that show a comprehensive understanding of tools, materials, equipment, and processes

### Unit 4: Product Analysis

- 4.1 analyze and evaluate products produced by different methods of manufacturing such as handcrafted, custom, mass, and CIM
- 4.2 apply critical thinking skills for developing and evaluating ideas
- 4.3 define the conceptual framework associated with the design problem-solving process
- 4.4 demonstrate the application of the design problem-solving process during the production of numerous products
- 4.5 control quality effectively during the production of a product
- 4.6 perform regular tasks on a manufactured product
- 4.7 be aware that the appearances of products and their relationship to their environment is important to the consumer
- 4.8 use techniques, processes, and resources creatively to achieve a high-quality product that matches the specifications

### Unit 5: Construction Production

- 5.1 identify the features relevant to small- and large-scale construction production projects
- 5.2 design, plan, and complete a custom production project
- 5.3 identify and use the materials, tools, machines, and techniques used in construction production
- 5.4 overcome obstacles when making by applying knowledge of materials components, tools, equipment, and processes to change working practice

### Unit 6: Computers and Manufacturing

- 6.1 describe and demonstrate the basic operation of a computer
- 6.2 demonstrate and use a computer to support production manufacturing in a variety of ways as follows:
  - for the management of production
  - for research and development
  - to assist the promotion and sale of a product
  - for planning production
  - for the control of manufacturing/production

- 6.3 save, restore, and print products of computer applications listed above

### **Unit 7: Future Production and Careers**

- 7.1 identify and distinguish the advantages and disadvantages of new materials for use in production technology
- 7.2 describe and discuss the impact of production on resources available, the environment, and human beings
- 7.3 display and develop the personal qualities and attitudes beneficial to careers in the production and job applications
- 7.4 identify the careers available in the area of production technology
- 7.5 work as a member of a team in a production enterprise

# Skilled Trades 12 Co-op

## Specific Curriculum Outcomes

Skilled Trades 12 Co-op is a co-operative education course. As such, students must complete the required in-class components:

### Module 1: Career Planning

- 1.1 identify and use strategies to determine appropriate, realistic education and career plans
- 1.2 demonstrate understanding of, and actively participate in, the career-building process

### Module 2: Preparing for the Workplace

- 2.1 demonstrate workplace readiness by identifying and assessing personal traits, values, strengths and weaknesses, abilities, and employability skills
- 2.2 demonstrate an understanding of workplace hierarchies, relationships, etiquette, and confidentiality

### Module 3: Workplace Health and Safety

- 3.1 demonstrate understanding of the major components of the Nova Scotia *Occupational Health and Safety Act* and regulations, including employer and employee rights and responsibilities for workplace health and safety
- 3.2 demonstrate understanding of the five main types of workplace hazards and their four main contributing factors
- 3.3 demonstrate understanding of hazard control, including the role of reporting, workplace hazards, and the use of personal protective equipment (PPE)
- 3.4 demonstrate understanding of the components of Workplace Hazardous Materials Information System (WHMIS)—training, labels, and Material Safety Data Sheets (MSDS)

## Learning Plan Framework

In addition, Skilled Trades 12 Co-op students will be expected to use the following guidelines in the development of their learning plan.

### Cluster 1: Unique Trades Realities

How will my learning plan provide me with a better understanding of

- the nature of work and general working conditions; and
- the roles and responsibilities of people working in the specific trade and perform the work of this trade?

How will my learning plan help me to better

- recognize established work specifications in the specific co-operative trade and perform work meeting those specifications;

- model the employability skills required for successful employment in the specific co-operative trade; and
- produce appropriate artifacts for their lifework portfolio to demonstrate learning throughout the placement?

### **Cluster 2: Safety**

How will my learning plan help me to better

- identify and demonstrate the importance of reporting safety risks and hazards in the workplace;
- apply workplace health and safety practices and procedures in various work situations;
- properly use and maintain personal protective equipment; and
- use tools and equipment safely?

### **Cluster 3: Measurement and Calculation**

How will my learning plan help me to better

- interpret trades-related specifications, graphs, measurements, and instructions;
- estimate values;
- perform trades-related calculations; and
- measure values using various systems of measurement?

