



A Guide to Upgrading in British Columbia's Public Post-Secondary Institutions

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ABE Articulation Handbook: 2025 - 2026

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INTRODUCTION

This is the fortieth edition of the Articulation Handbook for British Columbia's public post-secondary institutions. It has been updated for 2025-2026 through the dedicated efforts of the educators who participate in the working and steering committees. Articulation is a dynamic process that will never be completed. It brings order to the Adult Basic Education program area offered by the post-secondary system and facilitates the transfer of course work and credits between participating institutions. The articulation process facilitates dialogue and sharing among professionals, and it has effectively raised the status of this program area. The biggest beneficiaries, however, are our students.

Articulation has been supported by development of curriculum resources in the various disciplines that include:

- Computer Studies
- Education and Career Planning
- English
- First Peoples ABE
- Adult Literacy Fundamental Studies
- Science: Biology, Chemistry and Physics
- Mathematics
- Social Science: First Nations, Geography, History, Law and Psychology

A PDF version of this handbook can be downloaded from: <https://www.bctransferguide.ca/transfer-options/adult-basic-education/past-abe-guides/>

HISTORY OF ADULT BASIC EDUCATION IN BRITISH COLUMBIA'S PUBLIC POST-SECONDARY SYSTEM

Since the early 1960s, British Columbians have had a rich history of Adult Basic Education (ABE) courses and programs. ABE provides access to courses and skills training ranging from basic literacy through to provincial level and adult secondary school completion. ABE programs support learners to achieve one or more of the following goals: high school graduation, further education, employability skills, and life management skills. These courses are offered both in the public post-secondary institutions and British Columbia (BC) school districts. In both systems, ABE courses are offered in a variety of settings and with a variety of delivery methods.

In the school district system (K-12), adult graduation programs are offered through all 60 school districts. The focus of these adult programs is graduation, but adults can also take courses in the K-12 system to upgrade. Adult students have a choice of completing the regular BC Certificate of Graduation, or the BC Adult Graduation Diploma (BCAGD), which has the same foundational course requirements but requires fewer electives.

In the PSE system, ABE programs are delivered by 18 post-secondary institutions, and include programs focused on literacy, basic education or academic upgrading, employment preparation, English as a Second Language and Adult Special Education. These programs provide flexible learning opportunities for adult learners and are designed for the large number of British Columbians in need of basic skills or language training to participate fully in society and the economy. ABE programs in the PSE system are offered in a variety of formats ranging from semester classes to self-paced individualized instruction, including distance (online) education and community outreach with tutoring assistance. Programs are fully articulated, allowing for course transferability around the province. Adult learners may choose to take courses as prerequisites for other programs in the PSE or work toward their BCAGD.

The following chronology of events highlights the development of ABE in British Columbia's public post-secondary system.

HIGHLIGHTS OF THE HISTORY OF ADULT BASIC EDUCATION IN BRITISH COLUMBIA'S PUBLIC POST-SECONDARY SYSTEM

1960 The federal government passed the *Technical and Vocational Training Assistance Act*, enabling it to partner with the provinces to fund capital costs for vocational training facilities. Many institutes of technology created through this Act were later converted to community colleges.

1963 The provincial government amended The *Public Schools Act* and established “regional colleges”.

1967 The federal government introduced the *Adult Occupational Training Act* to provide short-term retraining for unemployed and underemployed workers. This program revealed that most people in need of vocational training did not have the basic academic skills needed to participate in vocational programs.

1973 The federal government funded 1) the *Basic Training and Skills Development (BTSD)* which provided upgrading for students in grades K-12 and enabled them to gain the prerequisites for vocational training, and 2) *Basic Job Readiness Training (BJRT)* programs to help adult learners, who needed more than short-term training programs, gain literacy and life skills, job search techniques and work experience leading to employment.

1976 A provincial discussion paper, *Helping to Develop a Provincial Continuing and Community Education Policy* made recommendations to MEd on continuing and community education policy.

The Report of the *Committee on Continuing and Community Education in BC* highlighted ABE as a “high priority special program”.

1977 The government passed the new comprehensive *College and Institute Act*.

1979 The inaugural meeting of the Adult Basic Education Association of British Columbia (ABEABC) was held. The first of its kind in Canada, ABEABC was comprised of ABE and literacy instructors and community members who wanted to help build the quality of programming available in the province.

1982 The government report *Ministerial Policy on the Provision of Adult Basic Education Programs including English Language Training in the Public Education System of British Columbia* stated that it was the responsibility of the ministry to provide, to adult citizens and landed immigrants residing in the province, reasonable access to high quality ABE programs.

It also noted that responsibility for the development, administration and delivery of ABE programs resided with the colleges, the institutes and the public schools.

1983 The ABE articulation process was launched in British Columbia. The ABE Articulation Development Committee produced a provincial framework and common terminology as a foundation to the process by early 1985.

The ABE Articulation Steering Committee was established to oversee the implementation and on-going process of articulation across the post-secondary system. The ABE Steering Committee established working committees in each of the major discipline areas, with members from 18 colleges and the Open Learning Agency. The discipline working committees developed generic outlines and a grid of equivalencies by subject and course for the participating institutions.

1986 Responsibility for education of all adults except those in secondary schools, the General Education Development (GED®) challenge exam, and some adult English Language Training programs, was

transferred to the newly created Ministry of Advanced Education and Labour Market Development (ALMD) from MEd.

The Ministry of Advanced Education and Job Training validated the articulation process by producing the ABE Provincial Diploma to be awarded to any student completing the requirements for secondary school graduation as laid out by the ABE framework.

1987 The ABE Framework and Diploma were presented to the provincial universities and British Columbia Institute of Technology. These institutions recognized the Diploma as an official credential for entry into university studies.

1988 ALMD Minister established the Provincial Literacy Advisory Committee (PLAC) to develop a literacy strategy.

Tuition fees were abolished for adult learners who had not graduated and were enrolled in MEd's ABE programs. This policy was one of the recommendations from the 1988 *Report of the Royal Commission on Education*.

1991 Fundamental ABE became tuition free as a result of the recommendations in the Provincial Literacy Advisory Committee's 1989 Report.

The ABE Steering Committee implemented a review of the whole ABE Articulation process. This culminated in a report presented to the Steering Committee in June 1992.

1992-1995

In 1992, *The Rivers Report* identified some difficulties in the delivery of ABE programs by MEd and ALMD and that same year, *The Faris Report* offered recommendations for overcoming those difficulties.

The 1993 Articulation Handbook included a revised statement on the purpose of articulation.

In 1994, The government established the MEd/ALMD Joint Committee on ABE to conduct a review and make recommendations on: the two systems' funding and fee structures; a common credential; records management, transferability and certificate granting; articulation of ABE courses; program quality, evaluation, and guidelines for good practice; and in addition, ensure cooperation between the two ministries on issues related to ABE.

In 1995, a Ministry of Education/Ministry of Skills, Training and Labour Joint Committee on Adult Basic Education made recommendations that included, among others, a common adult graduation credential and an articulation process between school district adult programs and the public post-secondary institutions.

1998 ABE became tuition-free in the PSE system and for online learners through LearnNowBC.

The ABE Transitions Project was set up between MEd and ALMD. The overall goal of the project was to work towards a coordinated ABE system for BC by developing a more integrated, learner-centred approach to ABE programming. Two of the specific objectives of the project were the implementation of a common credential for adults and improved articulation of courses.

1999 The British Columbia Adult Graduation Diploma (BCAGD) – “The Adult Dogwood” – became the common credential for ABE learners and would replace the old Adult Dogwood and the ABE Provincial

Diploma. This credential allowed adult learners to earn a graduation diploma with a mix of appropriate courses from either or both systems – MEd/ALMD.

2000 Amendments were made to the *School Act*, *College and Institute Act*, *Institute of Technology Act*, and *Open Learning Agency Act* to accommodate the granting of the BCAGD. Amendments were made to the *School Act* and the *Independent School Act* to recognize the credential as well.

New developments such as the Provincial “e-merge initiative” for ABE on-line delivery (2000), and the introduction of block funding (ABE funding was rolled into the block funding model) in the PSE system (2002) presented new challenges for ABE in the province.

2003 The Ministry gave public post-secondary institutions autonomy to charge tuition fees for students taking ABE courses if they already had a high school diploma. However, fundamental level ABE (literacy) programs and employment preparation programs were to remain tuition-free.

2004 The Premier’s Advisory Panel on Literacy was created to assess the literacy challenges in BC, highlight the most urgent needs and develop recommendations for a provincial literacy strategy that will address those challenges.

2007 In response to the recommendations made by the Premier’s Advisory Panel on Literacy, the provincial ministries encouraged the PSE and K-12 systems to work together to improve the planning and coordination of ABE and community adult literacy programs in their respective regions.

In September 2007, the Province announced that all students had access to tuition-free ABE in the public post-secondary institutions beginning in January 2008.

2008 ABE courses in both the PSE and K-12 systems became tuition free for all learners, regardless of their graduation status.

2015 Effective January 1, 2015, public post-secondary institutions had the option to reinstate tuition fees for ABE, up to a maximum tuition cost of \$1,600 per semester of full-time studies.

Effective May 1, 2015, school districts had the ability to charge graduated adults for academic upgrading courses, but they could still access tuition-free foundational level courses.

2017 The Province announced the re-instatement of the tuition-free policy for domestic students accessing ABE programs in the public post-secondary and secondary (K-12 school districts) systems, effective September 1, 2017.

THE BC ADULT GRADUATION DIPLOMA: "THE ADULT DOGWOOD"

THE BC ADULT GRADUATION DIPLOMA: “THE ADULT DOGWOOD”

An adult high school diploma is the British Columbia Adult Graduation Diploma (BCAGD), also known as the “Adult Dogwood.” It is for adult learners (18 years of age and older) who want to take courses in order to complete high school and obtain their adult high school diploma. Courses can be taken at school district continuing education centres and/or at one of the public post-secondary institutions that delivers Adult Education programs across the province.

Requirements for the British Columbia Adult Graduation Diploma (Adult Dogwood):

BC POST-SECONDARY SYSTEM		BC SECONDARY SCHOOL SYSTEM	
Qualifying Courses		Qualifying Courses	
A Provincial Level English or higher	OR	English Studies or English First Peoples 12	4 credits
An Advanced or Provincial Level or higher Mathematics*	OR	A Mathematics 11 or 12	4 credits
Three additional courses at the Provincial Level or higher or Advanced Social Sciences and two Provincial level courses or higher	OR	Three Grade 12 Ministry-authorized Courses (4 credits each) or Social Studies 11 (4 credits) and two Grade 12 Ministry-authorized Courses (4 credits each)	12 credits 12 credits
Total: 5 courses			Total: 20 credits

* A student is able to take and obtain credit towards the BCAGD for both Advanced level and Provincial level (or higher) Mathematics. In the latter case, Mathematics would be one of the electives.

Notes:

- To be eligible for the BC Adult Graduation Diploma (BCAGD), a person must be 18 years or older.
- Courses and credits can be counted from either or both the public secondary and post-secondary systems
- Of the five courses required for the Adult Dogwood, at least three must be completed after the adult student has entered the Adult Graduation Program, either through enrolment (instruction) or Prior Learning Assessment. This means that students can receive credit toward the Adult

Dogwood for no more than two qualifying courses completed while in the B.C. (school-aged) Graduation Program. You cannot receive an Adult Dogwood using only courses completed prior to enrolling in the Adult Graduation Program.

- Adult learners are not required to complete the Graduation Numeracy or Literacy Assessments to graduate with the Adult Dogwood. At the same time, adult learners should be aware that some post-secondary institutions may require that students write assessments/examinations for admission purposes.
- Accounting 11 or a college course equivalent to Accounting 11 can be used for the Mathematics 11 credit for the BCAGD.

THE BC ADULT GRADUATION DIPLOMA: QUESTIONS AND ANSWERS

What is the name of the adult credential?

The official name of the adult credential is the British Columbia Adult Graduation Diploma, but it is also known informally as the “Adult Dogwood.”

What about the regular Dogwood Diploma?

Adults may choose to do the regular Dogwood Diploma through the Ministry of Education (MEd). All articulated post-secondary ABE courses can be used for credit towards either the regular or Adult Dogwood.

What about the GED®?

The GED® (General Educational Development) certificate is not the same as the Adult Dogwood diploma. The Ministry of Education discontinued the GED® program at the end of 2014.

When was the BC Adult Graduation Diploma (BCAGD) implemented?

The BCAGD was implemented on September 1, 1999.

Who will issue the BC Adult Graduation Diploma?

Post-secondary institutions will request the diplomas from AEST (at AEST.PostSecondaryProgsBr@gov.bc.ca) and issue them from the registrar’s office. The BCAGD is a joint AEST/MEd document signed by both ministers. Students may take their post-secondary course(s) back to the school district and apply for their diploma through the school district and MEd.

Who will issue the transcripts for the diploma?

The institution issuing the diploma takes responsibility for the student and identifies which courses have been used to qualify for the diploma, both internal and transfer courses.

Students combining courses from the two systems for the diploma will need to include all relevant transcripts in situations where they need to verify their courses and grades.

Does a student have to take at least 3 of the courses used towards the Adult Dogwood as an adult?

Yes, 3 courses should have been completed after turning 18 years old. A student may use Prior Learning Assessment (where available) as an adult to get credit for up to 3 courses used towards the diploma.

What if a student is missing one or two courses from his/her high school graduation?

If the student is school aged, they are still able to complete the graduation program.

If the student has turned 18, they can choose to finish the graduation program for a regular Dogwood or switch over to the adult graduation program for an Adult Dogwood.

Does a student have to take a minimum number of courses used towards the Adult Dogwood from the institution granting the Adult Dogwood?

Yes, at least one course from the institution granting the diploma. The other eligible courses may be brought from another institution(s) or school district.

Can a student use courses taken a long time ago for credit towards the Adult Dogwood?

Yes, as long as they were Ministry-authorized courses at the time, and they have completed three courses as an adult.

What courses are eligible? Can Communications 12 be used as the Language Arts 12? Can Accounting 11 be used for the Mathematics 11?

All courses must be ministry-authorized Ministry of Education or Advanced Ed, but only certain courses are eligible to satisfy the Language Arts requirements and the Math requirements.

Yes, Communications 12 can count towards the Language Arts 12 requirement, but so can English 12, English First Peoples and any of the French versions of these courses. With Math, the same idea as there are several courses that can satisfy the Math requirement,

(i.e. Apprenticeship and Workplace, Foundations, Pre-Calc, Accounting) but it is incumbent upon the student to ensure they take the appropriate Math or English course if they are planning to take post-secondary studies as most programs have specific course requirements for entrance.

Please note that Communications 12 was discontinued in the 2018/19 school year.

What is meant by “Three additional courses at the Provincial Level or higher”?

The Provincial level means that the course has to be articulated as an ABE Provincial Level course and be listed on a transfer grid in the ABE Articulation Handbook (either this Handbook or a previous one). A higher level course means that the course is a university transfer course and listed on the BCCAT website.

For non-academic courses, refer to List 2 on the Framework. For the trades and other programs, courses can be used if there is a written agreement with the school, or if the course is listed in the college’s calendar and is used towards a credential for a certificate, diploma or degree.

Do the three additional Post Secondary courses at the Provincial Level or higher have to be from different subject areas?

No they could all be from the same subject area.

Where can I find out more information about course requirements and graduation requirements?

Ministry of Advanced Education and Skills Training:

This Articulation Handbook is the AEST authorized guide to ABE course information and graduation requirements. Eligible courses include any advanced Mathematics or higher, any provincial English or higher, and any provincial level courses or higher. Higher than provincial level courses may or may not be accepted for university transfer if they have also been used towards the BCAGD. Students using the Articulation Handbook need to check with the receiving department/institution.

Ministry of Education:

The main MEd website for the Adult Graduation Program is <https://www2.gov.bc.ca/gov/content/education-training/adult-education/graduate-high-school/bc-adult-graduation-diploma-program>

The graduation requirements are also included in the *Handbook of Procedures (Chapter 3)*

<http://www.bced.gov.bc.ca/exams/handbook/>

The MEd has determined that all ABE courses from British Columbia's public post-secondary institutions will be recognized for credit toward completion of the BCAGD.

All Ministry-authorized courses from Ministry of Education, at the Grade 12 level, plus Social Studies 11, can meet the requirements for the Adult Graduation Diploma. For a listing of all courses, please see the Course Registry at: http://www.bced.gov.bc.ca/datacollections/course_registry_web_search/search-home.en.php

New curriculum website: <https://curriculum.gov.bc.ca/>

For the BC Post-Secondary System Qualifying Courses, what courses (other than the academic ones) are eligible from List 2?

For the trades and other programs, courses can be used if there is a written agreement with the school, if the course is listed in the college's calendar and is used towards a credential for a certificate, diploma or degree.

What English course can be used as the BC Post-Secondary Provincial Level English?

As long as the English course has been articulated as a Provincial level English course by the ABE English Working Group and is on the ABE English transfer grid, then it can be used.

What math course can be used as the BC Post-Secondary math towards the Adult Dogwood?

As long as the math course has been articulated as an Advanced level math course, or higher, by the ABE Mathematics Working Group and is on the ABE Mathematics transfer grid, then it can be used.

The tables below indicate which ABE post-secondary courses have been deemed equivalent (80% match of prescribed learning outcomes) to the MEd courses and which ones are external (MEd authorized for credit towards a graduation diploma). MEd course equivalency policies are outlined at the beginning of chapter 2 of the Handbook of Procedures: <http://www.bced.gov.bc.ca/exams/handbook/>

ABE Post-Secondary Courses Authorized as Equivalent to Ministry of Education Courses

MED COURSE CODE	ABE POST-SECONDARY COURSE TITLE	MED EQUIVALENT COURSE	CREDITS	MEETS FOUNDATION STUDIES
MATHEMATICS				
UABEF11	ABE Advanced Foundations of Mathematics (11)	Foundations 11	4	Mathematics
UABEM11	ABE Advanced Algebraic Mathematics (11)	Pre-Calculus 11	4	Mathematics
UABEM12	ABE Provincial Algebra and Trigonometry Mathematics (12)	Pre-Calculus 12	4	Mathematics
UABEL12	ABE Provincial Calculus (12)	Calculus 12	4	Mathematics
SCIENCE				
UABEB11	ABE Advanced Biology (11)	Biology 11	4	Science
UABEB12	ABE Provincial Biology (12)	Biology 12	4	Science
UABEH11	ABE Advanced Chemistry (11)	Chemistry 11	4	Science
UABEH12	ABE Provincial Chemistry (12)	Chemistry 12	4	Science
EDUCATION AND CAREER PLANNING				
UABER12	ABE Provincial Education and Career Planning (12)	Planning 12 Career Ed 12 (2017)	4	Planning 10

ABE courses at the “advanced level or higher” taken in the post-secondary system count for external credit and can be used for the math credit in the BCAGD.

External ABE Post-Secondary Courses Authorized for Ministry of Education Credit

MED COURSE CODE	ABE POST-SECONDARY COURSE TITLE	MEETS FOUNDATION STUDIES	CREDITS	CREDIT RESTRICTIONS BY CODE
UABEA 11	ABE Advanced Accounting (11)	Applied Skills	4	
UABEC 11	ABE Advanced Computer Studies (11)	Applied Skills	4	
UABEC 12	ABE Provincial Computer Studies (12)	Applied Skills	4	
UABEE 11	ABE Advanced English (11)	English Language Arts 11	4	EN 11
UABEE 12	ABE Provincial English (12)	English Language Arts 12	4	EN 12
UABET11	ABE Advanced Business/Technical Mathematics (11)	Mathematics	4	
UABED11	ABE Advanced Developmental Mathematics (11)	Mathematics	4	
UABEP 11	ABE Advanced Physics (11)	Science	4	PH 11
UABEP 12	ABE Provincial Physics (12)	Science	4	PH 12
UABEG 11	ABE Advanced General and Applied Science (11)	Science	4	
UABES 11	ABE Advanced Social Studies (11)	Social Studies	4	SS 11
UABES 12	ABE Provincial Social Studies (12)		4	

N.B.: A Ministry of Education (MEd) approved External course is a MEd-authorized course. These courses are of equivalent or higher standard to other MEd-authorized senior secondary courses, but the learning outcomes differ.

RECOGNITION OF THE BC ADULT GRADUATION DIPLOMA

The British Columbia Adult Graduation Diploma (BCAGD) is recognized by colleges, institutes, and universities in the British Columbia public post-secondary system. For further details, please refer to the most recent edition of each institution's Academic Calendar.

TRANSFER GUIDES

Use the course search at the link below to find equivalencies amongst ABE programs in BC from 2020 onward:

<https://www.bctransferguide.ca/transfer-options/adult-basic-education/>

For earlier years, please access the ABE Articulation Handbook archive:

<https://www.bctransferguide.ca/transfer-options/adult-basic-education/past-abe-guides/>

THE ABE ARTICULATION PROCESS

THE PURPOSE OF ARTICULATION

The purpose of ABE articulation is to ensure learners have access to quality courses, receive appropriate credits and are able to transfer easily among publicly-funded colleges, universities and institutes in British Columbia. Articulation also involves liaison with the school system's ABE programs to facilitate transfer of students back and forth between school district and college ABE programs.

NOTE: The BC Council on Admissions and Transfer (BCCAT) works to further the aim of transitions of adult learners.