### **Cluster 4: Tools and Materials of the Transportation Trades**

How will my learning plan help me to better

- use and interpret documents, specifications, drawings, and instructions related to the specific co-operative trade;
- use and maintain tools and equipment in a safe, accurate, and appropriate manner; and
- identify, use, store, and properly dispose of materials and hazardous products in a safe, responsible, and sustainable manner?



# Sociology 12

## Specific Curriculum Outcomes

**Note:** Students have the opportunity to take Sociology 12 as either an open or an academic course. The specific curriculum outcomes (SCOs) for Sociology 12 as an open course are printed in roman (plain) type. *The SCOs for Sociology 12 as an academic course include those printed in roman type (Sociology 12 Open) as well as those printed in italics (for Sociology 12 Academic only).*

Students will be expected to

### Unit 1—Sociology: A Social Science

- 1.1 describe the discipline of sociology as a social science through the examination of selected social issues
  - Define social science.
  - Define sociology.
  - Differentiate sociology from other social sciences, including anthropology and psychology.
  - Describe the ways in which sociologists examine the world.
- 1.2 demonstrate an understanding of major sociological perspectives
  - Identify key figures in the development of the discipline of sociology.
  - Explore multiple theoretical perspectives and viewpoints used in sociological analyzes (e.g., functionalism, conflict, symbolic interactionism, feminism, post-modern).
  - Recognize examples of major perspectives.
  - Differentiate sociological perspectives from the perspectives of other social sciences.
- 1.3 analyze a variety of appropriate sociological research methods
  - Describe common sociological research methods.
  - Assess the strengths and weaknesses of each method studied.
  - Select the research methods most appropriate to given scenarios.
- 1.4 design and conduct a sociological research project, independently or collaboratively, using methods appropriate to sociology
  - Identify stages in the research process.
  - Formulate an appropriate research question.
  - Construct an appropriate research plan.
  - Implement their research plan.
  - Communicate the results of their research.
  - Evaluate their research process.

### Unit 2—Culture: A Shared Human Experience

- 2.1 demonstrate an understanding of the concept of culture
  - Describe various elements of culture (e.g., symbols, language, norms, and values).
  - Investigate various theoretical perspectives and viewpoints that attempt to explain culture (e.g., structural functionalism, conflict, symbolic interactionism, feminism and post-modern) as well as cultural materialism and sociobiology.

- Apply these theoretical perspectives to given cultural scenarios.
  - Evaluate influences that shape their cultural identity.
- 2.2 analyze factors related to cultural variation
- Examine factors that contribute to cultural variation.
  - Investigate the role of ethnocentrism, cultural relativism, and dominant culture in cultural variation.
  - Compare pluralism to multiculturalism in a Canadian context.
  - Investigate the existence of subcultures and countercultures in Canadian society.
- 2.3 analyze factors related to cultural uniformity
- Examine factors that contribute to cultural uniformity.
  - Investigate the role of popular culture in fostering cultural uniformity.
  - Formulate a hypothesis regarding the beneficial and/or detrimental effects of cultural assimilation.
  - Compare the attributes of cultural uniformity with those of cultural variation.
  - Examine the concepts of “dominant culture” and “multiculturalism” within the context of Canadian Society.
- 2.4 investigate the process of cultural change
- Analyze factors that contribute to the process of cultural change.
  - Describe the role of cultural lag and cultural diffusion in the process of cultural change.
  - Assess society’s response to the process of cultural change.
  - Evaluate the beneficial and detrimental effects of cultural change.

### **Unit 3—Socialization: The Shaping of Human Behaviour**

- 3.1 explain the process of socialization
- Define socialization.
  - Identify various agents of socialization (e.g., media, family, peers, education, religion, work) and describe their role in the socialization process.
  - Relate the impact of agents of socialization to their behaviour and own socialization.
- 3.2 investigate the relationship between socialization and the development of individual personality
- Examine the roles of nature and nurture in the socialization process.
  - Analyze major theories of personality development (e.g., Freud’s Psychosexual Theory, Erikson’s Psychosocial Development, Cooley and Mead’s Symbolic Interactionist theories).
  - Identify connections between society and the development of self-image and personality.
  - Assess how personality development and socialization influence each other.
- 3.3 investigate the relationship between socialization and the process of human learning
- Examine various theories of human learning (e.g., Piaget’s Cognitive Development Theory, Erikson’s Psychological Development, Kohlberg’s Moral Development Theory, and Gilligan’s Theory on Gender and Moral Development).
  - Evaluate various theories of human learning (e.g., Piaget’s Cognitive Development Theory, Erikson’s Psychological Development, Kohlberg’s Moral Development Theory, and Gilligan’s Theory on Gender and Moral Development).
  - Formulate a hypothesis as to which theory(ies) of human learning best characterize their learning.
  - Assess how human learning and socialization influence each other.

- 3.4 *investigate a social issue that serves as a good example of socialization and related concepts*
- *Examine the relationship between the process of socialization and the issue.*
  - *Assess the relationship between personality development and the issue.*
  - *Analyze the relationship between human learning and the issue.*
  - *Formulate and support a hypothesis related to the issue.*

## **Unit 4—Social Organization: Living Together as Humans**

- 4.1 describe the role of groups in the organization of human societies
- Identify different types of groups.
  - Describe ways in which groups shape human behaviour.
  - Investigate the role of groups in the evolution of human societies.
- 4.2 examine the role of social stratification in the organization of human societies, in relation to gender, race, and socio-economic status
- Define social stratification and its related concepts (i.e., status and role).
  - Apply appropriate theories to the concept of social stratification.
  - Formulate a hypothesis regarding positive and negative implications of social stratification in a society.
  - Investigate examples of the relationship between stratification, power, and inequality.
- 4.3 examine the role of social institutions in the organization of human societies
- Describe the characteristics of a social institution.
  - Apply appropriate theories to the concept of social institutions.
  - Analyze examples of social institutions, including the family.
  - Evaluate the contribution of social institutions to social organization.
- 4.4 *investigate a social issue that serves as a good example of social organization and related concepts*
- *Assess the influence of groups on the issue.*
  - *Examine aspects of social stratification relevant to the issue.*
  - *Investigate the role(s) of relevant social institutions to the issue.*
  - *Formulate and support a hypothesis related to the issue.*

## **Unit 5—Social Control: Deviant and Conformist Behaviour**

- 5.1 analyze ways in which societies exercise social control to achieve conformity
- Apply appropriate theories to the concept of conformity.
  - Distinguish between formal and informal methods of social control.
  - Assess the effectiveness of various methods of social control.
  - Investigate the evolution and effectiveness of the modern corrections system.
- 5.2 investigate deviance as a form of social behaviour
- Define the concept of deviance.
  - Compare how diverse cultures define, and respond to, deviance.
  - Apply appropriate theories to the concept of deviance.
  - Evaluate the positive and negative implications of deviant behaviour in a society.

- 5.3 investigate the issue of crime as an example of deviant behaviour
- Distinguish between legal and sociological approaches to the study of crime.
  - Outline the sociological framework for the classification of crime.
  - Describe the social factors that contribute to the occurrence of crime.
  - Apply the sociological analysis of crime to current examples of criminal behaviour in Canadian society.
- 5.4 *investigate the issue of youth crime and violence as an example of both deviance and conformity*
- *Assess the impact of social controls on youth crime and violence.*
  - *Describe ways in which youth crime and violence provide examples of conformity and/or deviance.*
  - *Evaluate the implications of youth crime and violence for society.*
  - *Formulate and support a hypothesis related to youth crime and violence.*

# Textile Technology 12

## Learning Outcomes

Students will be expected to

1. discern the production methods and properties of various fibres, yarns and fabrics
2. identify, understand and apply the elements and principles of design to create aesthetic works
3. demonstrate skills related to selecting and using textile construction tools
4. plan and create project(s) that demonstrate production skills and techniques
5. critically analyze the aesthetic and cultural impact of textiles
6. identify the life-work benefits of developing skills in textile creation and production
7. plan, produce, and present a summative textile work that demonstrates personal expression and skill development