For further information on the work and publications of BCCAT, visit the website: <http://www.bccat.bc.ca>

THE GOALS OF ABE ARTICULATION

The goals of ABE articulation are:

1. to facilitate the transfer of students from one educational institution to another;
2. to facilitate entry of students into further education programs;
3. to lend credibility to the ABE Certificates/Diplomas for students seeking employment or further education;
4. to provide a common terminology throughout the province for levels of achievement;
5. to provide for exchange of information;
6. to set and maintain learning outcomes which respect the autonomy of colleges and institutes to create equivalent course content;
7. to set course requirements for diplomas and certificates;
8. to assist, through working committees, in the development of guidelines for the content of courses identified for different levels of certification;
9. to provide a forum for the discussion of ABE issues;
10. to provide a common voice when addressing external bodies;
11. to encourage development and exchange of curriculum materials.

STEERING COMMITTEE TERMS OF REFERENCE

I. Representatives to the ABE Steering Committee

Appointment/Membership:

1. The ABE Steering Committee Chairperson requests a representative and an alternate from each institution through the Chief Executive Officer of the institution.
2. A formal appointment is made by the institution and recorded by the Steering Committee Chairperson.
3. The desirable attributes in a representative should include:
 - knowledge of field and programs in ABE
 - knowledge about the institution's development of ABE
 - commitment to the articulation process.
4. Appointment is for a two-year term that is renewable.
5. A representative carries a single, institutional vote.

Role of a Representative:

As the prime contact person for ABE articulation within the college, between colleges and for other related groups, committees or agencies in the field which may be affected by articulation, the representative:

1. attends Steering Committee meetings;
2. brings institution's concerns, plans and continuing progress in articulation work to the Steering Committee;
3. encourages and facilitates institutional participation in articulation working committees;
4. facilitates articulation work in the college by:
 - communicating with all parts and persons in ABE or relating to ABE,
 - promoting the rationalization of ABE in the light of continuing articulation, and
 - assisting in the update of college brochures, services, etc. regarding ABE articulation.
5. maintains contact with the college's member of BCCAT;
6. provides regular reports to their college on articulation activity;
7. prepares and submits an annual report to the Steering Committee on changes, progress etc. in their institution that have occurred because of ABE articulation;
8. advises their institute's Administration in matters relating to articulation.

II. Chairperson of the Steering Committee

Role of the Chairperson:

The Chairperson of the ABE Steering Committee:

1. prepares the agendas for meetings;
2. sends out a notice of a meeting and its agenda well in advance of each meeting;
3. orients new Working Committee Chairs;
4. submits recommendations and concerns with respect to the articulation process to the BCCAT;
5. chairs meetings of the Steering Committee;
6. keeps informed of all articulation developments in relation to Working Committee developments, local college developments, liaison with receiving institutions;
7. represents the ABE Articulation process when needed and as appropriate;
8. confers with Working Chairpersons on agendas for all meetings;
9. attends as many Working Committee meetings as possible as a non-voting member;
10. attends meetings of the Deans and Directors of Developmental Education;
11. deals with problems and inquiries regarding articulation that arise in the field;
12. liaises with the Ministry on information and problems related to articulation;
13. keeps the ABE articulation policy manual up to date.

WORKING COMMITTEE TERMS OF REFERENCE

I. Tasks of a Working Committee

A Working Committee:

1. reviews college course outlines at the respective levels;
2. comes to a consensus on learning outcomes derived from existing courses at each level of the framework;
3. if appropriate, reviews related curriculum which may impact upon articulation, i.e., Ministry of Education;
4. articulates college courses with the described learning outcomes and produces a provincial course transfer guide;
5. makes recommendations through the chairperson to the Steering Committee about such things as curriculum development, course development;
6. understands that course articulation (Advanced & Provincial Levels) with the universities and institutes is ultimately the responsibility of each college;
7. understands that the process of articulation is primarily one of the exchange of information and setting of learning outcomes, and not one of prescription of length of course, instructional methodology or materials;
8. establishes and maintains links with other articulation committees in the same discipline whenever feasible on issues related to university transfer, career/ technical/ vocational areas, K-12, and Continuing Education ABE.

II. Tasks of a Chairperson

A. Procedure

A Working Committee Chairperson:

1. is elected from within the Working Committee;
2. serves a two-year (renewable) term;
3. becomes a member of the Steering Committee and the Executive of the Steering Committee;
4. calls annual meetings in the Lower Mainland at least two months prior to the annual Steering Committee meeting;
5. discusses a proposed agenda with the Steering Committee chairperson prior to mail-out;
6. sends a copy of an agenda one month in advance of the meeting to the Working Committee members, the Steering Committees, the Ministry, and to all College principals;
7. encourages every college and institution to send or designate a representative who will act as a spokesperson for the institution;
8. writes an annual report which includes a goal statement, a list of generic topics, a course transfer guide, and the recommendations of the Working Committee to the Steering Committee that may include any curriculum proposals;
9. brings the annual report for distribution and presentation to the annual meeting of the ABE Steering Committee;

10. reports in person to the Steering Committee;
11. provides updated material to the Ministry for the Articulation Handbook (transfer guide, committee lists, course changes, etc.).

B. Responsibilities

A Working Committee Chairperson:

1. represents an institution;
2. orients new members of the Working Committee;
3. notifies Steering Committee members when colleges are not represented on Working Committees;
4. ensures there is a recorder for the Working Committee to summarize the results of the meetings, including items for action;
5. seeks the advice of the System Liaison Person, BCCAT, or the Ministry as and when appropriate, and invites such non-voting representatives to a meeting when necessary;
6. keeps updated course outlines at all levels for each college;
7. ensures the Working Committee stays on task.

List of Working Committees

Currently, there are eight working committees. They are:

- Computer Studies
- Education and Career Planning
- English
- Adult Literacy Fundamental Level
- Mathematics
- Science
- Social Science
- First Peoples ABE

ARTICULATION TASK CHECKLIST

The following checklist is provided to facilitate effective ABE articulation within and between post-secondary education institutions.

1. Within the ABE Division

Within the ABE division or department in the institution, there should be a plan for general information sessions, including:

- regular subject area meetings, particularly after representatives return from Working Committee meetings;
- prompt and efficient distribution of reports from the Working Committee and Steering Committee minutes and reports;
- change of terminology on certificates, transcripts, calendars, application forms, and other documents;
- development of a new ABE brochure to use in orientation meetings internally and externally;
- submission of course, program, or procedural changes to the respective college committees, i.e. Program Advisory Committee, Standards and Admissions Committee, etc.

2. Regarding Students

- Provide orientation for:
 - ABE students already enrolled in ABE;
 - potential ABE students currently enrolled in other programs.

3. Within the Rest of the Institution

- Provide information on an on-going basis to:
 - Coordinators or heads of other departments;
 - Dean or Vice-president of Instruction;
 - Counsellors/Advisors;
 - Registrar/Admissions;
 - Financial Aid Officer.

4. Planning and Tracking for the BCAGD

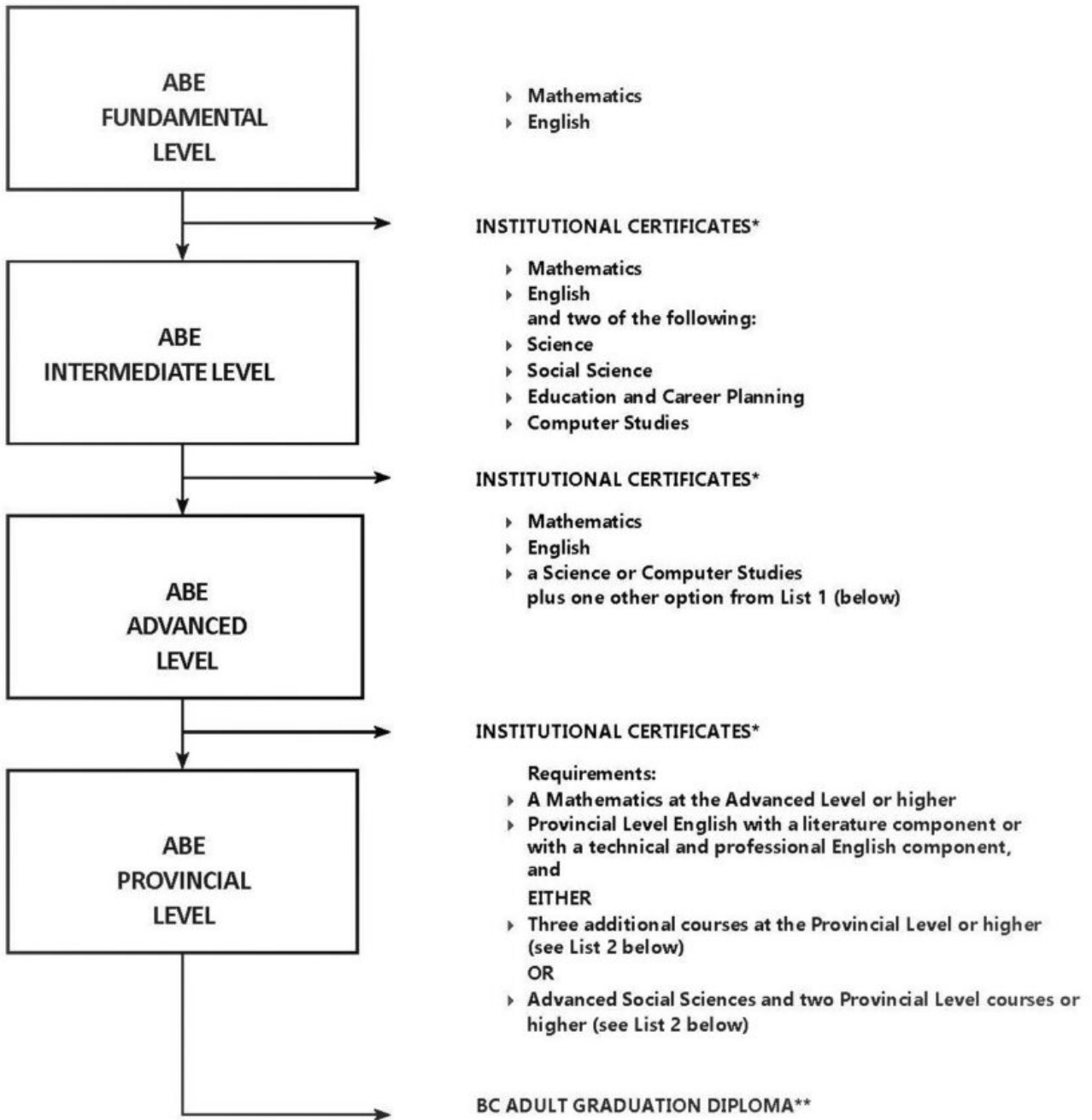
- Appropriate departments of the institution should plan to:
 - identify a list of required and elective courses at this level;
 - establish a procedure for dealing with electives;
 - ensure that students are well-advised or counseled in their course selection;
 - establish a procedure for applying for the Diploma (an application form, college transfer credit policy, application of 100 or higher level courses);
 - approve student applications (coordinator, committee, registrar);

- establish a procedure for tracking diploma recipients.