## Specific Curriculum Outcomes

Students will be expected to

### Unit 1: Creating Fabrics

- 1.1 describe the sources of specific natural, synthetic and manufactured fibres
- 1.2 demonstrate an understanding of the properties and performance of fibres, yarns, and fabrics
- 1.3 research and explore evolution of fibres to fabrics

### Unit 2: Elements and Principles of Textile Design

- 2.1 define and investigate the elements and principles used in the design of textile works
- 2.2 create a textile aesthetic and reflect on the relevant elements and principles of design

### Unit 3: Textile Construction Tools

- 3.1 identify and demonstrate effective use of textile tools and equipment
- 3.2 demonstrate safe use of tools and equipment and appropriate conduct in the textile laboratory environment
- 3.3 practice suitable care and maintenance of textile tools and equipment
- 3.4 explain factors affecting consumer decisions when purchasing textile tools and equipment

### Unit 4: Textile Production

- 4.1 effectively use language associated with textile production
- 4.2 compare and contrast standards of quality in textile production
- 4.3 demonstrate skills and techniques used in textile design and/or drafting
- 4.4 demonstrate informed preparation skills for textile production
- 4.5 accurately interpret the language and symbols used in commercial patterns

- 4.6 identify and select suitable notions and materials for use in textile production
- 4.7 explore and effectively use textile production and embellishment techniques

### **Unit 5: Aesthetic and Cultural Appreciation**

- 5.1 investigate the evolution of various textile processes
- 5.2 analyze and anticipate the diverse impacts of textiles on culture(s)

### **Unit 6: Life Work Skills**

- 6.1 explore opportunities related to textile creation and production for the individual, community, and industry
- 6.2 reflect on the benefits associated with textile creation and production

### **Unit 7: Independent Study**

- 7.1 demonstrate resource management skills and innovation in developing a plan for a summative textile work
- 7.2 effectively execute their plan demonstrating developed skills and knowledge
- 7.3 share and reflect on their summative textile work

# Tourism 12

## Specific Curriculum Outcomes

Students will be expected to

### Module 1: The Tourism Sector

- 1.1 demonstrate a detailed understanding of sector structures, components and interrelationships among components
- 1.2 demonstrate an understanding of the issues and challenges facing the sector
- 1.3 examine a range of trends in the sector
- 1.4 evaluate the economic and social impact of trends on the sector
- 1.5 investigate significant features of major Nova Scotia tourism markets, including economic impact

### Module 2: The Tourism Professional

- 2.1 demonstrate the knowledge, skills and attitudes to enter, stay in, and progress in the sector
- 2.2 demonstrate the qualities and behaviours that exhibit professionalism
- 2.3 communicate effectively in workplace settings
- 2.4 demonstrate the ability to work with others internally (coworkers) and externally (guests)
- 2.5 investigate sector standards and explore and/or acquire certification
- 2.6 access tourism resources
- 2.7 apply strategies for using tourism resources
- 2.8 investigate an occupation within the sector through research, information interviews, job shadowing, or work placement
- 2.9 develop a life/work portfolio to document achievement, plan a career, and reflect on their learning

### Module 3: The Tourist or Traveller

- 3.1 demonstrate an understanding of the history and evolution of travel
- 3.2 examine the motivations, needs, and expectations of travellers
- 3.3 demonstrate sensitivity to the issues of culture, diversity, demography, and safety of Canadian and international travellers
- 3.4 demonstrate sensitivity to the issues of culture, diversity and demography
- 3.5 demonstrate an understanding of the tourism regions of Nova Scotia

### Module 4: Transportation, Travel Services, Recreation, and Entertainment

- 4.1 compare surface, air, and water forms of transportation
- 4.2 examine current and future trends in each Industry
- 4.3 investigate laws and regulations which have an impact on each industry
- 4.4 examine a range of social, economic, and environmental issues within each industry

## **Module 5: Accommodations, Food, and Beverage**

- 5.1 compare the types of food and beverage businesses, types of accommodations, types of attractions, events and conferences
- 5.2 describe the early history of hospitality and the business of inn keeping
- 5.3 examine current and future trends and influences in each industry
- 5.4 investigate laws and regulations which have an impact on each industry