5. Community

- Provide information on an on-going basis to:
 - Relevant BC Government Ministries;
 - school districts;
 - aboriginal band administration officers;
 - other funding agencies.

ABE PROGRAM FRAMEWORK



List 1: Options may be chosen from social sciences, another science, trades training at the occupational level, a language, accounting, education and career planning, etc., at the advanced level or higher.

List 2: Courses may be chosen from academic subjects at the Provincial level or higher in the areas of science, languages, humanities, social sciences, mathematics, and computer science or studies. Courses for credit may also be chosen from other subjects at the Provincial level or higher such as education and career planning, trades training at the specialty level, business administration, visual, graphic and performing arts. (Specific lists of options will be available at individual colleges & institutions.)

*** Each certificate and diploma is independent and not prerequisite for another.**

**** As of Sept. 1, 2000, the ABE Provincial Diploma was no longer granted. The BC Adult Graduation Diploma ("The Adult Dogwood") was effective Sept. 1, 1999. See the next pages for more information.**

ADULT LITERACY FUNDAMENTAL LEVEL

ADULT LITERACY FUNDAMENTAL LEVEL (ALF)

Goal Statement

Adult Basic Education at the Adult Literacy Fundamental (ALF) level is designed to provide reading, writing (ALFE), and mathematics skills (ALFM) along with associated skills and strategies for communication and learning. Both English and math have six designated levels that range, in English, from non-reading and -writing to readiness for the Intermediate ABE level and, in mathematics, from pre-numeracy to readiness for the Intermediate ABE level.

Areas defined within ALF are: English (Reading and Writing), Mathematics, and Skills and Strategies for Learning. Recommended computer skills are included within these areas. While Social Studies and Science are not delineated as discrete content areas, an integrated approach will incorporate such content. An integrated approach also assists learners to acquire a better understanding of themselves, their communities and their participation in Canadian society by using real-life materials, activities and experiences in their studies, which students then can apply in their daily lives. Desired results include improved self-confidence, self-reliance and self-evaluation. Students' personal literacy goals should be reflected in the design of any ALF program. The topics listed with each skill are neither exhaustive nor exclusive.

Prerequisites

Ability to speak and understand English.

Outcomes

Learning outcomes for Adult Literacy Fundamental English and Math are illustrated in the following tables.

ADULT LITERACY FUNDAMENTAL ENGLISH

READING OUTCOMES

Level 1 - Reading

Learning Outcome <i>Students will be able to . . .</i>	Skills (Cumulative) <i>In achieving this broader outcome, students will demonstrate that they can also . . .</i>	Sample Practice Tasks <i>Students can develop/practice the skills needed to achieve this outcome by . . .</i>
<ol style="list-style-type: none"> 1. read a 1-page simple form with assistance 2. read 5-7 sentence, life experience stories independently 	<ul style="list-style-type: none"> • read common symbols (e.g. &, \$, #) • read 50-75 common sight words • read the alphabet, upper and lower case • read 50-75 personal sight words • articulate short and long vowel sounds, simple consonant blends (e.g. CVC, CVC + e, CVVC) 	<ul style="list-style-type: none"> • completing simple forms • identifying common abbreviations • answering literal questions about a life experience story • describing and dictating the sequence of events in a life experience story • identifying words from a list • identifying words in familiar text • exchanging ideas and viewpoints to build shared understanding and extend thinking

Level 2 - Reading

Learning Outcome <i>Students will be able to . . .</i>	Skills (Cumulative) <i>In achieving this broader outcome, students will demonstrate that they can also . . .</i>	Sample Practice Tasks <i>Students can develop/practice the skills needed to achieve this outcome by . . .</i>
<ol style="list-style-type: none"> 1. read and follow directions written in simple sentences using 2 formats (e.g. geographical, practical) 2. read 5-7 sentence paragraphs containing familiar topics and vocabulary, and supported with visual clues (e.g. illustrations) 	<ul style="list-style-type: none"> • identify parts of speech and end punctuation in simple sentences • read 200-300 sight words • employ pre-reading skills to enhance understanding (e.g. KWL, prediction) • use context clues to find meaning • use phonics to decode words 	<ul style="list-style-type: none"> • physically demonstrating activities required by directions (e.g. on a map, in a simple recipe) • answering literal and inferential questions about a familiar topic • getting basic information from short, simple notes or letters • stating or writing opinions about a familiar topic • identifying characters, main ideas, events in a story

Level 3 - Reading

Learning Outcome <i>Students will be able to . . .</i>	Skills (Cumulative) <i>In achieving this broader outcome, students will demonstrate that they can also . . .</i>	Sample Practice Tasks <i>Students can develop/practice the skills needed to achieve this outcome by . . .</i>
<ol style="list-style-type: none"> 1. read 3-paragraph passages of familiar genres (e.g. descriptive and narrative) including unfamiliar vocabulary 2. read 7-10 sentence paragraphs on unfamiliar topics including familiar or common vocabulary 	<ul style="list-style-type: none"> • identify main idea, details, characters, and sequence in short passages and paragraphs • identify and read synonyms, antonyms, and homonyms • use structural analysis (e.g. roots, affixes, syllabication, stress, compound words, contractions) to decode vocabulary • use pre-reading and reflection strategies to self-evaluate findings 	<ul style="list-style-type: none"> • summarizing short passages • answering comprehension questions based on text • using dictionary and thesaurus to find meaning • surveying text (titles, pictures, font size, underlined/bold/italic text) • noting words that are repeated • reading the first and last sentences of the passage • describing what was easy/difficult about a reading passage. • identifying difficult passages or words • re-stating difficult sentences or passages in own words. • re-reading text to answer questions. • reading and following a more complicated recipe; answer questions about it; share with family

Level 4 - Reading

Learning Outcome <i>Students will be able to . . .</i>	Skills (Cumulative) <i>In achieving this broader outcome, students will demonstrate that they can also . . .</i>	Sample Practice Tasks <i>Students can develop/practice the skills needed to achieve this outcome by . . .</i>
<ol style="list-style-type: none"> 1. read 3-5 paragraph passages of familiar genres (e.g. concrete, factual) including abstract, specialised vocabulary 2. read 3-paragraph passages of unfamiliar topic and genres (e.g. argument, opinion, inference including familiar vocabulary) 	<ul style="list-style-type: none"> • differentiate between fact and opinion • differentiate between likes, dislikes, and preferences • demonstrate strategies for learning and remembering words • use peer feedback and self-monitoring strategies to evaluate meanings and findings • draw inferences and conclusions • understand how quotation marks, semicolons, parentheses, and dashes affect meaning 	<ul style="list-style-type: none"> • responding to formal letters, brochures, newsletters • responding to factual and fictional stories • responding to articles in the newspaper or online news (e.g. letters to the Editor) • completing surveys or polls (online or paper-based) to state and rate likes, dislikes, dis/agreement, preferences • locating information using appropriate strategies (e.g. table of contents, glossary, headings, guiding words, menu) • developing an awareness of the protocols and ownership associated with First Peoples texts

Level 5 - Reading

Learning Outcome <i>Students will be able to . . .</i>	Skills (Cumulative) <i>In achieving this broader outcome, students will demonstrate that they can also . . .</i>	Sample Practice Tasks <i>Students can develop/practice the skills needed to achieve this outcome by . . .</i>
<ol style="list-style-type: none"> 1. read 5+ paragraph texts or short stories including figurative language and a full range of sentence structures 2. read 3-5 paragraph non-fiction texts including unfamiliar topic and vocabulary 	<ul style="list-style-type: none"> • recognize different purposes for reading • detect tone, story and direct characterization • use self-monitoring techniques to assess comprehension • recognize cause and effect, comparison and contrast, bias and objectivity 	<ul style="list-style-type: none"> • writing alternative endings to short stories • writing a logical prequel to a story – imaging what came before. • writing own comprehension questions to demonstrate understanding • describing a character in own words • using a checklist to identify strategies used before, during and after reading • completing matching activities that link cause to effect, compare to contrast

Level 6 - Reading

Learning Outcome <i>Students will be able to . . .</i>	Skills (Cumulative) <i>In achieving this broader outcome, students will demonstrate that they can also . . .</i>	Sample Practice Tasks <i>Students can develop/practice the skills needed to achieve this outcome by . . .</i>
<ol style="list-style-type: none"> 1. read and discuss: non-fiction, 7+ paragraph texts (e.g. articles, chapters, webpages, transcripts) including abstract, conceptual or specialised vocabulary 2. read and discuss: 7+ paragraph short stories; poems; songs (e.g. those including figurative language and implicit meaning) 	<ul style="list-style-type: none"> • separate relevant from non-relevant details • identify purpose, logic, validity • identify point of view, plot, main events, indirect characterization • use form and structure to inform understanding (e.g. rhymes, stanzas, haikus, limericks) • identify themes in poems, songs, fictional stories 	<ul style="list-style-type: none"> • critically discussing and responding to a variety of texts, genres and media • arguing for or against ideas in written or oral assignments • composing own lyrics, poems, creative work on an identified theme

ADULT LITERACY FUNDAMENTAL ENGLISH

WRITING OUTCOMES

Level 1 - Writing

Learning Outcome <i>Students will be able to . . .</i>	Skills (Cumulative) <i>In achieving this broader outcome, students will demonstrate that they can also . . .</i>	Sample Practice Tasks <i>Students can develop/practice the skills needed to achieve this outcome by . . .</i>
<ol style="list-style-type: none"> 1. fill in one-page simple forms with assistance 2. write five sentences of three to four words, independently 	<ul style="list-style-type: none"> • print the alphabet (upper-and lower-case letters) • print or write own name, address and phone number • use capital letters on proper nouns • use capital letters for beginning a sentence • print or write CVC (consonant- verb-consonant) words and 50-75 sight words (words that students memorize and know by sight rather than sounding them out) • recognize and use end punctuation (i.e. period, question mark, exclamation mark) 	<ul style="list-style-type: none"> • completing sentences by adding in subject or verb • copying short sentences • giving sentence answers to questions with the answers using words and phrases in the question • dictating and copying experience stories

Level 2 - Writing

Learning Outcome <i>Students will be able to . . .</i>	Skills (Cumulative) <i>In achieving this broader outcome, students will demonstrate that they can also . . .</i>	Sample Practice Tasks <i>Students can develop/practice the skills needed to achieve this outcome by . . .</i>
<ol style="list-style-type: none"> 1. write five complete simple sentences 2. write two messages of one to three sentences (to a familiar audience) 	<ul style="list-style-type: none"> • participate in brainstorming to generate ideas for writing • use assigned vocabulary in sentence writing • use end punctuation • use capitals for proper nouns • write 75-100 sight words • write CVC words • write CVC words that end in silent e 	<ul style="list-style-type: none"> • writing sentences to answer <i>who, what, when, where, why</i> questions • writing phone messages, directions, emails, requests • writing an opinion about a familiar topic • writing an experience story of two to three sentences