# Visual Arts 12

## General Curriculum Outcomes

Students will be expected to

### Creating, Making, and Presenting

1. explore, challenge, develop, and express ideas using the skills, language, techniques, and processes of the arts
2. create and/or present, collaboratively and independently, expressive products in the arts for a range of audiences and purposes

### Understanding and Connecting Contexts of Time, Place, and Community

3. demonstrate critical awareness of and value the role of the arts in creating and reflecting culture
4. respect the contributions of individuals and cultural groups to the arts in local and global contexts and value the arts as a record of human experience and expression
5. examine the relationship among the arts, societies, and environments

### Perceiving and Responding

6. apply critical thinking and problem solving strategies to reflect on and respond to their own and others' expressive work
7. understand the role of technologies in creating and responding to expressive works
8. analyze the relationship between artistic intent and the expressive work

## Specific Curriculum Outcomes

Students will be expected to

- CM 1.1 assess and apply complex image development techniques
- CM 1.2 produce an original body of artwork that integrates information from a variety of sources to convey personal meaning
- CM 1.3 create artwork that communicates intentions
- CM 1.4 analyze and use complex visual relationships, processes, and content, making subtle discriminations
  
- CM 2.1 create artworks to carry personal messages to a diverse range of audiences
- CM 2.2 analyze and create art objects where emotions, feelings, and experiences are used as a symbolic, non-verbal means of expression and communication of ideas
- CM 2.3 arrange and create an exhibition of works that considers types of works, presentation issues, location, lighting, and intended audience
- CM 2.4 demonstrate an open-minded approach to diversity of ideas and artistic style and show empathy to other people's point of view
- CM 2.5 engage in artistic inquiry, exploration, and discovery in collaboration with others

- UC 3.1 analyze and make informed judgments about the role that visual creations have in our everyday modes of expression
- UC 3.2 demonstrate an understanding of the complexities of artworks
- UC 3.3 understand how ideas, perceptions, and feelings are embodied in artworks of a culture
- UC 3.4 explore how the visual arts of their own culture are used as a vehicle of cultural production and transmission
- UC 3.5 use visual arts as a means of conveying concerns about social and ethical issues
- UC 3.6 evaluate possibilities for ongoing involvement in art-related vocations and avocations
  
- UC 4.1 explore how ethnic and geographical communities visually celebrate themselves
- UC 4.2 derive images through the study of historical images from their own and others' cultures
- UC 4.3 create personal symbols for visual communication
- UC 4.4 explain the role of artists and the arts to inform, define, and cause us to question and reflect
- UC 4.5 develop knowledge, understanding, and appreciation of art and design in historical and contemporary cultures
- UC 4.6 trace influences of various cultures on contemporary artwork
  
- UC 5.1 determine the relationship among the visual arts and the other arts disciplines through studio experiences, viewing, and investigation
- UC 5.2 use visual structures in art making to develop personal imagery and communicate a personal viewpoint on issues relating to society and/or environments
- UC 5.3 evaluate the context of images they produce
- UC 5.4 analyze the relationship between elements and principles of design in art and in the physical and built environments
- UC 5.5 examine and discuss the moral, ethical, and legal issues related to the creation of artworks
  
- PR 6.1 describe, analyze, interpret, and evaluate artworks, both formally and informally
- PR 6.2 recognize that the principles of design can be used to show relationship in an image
- PR 6.3 articulate informed aesthetic responses that demonstrate critical reflection
  
- PR 7.1 show competence and responsibility in the use and manipulations of required materials, tools, and techniques
- PR 7.2 assess the degree of knowledge, skills, and abilities necessary to carry out a project
- PR 7.3 demonstrate advanced abilities in and understanding of the technical aspects of art making
- PR 7.4 investigate how the sensory qualities of media affect an image and our response to it
- PR 7.5 predict the impact that new technologies might have on art and on society
  
- PR 8.1 interpret the relationship between intention and outcome in their own work and that of others
- PR 8.2 demonstrate an understanding of the play between artist, artwork, and audience