Level 3 - Writing

Learning Outcome <i>Students will be able to . . .</i>	Skills (Cumulative) <i>In achieving this broader outcome, students will demonstrate that they can also . . .</i>	Sample Practice Tasks <i>Students can develop/practice the skills needed to achieve this outcome by . . .</i>
<ol style="list-style-type: none"> 1. write five to seven complete simple and compound sentences 2. write informal correspondence (i.e. personal letter, email) to a familiar audience 	<ul style="list-style-type: none"> • generate, organize and write ideas (i.e. use the writing process) • use assigned vocabulary in sentence writing • apply dictionary or thesaurus skills to develop new vocabulary • use end punctuation (period, exclamation point, question mark) • use common coordinators (i.e. comma + and, or, but) • identify subject and verb in sentences • use compound words, contractions, possessives, and plurals • use appropriate, simple verb tenses • write 100-150 sight words • apply appropriate affixes to modify familiar root words 	<ul style="list-style-type: none"> • writing sentences expressing opinions on news events • doing a paired writing exercise where students have an informal conversation on paper—no talking allowed • writing letters to family member, child's teacher, friend • writing an email to instructor

Level 4 - Writing

Learning Outcome <i>Students will be able to . . .</i>	Skills (Cumulative) <i>In achieving this broader outcome, students will demonstrate that they can also . . .</i>	Sample Practice Tasks <i>Students can develop/practice the skills needed to achieve this outcome by . . .</i>
<ol style="list-style-type: none"> 1. write paragraphs of five to eight sentences using familiar forms (i.e. narrative, process, descriptive, opinion) 2. write formal correspondence to a specified audience 	<ul style="list-style-type: none"> • use paragraph structure: topic sentence, supporting details, conclusion, and transitional words and phrases • use paragraph format: title line, blank line, indentation, connected sentences, clear margins • demonstrate logical sequencing of sentences • write complex sentences using common subordinating conjunctions • write compound sentences using commas and FANBOYS • recognize and correct fragments and run-on sentences • use consistent verb tenses • use common regular and irregular past tense verbs • use subject/verb agreement • use standard pronoun reference and agreement • edit written work • spell common sight words and homonyms • use MLA format for headings, titles, and margins 	<ul style="list-style-type: none"> • writing a how-to paragraph (i.e. repairs, recipe) • going outside for a walk and writing a paragraph describing the surroundings • writing an opinion paragraph about a local issue after watching a news clip, reading an article about it, and discussing the issue • writing cover letters, emails, online applications • using editing rubrics

Level 5 - Writing

Learning Outcome <i>Students will be able to . . .</i>	Skills (Cumulative) <i>In achieving this broader outcome, students will demonstrate that they can also . . .</i>	Sample Practice Tasks <i>Students can develop/practice the skills needed to achieve this outcome by . . .</i>
<ol style="list-style-type: none"> 1. write 8 – 10 sentence paragraphs using abstract forms (i.e. expository, summary, narrative, opinion) 2. compose response writings that express personal feelings on an assigned topic including a rationale 	<ul style="list-style-type: none"> • recognize and use synonyms, antonyms, and homonyms • identify topic and main ideas after readings and discussions • apply spelling rules and strategies • use quotation marks, semicolons, and parentheses • use conjunctive adverbs • respond to selected material after reading, viewing, or listening by explanation of one’s personal viewpoint 	<ul style="list-style-type: none"> • summarizing a short reading passage • searching the local news outlets for community issues and writing an argument paragraph that is a call to action • producing reflective journals, poems, PowerPoint presentations, posters, blog posts, social media entries • writing a response paragraph after watching a movie

Level 6 - Writing

Learning Outcome <i>Students will be able to . . .</i>	Skills (Cumulative) <i>In achieving this broader outcome, students will demonstrate that they can also . . .</i>	Sample Practice Tasks <i>Students can develop/practice the skills needed to achieve this outcome by . . .</i>
<ol style="list-style-type: none"> 1. write 8-10 sentence paragraphs using abstract and academic forms (i.e., persuasive argument, formal summary, cause and effect, compare or contrast, advantages or disadvantages) 2. compose self-reflective writings that describe learning experiences 	<ul style="list-style-type: none"> • differentiate between subject and object pronouns • respond to self-identified learning experiences, concerns, and/or successes by using critical and future-oriented thinking • write concise, purposeful explanations • choose appropriate written register (i.e., colloquial or formal writing) 	<ul style="list-style-type: none"> • reading the student services webpages for the institution and summarizing one service (can later be linked to oral presentations) • summarizing an article • writing reflective journals, poems, PowerPoint presentations, posters, blog posts, social media entries • writing learner statements at the end of the semester to reflect on their learning process and acquired/ application of skills

ADULT LITERACY FUNDAMENTAL ENGLISH LEARNER PROFILES

It is expected that instructors will infuse Indigenous ways of knowing and world views into their course syllabi and will include acknowledgement of the traditional and unceded territory on which they work. Instructors are encouraged to refer to *Pulling Together: A guide for Indigenization of post-secondary institutions* available through OpenTextBC: <https://opentextbc.ca/indigenizationfoundations/front-matter/foundations-guide-overview/>

Level	ALFE: 1-2 (Canadian Language Benchmarks 6: Listening & Speaking) (K-12, Core Competencies: 1)
Oral Communication	When provided with support in a safe environment, learners at this level can participate in group discussions and respond in a meaningful way when classmates and instructors communicate with them.
Critical Thinking	Learners at this level can work with concrete materials and actions. They can indicate their preferences.
Social Responsibility	With some support, learners at this level can interact with classmates and instructors and be part of a group.
Personal and Cultural Identity	Learners at this level are aware of themselves as different from others. With some help, they can identify some of their attributes.
Time and Work Management	Learners at this level will be able to work with help and independently for short periods of time on assigned tasks. They can organize work for ready access.

	<p>ALFE: 3-4 (CLB 7: Listening & Speaking) (K-12, Core Competencies: 2)</p>
Oral Communication	When provided with direct support in a familiar situation, learners at this level can communicate with others in the classroom by sharing basic information about topics important to them (and listening to others do the same), planning and completing activities with others, and answering simple direct questions about themselves and their experiences.
Critical Thinking	Learners at this level can make simple judgments using some evidence. They can question, predict, and gather information using sensory input. They can have a purpose in mind when they explore and use what they learn. They can demonstrate or explain something about their thinking. They can help develop and use simple criteria (e.g., related to assessing their own writing).
Social Responsibility	In familiar and structured settings, learners at this level can interact with others in the classroom with respect, cooperation, inclusion, and kindness, including participation in classroom and group activities. They can respectfully share their own feelings and listen to others' views. They can identify when a situation is unfair to themselves or others. They can do some problem-solving themselves, but they also know when to ask for help. They do their share in the classroom and can identify when someone else needs help.
Personal and Cultural Identity	Learners at this level are aware of and can identify their own individual characteristics and interests. They can describe their family, home, and/or community (people and/or place).
Time and Work Management	Learners at this level will be able to work independently for longer periods of time, even with some distraction in the classroom. They can move on to other tasks while waiting for help. They can organize work for ready access.

	<p>ALFE: 5-6 (CL B 8: Listening & Speaking) (K-12, Core Competencies: 3)</p>
Oral Communication	In familiar situations, with some support or guidance, learners at this level can understand and share basic information about topics that are important to them by participating in different types of conversations. They listen and respond to others. They can work with others on concrete, short-term projects. They can recount experiences and activities and tell something they have learned.
Critical Thinking	Learners at this level can draw conclusions, make judgments, and ask new questions by using observation, experience, and imagination. They can ask and answer open-ended questions. They can participate in exploration and information gathering. They can experiment purposefully and develop options. They can help develop and use criteria (e.g., for assessing their own writing); they can describe their thinking and how it has changed.
Social Responsibility	Learners at this level can demonstrate respectful, inclusive behavior. They can contribute to group activities that make their community (inside or outside the classroom) a better place. They can identify actions they can take to make a difference in their community. They can consider others' views and respectfully express a different opinion. They can identify problems and compare a range of problem-solving strategies. They can not only identify but also explain why something is unfair. They are capable of identifying when someone needs support and providing that support. They are capable of building and maintaining relationships.
Personal and Cultural Identity	Learners at this level can identify, describe, and represent different aspects of their identity and cultural contexts (e.g., family, communities, peer groups) through words and images. They can describe what is important to them and demonstrate pride in their identity and cultural contexts.
Time and Work Management	Learners at this level can manage their time and work independently for longer periods, even with some distractions in the classroom. They can transition to other tasks while waiting for help. They can organize their work for easy access.

The BC Ministry of Education K-12 Core Competency documents (<https://curriculum.gov.bc.ca/competencies>) and the Canadian Language Benchmarks (<https://www.language.ca/overview-of-clb-and-nclc-competency-levels/>) provided a valuable framework for developing these learner profiles.

ADULT LITERACY FUNDAMENTAL MATHEMATICS (ALFM)

Goal Statement

Adult Literacy Fundamental Level Mathematics (ALF-M) will give students a strong foundation of basic skills, concepts, mathematical vocabulary, and problem solving strategies to prepare them to meet personal, career or further academic goals.

The ALF-M levels are six designated levels that range from pre-numeracy to readiness for the Intermediate ABE level. Learning Outcomes for all six levels are categorized as CONCEPTS, OPERATIONS/APPLICATIONS or SKILLS & STRATEGIES FOR LEARNING. The outcomes in each of the six ALF-M levels are cumulative and reflect all the skills encompassed by the previous ALF-M level. In many cases, it is necessary to spiral back to review concepts mastered at previous ALF-M levels.

Students are expected to develop conceptual understanding as well as skills. They are expected to apply the learned mathematical concepts and skills to a variety of problem-solving situations. They are to be encouraged to develop automaticity and estimation skills in order to increase their confidence and competence in mathematics.

Level 1 Math

Students need to demonstrate competency in these outcomes before progressing to the next level. In assessment, it may be determined that some of the outcomes have already been met. In this case, students will focus on the outcomes which still need to be achieved.

Learning Outcome <i>Students will be able to . . .</i>	Sub-outcomes/skills <i>By achieving this broader outcome, students will demonstrate that they can also . . .</i>	Sample Practice Tasks <i>Students can develop/practice the skills needed to achieve this outcome by . . .</i>
<ol style="list-style-type: none"> 1. Evaluate 2-digit expressions using addition and subtraction, without carrying or borrowing/trading 2. Identify place value to 100 3. Round whole numbers to the nearest 10, 100, 1000 4. Order whole numbers to 100 5. Represent mathematical ideas in concrete, pictorial, and symbolic forms 6. Use mathematical vocabulary and language to communicate concepts 7. Identify value of Canadian currency 8. Translate a 1 step addition or subtraction word problem into a mathematical expression 9. Identify regular shapes: rectangle, square, triangle, and circle 10. Recognize common base time units (seconds, minutes, etc.) 	<ul style="list-style-type: none"> • Read and write whole numbers up to 100 • Recognize vertical and horizontal format for adding and subtracting • Count by multiples of 2, 5, 10, up to 1000 • Apply or use examples of keywords • Compare whole numbers • Estimate value of numbers • Solve for the perimeter of a rectangle, triangle, and square • Draw and label the sides of a regular shape (rectangle, square, triangle) • Planning the steps necessary for a feast 	<ul style="list-style-type: none"> • Counting by multiples of 2, 5, and 10 • Show the relationship between manipulatives and numbers up to 20 • Drawing and labeling regular shapes (rectangle, square, triangle, circle) • Plan and produce a food product based on a recipe.

Level 2 Math

Students need to demonstrate competency in these outcomes before progressing to the next level. In assessment, it may be determined that some of the outcomes have already been met. In this case, students will focus on the outcomes which still need to be achieved.

Learning Outcome <i>Students will be able to . . .</i>	Sub-outcomes/skills <i>By achieving this broader outcome, students will demonstrate that they can also . . .</i>	Sample Practice Tasks <i>Students can develop/practice the skills needed to achieve this outcome by . . .</i>
<ol style="list-style-type: none"> 1. Evaluate multi-digit expressions using addition, subtraction with carrying or borrowing/trading 2. Identify place value to 1,000,000 3. Round whole numbers up to 1,000,000 place value 4. Read, write and compare whole numbers to 1,000,000 in digits and words 5. Represent mathematical ideas in concrete, pictorial and symbolic forms 6. Use mathematical vocabulary and language to communicate concepts 7. Add and subtract currency up to \$2 8. Translate 1-step addition, subtraction and multiplication word problems into a mathematical expression 9. Convert, add and subtract time units 10. Convert to and from 12-hour notation to 24-hour notation 	<ul style="list-style-type: none"> • Show the relationship between multiplication and repeated addition • Recall multiplication facts up to 12 x 12 • Write numbers in expanded notation to 10,000 • Estimate sums and differences • Multiply two whole numbers that are less than or equal to 10 • Multiply one-digit numbers by 10, 100, 1000 • Use key words: multiplier, multiple, multiplication, multiply, product, double/twice, triple, quadruple, by, of, carrying, borrowing, times, expanded notation, perimeter 	<ul style="list-style-type: none"> • Memorize 12 x 12 multiplication chart • Write numbers as repeated additions or multiplication • Calculate perimeter of a square and a rectangle • Make change up to \$1 • Scheduling

Level 3 Math

Students need to demonstrate competency in these outcomes before progressing to the next level. In assessment, it may be determined that some of the outcomes have already been met. In this case, students will focus on the outcomes which still need to be achieved.

Learning Outcome <i>Students will be able to . . .</i>	Sub-outcomes/skills <i>By achieving this broader outcome, students will demonstrate that they can also . . .</i>	Sample Practice Tasks <i>Students can develop/practice the skills needed to achieve this outcome by . . .</i>
<ol style="list-style-type: none"> 1. Evaluate expressions using multiplication and division with carrying and with/without remainder 2. Divide and multiply whole numbers by 10, 100's, and 1000's. 3. Translate multiplication and division into mathematical expressions to solve multi-step word problems reflecting real life situations 4. Demonstrate division by regrouping 5. Use mathematical vocabulary and language to communicate concepts 6. Recognize basic metric units 	<ul style="list-style-type: none"> • Memorize division and multiplication facts • Recognize the relationship between X and \div • Estimate products and quotients • Solve single and multi-step multiplication and division word problems reflecting real life situations • Apply multiplication and division to real life situations • Apply or use examples of keywords • Define basic prefixes of metric system • Calculate area of a square and rectangle • Compare and contrast perimeter and area informally, using a drawing or a shape 	<ul style="list-style-type: none"> • Check a division question using multiplication • Check multiplication with division • Determine a number's divisibility between 2, 3, 5 and 9 • Solve single and multi-step multiplication and division word problems reflecting real life situations • Calculate unit prices using whole numbers • Find quotient keywords • Calculate the lowest price comparing unit prices of similar products • Make change up to \$100

Level 4 Math

Students need to demonstrate competency in these outcomes before progressing to the next level. In assessment, it may be determined that some of the outcomes have already been met. In this case, students will focus on the outcomes which still need to be achieved.

Learning Outcome <i>Students will be able to . . .</i>	Sub-outcomes/skills <i>By achieving this broader outcome, students will demonstrate that they can also . . .</i>	Sample Practice Tasks <i>Students can develop/practice the skills needed to achieve this outcome by . . .</i>
<ol style="list-style-type: none"> 1. Evaluate decimal expressions using addition subtraction, multiplication, and division 2. Identify place value to 10 000ths 3. Round decimal numbers to a given place value 4. Order decimal numbers 5. Evaluate multi-step decimal expressions 6. Solve word problems 7. Convert measurements within the metric system 	<ul style="list-style-type: none"> • Read and write decimals • Apply or use examples of keywords: decimal, decimal place value, per, of, by • Convert between dollars and cents • Compare decimal values • Translate word problems into mathematical expressions and/or equations • Convert metric units without a conversion chart • Apply and use metric examples of length, mass, capacity, and temperature • Calculate perimeter and area of squares and rectangles • Add and subtract same units and mixed metric units 	<ul style="list-style-type: none"> • Calculate unit price • Solve for the best buy • Calculate household expenses (make a budget)

Level 5 Math

Students need to demonstrate competency in these outcomes before progressing to the next level. In assessment, it may be determined that some of the outcomes have already been met. In this case, students will focus on the outcomes which still need to be achieved.

Learning Outcome <i>Students will be able to . . .</i>	Sub-outcomes/skills <i>By achieving this broader outcome, students will demonstrate that they can also . . .</i>	Sample Practice Tasks <i>Students can develop/practice the skills needed to achieve this outcome by . . .</i>
<ol style="list-style-type: none"> 1. Use mathematical vocabulary and language to communicate the concept of fractions 2. Recognize the relationship between fractions and decimals 3. Reduce fractions 4. Convert between improper fractions and mixed numbers 5. Identify equivalent fractions 6. Evaluate fraction expressions using addition, subtraction, multiplication and division 7. Translate a word problem into a mathematical equation and solve 	<ul style="list-style-type: none"> • Define and use keywords like fraction, numerator, denominator, mixed numbers, equivalent fractions, whole numbers, long division, greater than, lesser than, equals, simplify • Express a number as a product of prime numbers or composite numbers, recognize prime numbers, greatest common factor, simplify • Comparison of fractions and long division of whole numbers • Group equivalent fractions • Calculate perimeter and area of squares and rectangles • Determine least common denominator (LCD), least common multiple (LCM) • Simplify and write equivalent fractions using addition, subtraction, multiplication, division, common denominator • Use critical thinking in real-life math applications 	<ul style="list-style-type: none"> • Label parts of a fraction – $\frac{2}{3}$ (numerator and denominator) • Use an image to show a proper fraction and mixed number (e.g., drawing, manipulatives, shapes, etc.) • Find the odd one (e.g., $\frac{1}{2}$, $\frac{2}{4}$, $\frac{3}{6}$, $\frac{8}{9}$) • Use common fraction function on a calculator

Level 6 Math

Students need to demonstrate competency in these outcomes before progressing to the next level. In assessment, it may be determined that some of the outcomes have already been met. In this case, students will focus on the outcomes which still need to be achieved.

Learning Outcome <i>Students will be able to . . .</i>	Sub-outcomes/skills <i>By achieving this broader outcome, students will demonstrate that they can also . . .</i>	Sample Practice Tasks <i>Students can develop/practice the skills needed to achieve this outcome by . . .</i>
<ol style="list-style-type: none"> 1. Evaluate expressions using fractions, decimals and percent 2. Represent proportion as a statement of equivalence between two ratios 3. Write the relationship between two numbers or quantities as a rate 4. Analyze data tables and graphs (bar, line, circle) 5. Apply mathematical concepts and procedures to tasks of daily living 	<ul style="list-style-type: none"> • Convert a decimal to a percent, percent to decimal, a fraction to a percent, a percent to a fraction • Recognize percent notation as a denominator of 100 • Compare a decimal to a percent, percent to decimal, a fraction to a percent, a percent to a fraction • Explain or show with examples the different elements of a graph • Identify different types of graphs (bar, line, circle, pictograph) • Estimate percentages 	<ul style="list-style-type: none"> • Find a percent of a number • Explain or use examples of key words: ratio, rate proportion, percent “of” commission, tax, discount, simple interest • Find a number when a percent is given • Find a percent of a number • Determine if proportions are equal, using two different methods • Solve a proportion for a missing term • Express the relationship between two numbers as a percent • Estimate percentages (mental shopping), calculate discounts, tips on service, tax, calculate wage increase, and budget • Apply ratio and proportion to solve problems involving real life situations • Calculate discounts, mark ups, budgets, payment schedules, wage increases, sale prices, taxation, commission and duty

COMPUTER STUDIES

COMPUTER STUDIES

COMPUTER STUDIES: FUNDAMENTAL LEVEL

Goal Statement

Computers are an important part of education, work and personal life. Computer skills are introduced at the fundamental level to help students gain the knowledge and confidence to perform basic computer operations.

Core Skills

Students will be able to demonstrate the following skills:

A. Basic Knowledge of Computers

- Describe some common uses of computers in society
- Identify healthy computer workspace practices (e.g., ergonomics, eye health, screen time)
- List the basic parts of a computer system (e.g., system unit, monitor, keyboard, mouse, USB drive, storage drive)
- Start and shut down a computer system, including logging off a public computer
- Use a mouse, pointing device, or touch pad
- Manage computer applications (e.g., start, close, maximize, minimize, move, resize)
- Create a folder and demonstrate basic file management skills
- Back up important files
- Operate a printer (e.g., power on, load paper, print)
- Update operating system and applications

B. Keyboarding

- Use correct touch-typing techniques and procedures for letters only
- Achieve an adjusted typing speed of 10 wpm

C. Word Processing

- Create a new word processing document
- Open and edit an existing document
- Format a document using basic tools (e.g., font, size, colour)
- Adjust view options (e.g., zoom, page display, ruler)
- Save a document in a specific location
- Print a document
- Use editing tools (e.g., spell check, grammar, thesaurus)

D. Electronic Communication

- Access the Internet using a web browser
- Search the Internet using a search engine
- Recognize a URL
- Create a bookmark
- Fill in online forms
- Send and receive email (e.g., open, download and attach files)
- Identify security problems associated with Internet (e.g., passwords, multi-factor identification, online shopping and banking, malware, phishing scams, suspicious file attachments)
- Use online synchronous communication tools
- Identify best practices for electronic communication (e.g., etiquette and formatting for emails, online forums, chats)

E. Options

1. Internet and Social Networking

- Delete browser cache and history files
- Recognize the accuracy, relevance, appropriateness, and bias on electronic information sources, such as Wikipedia, YouTube
- Identify the potential benefits and risks of social networking (e.g., disclosing personal information online)

2. E-commerce

- Explain advantages and disadvantages of selling and buying on the Internet
- Identify best practices for making online purchases (e.g., reliability of supplier, shipping and handling, delivery times, proof of purchase, warranty information, return policy)

3. Digital Photography

- Transfer pictures from a device to a computer
- Apply basic editing techniques to digital images

COMPUTER STUDIES: INTERMEDIATE LEVEL - COMPUTER SKILLS

Goal Statement

Computers are a part of daily life in personal, work and educational environments. The goal of an Intermediate Level computer course is to introduce adult learners to the use of the computer as a tool so that they become more confident and able to function more efficiently with a computer.

Core Skills

Students will be able to demonstrate the following learning outcomes:

A. Keyboarding

- use correct touch typing techniques and procedures
- achieve an adjusted typing speed of 20 wpm

B. Introduction to Computers

- give examples of the history of computers and range of applications in society
- describe commonly used computer terminology and acronyms
- describe the differences between hardware and software
- assess and modify workspace ergonomics

C. Operating System

- demonstrate use of basic operating system maintenance and management functions (e.g., task manager, start up applications, add/remove applications, system and driver updates)
- demonstrate the ability to correctly name, and locate, and identify files and folders
- demonstrate the ability to perform basic file and folder operations (e.g., copy, move, delete, restore and rename)

D. Word Processing

- create a new word processing document and save it to a specified location
- use templates to create documents
- retrieve a document from a specified location
- print a document using advanced options
- use tools, such as spelling and grammar, thesaurus, and search
- modify text using basic operational tools (e.g., copy, cut, paste)
- format text using basic text formatting tools (e.g., fonts, text treatments, and paragraph settings such as bullets, spacing, indents and tab stops)
- format a page using basic page layout properties (e.g., margins, orientation, size, columns, and breaks)

- insert and modify objects and features (e.g., tables, pictures, shapes, headers, footers, and page numbers)

E. Electronic Communications

- perform a targeted Internet search
- evaluate online sources using basic techniques (e.g., identify author, publication date, citations/references, funding sources)
- send and receive email with file attachments
- recognize security problems associated with Internet (e.g., passwords and multi-factor identification, online shopping and banking, malware, phishing scams, suspicious file attachments)
- identify online privacy concerns (e.g., social media, digital fingerprint, sharing personal information, understanding disclosure and permanence of online information)
- demonstrate the ability to participate in an online course (e.g., download and upload files, complete online activities, use synchronous communication tools such as Zoom)

F. Options

- import information to a word processor from other sources (e.g., graphs, graphics, spreadsheets, and the Internet)
- perform basic spreadsheet operations
- create and deliver a slideshow or poster using presentation software
- transfer, manage, edit, and share digital photos using basic photo editing software

COMPUTER STUDIES: ADVANCED LEVEL

Goal Statement

The goals of Computer Studies at the Advanced Level are:

- to provide students with a survey of the major applications of computers
- to develop an understanding of computers and concepts to aid the students' employment opportunities, personal productivity, and enjoyment
- to enable the student to acquire skills to contribute to, and participate productively in society.

Learning Outcomes

Students will be able to demonstrate the following skills:

1. Hardware

- identify, name and describe basic components of a computer system unit:
 - motherboard
 - Central Processing Unit (CPU)
 - memory (RAM)
 - peripheral connections (USB, firewire, HDMI...)

2. Memory and Secondary Storage

- identify, name and describe Secondary Storage Devices, including:
 - hard drives (fixed and removable)
 - USB devices (flash drives and USB hard drives)
 - solid state drives
 - Memory cards (SD, SC)
 - Online storage (cloud storage)
 - Optical and magneto-optical storage devices (CD-ROM, DVD)
- recognize and use capacity descriptors (KB, MB, GB, TB)
- distinguish between and describe the function of RAM, ROM and BIOS/UEFI

3. Input and Output

- identify, name, describe, and distinguish among input and output devices (and associated software):
 - keyboard, pointing devices, scanners
 - video adapters and displays (LCD, touch screen)
 - printers (various types)
 - voice
 - describe how various input and output devices can be used to assist people with

disabilities

- option: digital camera, cell phone, other devices

4. Operating a Computer

- distinguish between System Software, Utility Software and Application Software and describe the purpose of an operating system
- differentiate among various commonly used operating systems
- employ operating system(s) to perform basic operations of disk and file management.
 - assign meaningful file and folder names
 - employ wildcard characters in file management
 - organize files on storage devices and designate drives, folders and files
 - perform management functions to locate, list, display properties of, copy, rename, move, (un)delete folders and files
 - describe drive formatting (sectors, tracks, index) and defragment a drive
 - recognize a variety of common program and data file types and their associated extension
- describe the problem of computer malware, (viruses and spyware), and methods to detect and remove them
- demonstrate care, maintenance, and protection of computer equipment
- demonstrate the ability to back up data
- option: identify workspace ergonomics conditions

5. Computers in Society

- identify the effect of computers on their everyday lives (databases-subscription lists, ATMs, the Internet, computer record systems, income tax)
- give examples of how computers are affecting career opportunities
- trace the history of computer technology and identify current trends
- state the purchasing considerations from the perspective of an informed consumer (warranty, service, licensing, needs assessment, market trends)
- provide examples of issues involving computers in society (protection of privacy, social networking sites, identity theft, phishing sites, spam and copyright)
- discuss ethical and political implications of advancing technology (artificial intelligence, block chain technology, targeted advertising)

6. Word Processing

- create a word processing document and save it to a specified location and directory
- select any amount of text and format the character attributes
- format the indentation, the alignment, and the spacing of lines and paragraphs
- identify non-printing characters (space, tab, new line, new paragraph) as displayed on the screen
- move, copy, and delete text
- insert a page break and section break into a document

- insert, format and manipulate a table
- use bulleted and numbered lists
- use footnotes/endnotes
- apply lines, shading and colour to a document
- use the find and the replace functions
- use the spell checker/thesaurus
- insert a graphic into a document
- set page margins
- use headers and footers (including page numbering, filename, and date codes) with multiple sections
- preview and print a document
- recognize different document output devices
- recognize that different file formats originating from different word processors and versions may be incompatible, requiring file conversion routines
- save in a variety of appropriate formats
- work collaboratively on document online

7. Spreadsheets

- enter and format data (numbers, text, data series)
- create simple formulas (using basic operators and functions)
- copy or move data and/or formulas, utilizing absolute and relative cell addresses and ranges
- change cell characteristics (column widths, alignments, fonts, etc.)
- modify page layout (orientation, scaling, grid lines)
- use formulas to predict outcomes
- create several kinds of charts based on spreadsheet data
- save in a variety of appropriate formats
- preview and print using various print options
- work collaboratively on spreadsheets online

8. Internet

- describe the basic structure and functioning of the Internet and define current terminology (URL, ISP, WWW, http, https)
- describe the process of online commerce, including ATM cards, online banking, online shopping, online auctions, and security issues
- describe the various options for computer connectivity (cable modems, XDSL, routers, wireless, 3G, 4G, 5G, satellite, LTE)
- send and receive e-mail (including attachments) using proper etiquette
- use a web browser to access and navigate through a web site
- use search engines to locate and bookmark information
- save text and graphical information from a web site

- recognize computer security problems associated with Internet use (spyware, viruses, spam, firewall)
- understanding how the Internet was developed and how it functions

Option

1. Computer Programming

- create simple programs in a programming language
- describe the purpose of compilers and/or interpreters
- create and make use of computer designs or algorithms
- write basic input, processing and output instructions

2. Keyboarding

- significantly increase their typing speed
- demonstrate proper keyboarding techniques

3. Presentation Software

- Create, manipulate and deliver a presentation

4. Graphics Applications

- edit a digital photograph
- create and manipulate a graphic image (Paintbrush, Draw)
- differentiate between various bit-mapped and vector- based graphic file formats (BMP, JPG and PNG)

COMPUTER STUDIES: PROVINCIAL LEVEL - COMPUTER APPLICATIONS

Goal Statement

The goals for the Provincial Level Computing Studies are:

- to develop problem solving/critical thinking skills utilizing computer application software as a tool. Towards this end, project work will be emphasized.
- to build on computer software skills and outcomes as described by the learning outcomes of the advanced level computing studies.

Learning Outcomes

Because of the wide and ever expanding nature of computing applications, it is both impossible and undesirable to include all outcomes in a single course. A computing studies course at the provincial level will consist of a minimum of two from the following categories:

Each topic will consider ethical point of views and students will complete a research activity for each topic.

1. Current Technologies

- search all facets of the web efficiently (text, images, videos) for material relevant to a specific inquiry
- analyze websites critically for value, accuracy, potential malware, and bias
- critically evaluate “crowd sourcing” sites as research tools, e.g. opinions on consumer products, travel, health issues, political issues
- identify privacy & security issues related to social networking
- effectively communicate with email utilizing: address books, distribution lists, cc: and bcc: fields, attachments, effective subject lines, spam control
- identify email examples of phishing and other online fraudulent activity
- use logical folder (directory) management techniques for computer files, email, etc.
- compare and contrast a variety of techniques, hardware and software that can be used to back-up computer data
- describe the importance of operating system and driver patches, and the processes by which these patches are downloaded and installed
- list examples of anti-virus and anti-malware software
- describe virus and malware risks
- set up scheduled scans
- describe the security implications of automatic updates
- identify cases where AI tools may assist in computer productivity, including AI generated citations
- identify online content where AI negatively impacts the quality of content, including errors and contradictions
- identify examples of where Augmented Reality (AR), Virtual Reality (VR), and Mixed Reality (MR) are

used and their applications in computing

2. Publishing

- organize and present a variety of text, graphic and other data following appropriate design and layout procedures
- use templates, “wizards” and/or other productivity tools
- merge documents
- integrate tables, charts, and graphics
- describe the various file formats used for text, graphics and publication files
- change file formats where possible
- create, modify, and manipulate digital graphic images (e.g. scan, draw, paint)
- retrieve files from local and online sources
- use a variety of typographic principles to improve readability and effective communication
- generate cross references, footnotes, indexes and tables of contents

3. Advanced Spreadsheets

- format cell types and describe the differences between common numerical formats such as accounting, currency, and number
- use complex formulas including functions such as VLOOKUP and IF
- use and write formulas
- create and modify charts
- create reports for multiple sheets using 3D references
- manage and analyze data using pivot tables and what-if analysis
- create macros or use a programming language to customize a spreadsheet
- design a spreadsheet to analyze, interpret, and project outcomes in an applied situation

Optional:

- use solver

4. Database Management

- describe the function of a database, and differences between databases and tables/spreadsheets
- design and create flat file and relational databases
- maintain and modify the structure of existing databases
- correctly formulate queries
- create and edit forms
- create and edit reports
- explain various social and ethical issues involving databases

5. Networking

- state advantages and disadvantages of using networks
- describe different network configurations (LAN, WAN, etc.)
- describe and diagram different network topologies (point-to-point, star, bus, etc.)
- describe the advantages and disadvantages of different network data transmission media (ethernet, twisted pair, coaxial cable, optical fiber, and wireless)
- list and describe common network operating systems and network protocols
- describe various server models, including file servers and client/server systems
- list Internet/intranet similarities and differences
- compare the similarities and differences between the Internet and intranets in terms of access, security, and functionality
- describe management issues, including traffic analysis and security

6. Programming*

***A Note of Caution:** The Programming option must not be considered as equivalent to or as a replacement for the Computer Science course articulated at the provincial level.

This option introduces the learner to programming fundamentals. The learner will write programs in a high level language that demonstrates output only and input-process-output operations. While the emphasis of the Computer Science course is software engineering, this option focuses primarily on the elements of programming.

- test, debug, and modify program code
- define data types and assign meaningful identifiers to constants and variables
- use input statements to access the keyboard and use output statements to display text and graphics
- use conditional expressions to alter program flow
- use iteration structures to create loops
- write simple procedures
- write programs to demonstrate mathematical processing and simple character and graphic manipulations

7. Online Technologies

- develop an online portfolio which contains projects that demonstrate proficiency with computer software
- describe the concept of cloud computing, and utilize cloud-based applications such as: word processing, spreadsheets, online collaboration, photo-editing, online storage
- utilize electronic means for time and calendar management, task (to do) lists, user ID management, notes and bookmark (favourite) synchronization
- create and publish a blog entry, which includes text, pictures, and hyperlinks
- add and update an entry on a wiki
- create and publish an online video

- describe software that can be used to remotely access another computer
- describe the process for setting up a home wireless network, configuring encryption, and having computers connect to the network. Connect to wireless networks in other locations
- describe the benefits of Bluetooth technology, provide examples of Bluetooth devices, and set up Bluetooth devices
- correctly apply privacy settings to media published online
- describe various licenses including copyright, public domain, creative commons, and GNU

8. Web Publishing

- create web pages using both a WYSIWYG editor and an HTML editor to present text, graphics and other data using appropriate design and layout
- use fonts, font sizes, headings, justification and tables in a web page appropriately
- recognize the various file formats used for text, graphics, sound, and animation
- create, modify, and manipulate graphic images (e.g. resize, compress, crop, change format)
- locate and retrieve files (graphics, animations, sounds) from the Internet
- explain the implications of copyright copy-left (e.g. GNU GPL, Creative Commons, etc.)
- create and remove hyperlinks on text and graphics
- create internal (relative) and external (absolute) hyperlinks in a web page
- create a navigation scheme to move between web pages on a web site
- use accessibility features (e.g. alt text, choosing and structuring elements correctly, colour contrast and colourblind options)
- use meta tags (e.g. description, keywords, title)
- use JavaScript in web pages
- use Cascading Style Sheets (CSS)
- examine various monetization options for websites and examine the procedure of embedding advertisements

Optional:

- use templates, wizards, and other productivity tools in the creation of web pages
- create an image map

9. Digital Art and Graphics

- create basic digital shapes
- describe the difference between bitmap and vector images as well as the differences between common image file formats
- select, move, and align objects
- transform objects, including rotation, scaling, and reflecting
- create and format graphic text
- position text on a path
- create colours and gradients

- apply colours and gradients to text and other digital objects
- draw straight and curved lines
- trace a scanned object or digital photograph
- create and manipulate layers
- apply a variety of filter effects to a digital photograph
- adjust brightness and contrast of a digital photograph
- describe important specifications of a digital camera, including megapixels, optical zoom and digital zoom
- group and ungroup objects

COMPUTER SCIENCE: PROVINCIAL LEVEL

Goal Statement

The goals for the provincial level Computer Science course are:

- to develop problem solving skills whereby the student is able to analyze a problem, devise an algorithm or process to solve the problem, use this process to write a computer implementation of the solution and to test the solution
- to adequately prepare students for a career or program of studies where logical thought and structured design processes are required.

Core Topics

Software Engineering (Problem Analysis and Design of Solution)

Given a problem suitable for a computer programming solution, the student shall:

- analyze the problem so that it is clearly understood
- identify the inputs, outputs and appropriate data structures
- break down the solution of the problem into component modules
 - User defined functions
 - Classes
 - Scope
 - Inheritance
 - Polymorphism
- design the structure of each module, documenting it in structured English (using a method such as pseudo-code or top-down charts) and describing in detail all inputs, processes or algorithms used and format of outputs
- design an appropriate user interface
- produce computer source code as a software design implementation
- test, debug and modify program code until error free
- document the solution, both internally and externally; and
- identify the differences between source code and machine code

Given the solution to a computer programming problem, the student shall:

- identify the time complexity of an algorithm using big O notation;
- add features and fix bugs as requested by mock users
- use version control software; and
- discuss code with partners using pair-programming techniques

Elements of a programming language

Using a high-level programming language to create programs (such as command-line games and apps, simple graphics, and GUI elements), the student shall demonstrate knowledge of the following program elements:

- data types (including Integer, Real, Boolean, Character and String) and their representation as bits and bytes, conversion between data types, addressing of arrays
- meaningful identifier names for constants, variables, procedures (or subroutines) and programs input and output statements
- arithmetic expressions and operators, including parentheses
- string and character manipulation and processing, including use of substrings, concatenation, and other language-specific program features, and built-in functions and constants
- conditional expressions including use of relational operators, logical operators, Boolean variables, and nested conditional statements
- iteration structures, definite (e.g. For...Do) vs. indefinite loops, and nested loops.
- one-dimensional and two-dimensional arrays

EDUCATION AND CAREER PLANNING

EDUCATION AND CAREER PLANNING

CAREER PLANNING (CP)

Goal Statement

The goal of Career Planning is to enhance the life and employment readiness skills of adult learners. Students will be prepared to pursue occupational and educational goals in a changing and diverse world.

Generic Topic Outline

Education and Career Planning involves the development of a broad range of foundation skills. These skills are appropriate for Fundamental, Intermediate, Advanced and Provincial levels. Of the nine skill areas listed, 1 and 2 are considered mandatory, as well as five of the remaining seven. All outcomes listed in the two mandatory skills areas must be met. While suggestions for specific topics are provided for each major skill area, it is recognized that the exact content of courses may vary.

Note the learning outcomes listed are the same for Fundamental, Intermediate, Advanced, and Provincial levels because of the developmental nature of the content. Accordingly, the depth and breadth at which topics are explored and expectations of student work will vary with each level.

Mandatory Skills

1. Communication Skills

Students will:

- identify and practice active listening skills in a variety of situations
- demonstrate a knowledge of the range of effective speaking strategies
- extract, assess and exchange information using visual and electronic media
- recognize diverse cultural styles of communication
- identify and interpret non-verbal communication
- develop and apply effective writing processes in a variety of contexts
- develop self-awareness of personal qualities, values, interests and abilities
- apply critical thinking skills

2. Education and Career Exploration Skills

Students will:

- analyze current labour market and future trends
- investigate and develop a personal network
- undertake occupational and educational research
- identify available funding supports
- apply personal values, strengths, skills and interests to optional career paths
- recognize entrepreneurial options

- investigate and utilize work-related community resources
- familiarize themselves with student support services
- use a fluid process of goal setting for educational and career planning

Additional Skills (complete 5 of 7)

3. Study Skills

Students will:

- recognize how personal learning style affects perception and processing information
- develop strategies to effectively work in all learning styles
- identify and practice active reading skills necessary to gather information
- develop and apply effective note-taking strategies
- identify strategies for effective time management
- identify and use a variety of memory techniques and strategies
- perform tasks in word processing
- describe student responsibilities in a college environment
- increase their understanding of the value of life long learning
- develop and apply effective test taking strategies

4. Personal Awareness Skills

Students will:

- recognize that self-esteem is a life long process
- recognize personal feelings and their influence
- employ strategies to deal with anger
- assess and manage stress
- analyze and utilize time management strategies
- explore and connect personal assumptions with behaviour
- clarify personal values and their impact on choices
- create awareness of the spiritual, physical, intellectual and emotional dimensions of self

5. Interpersonal Skills

Students will:

- examine group process and practice the skills necessary for successful group experiences
- review problem solving models and develop group decision making strategies
- research and use the various methods of conflict resolution and demonstrate their use
- clarify the definition of assertiveness and implement successful techniques
- analyze the reasons for bias and develop the ability to recognize it in everyday situations
- identify issues around all forms of prejudice and practice non-discrimatory interpersonal skills

- investigate the various types of relationships and interaction they have with others
- identify methods of developing positive relationships, including effective communication techniques
- examine the diversity of relationships and cultures in Canadian society

6. Living Skills

Students will:

- design and implement a personal budget
- formulate financial planning for the future
- investigate nutrition and impact on personal health
- assess personal wellness
- investigate and utilize community resources
- strengthen personal support system and advocacy options
- examine the impact of lifestyles choices
- explore techniques for being an effective consumer

7. Job Search

Students will:

- identify and plan the major steps of the job search process
- develop effective interview strategies
- develop and maintain job search networks
- create effective resume and cover letter

8. Work/Training Experience

Students will:

- gain exposure to a work or training situation
- demonstrate appropriate work habits
- gather information about vocational choices
- demonstrate interpersonal skills with co workers and supervisors
- identify work adjustment needs and strategies for success
- explore and/or participate in required industry training certificates

9. Career Management

Students will:

- examine labour/union negotiation and human rights
- review Labour Standards Act
- investigate entrepreneurial options
- develop strategies preparing for career transition

- develop strategies and attitudes to maintain employment
- identify workplace ethics

PORTOFOLIO (PF): PROVINCIAL LEVEL

Goal Statement

Creating a well-organized, comprehensive portfolio is an in-depth process. This is a Prior Learning Assessment and Recognition (PLAR) course and as such, students will be granted credit for past and current personal knowledge, skills, and abilities. As part of the learning process, students must document these experiences and tailor them toward a specific purpose.

Portfolio provides an opportunity for students to present and engage with faculty in the coordination and review of their work. This course is recognized as a provincial-level elective toward the BC Adult Graduation Diploma.

The first task involves choosing one of the following targeted portfolio options:

1. Career Portfolio –This type of portfolio can help take an inventory with a job-related goal. Some examples include searching for a job, identifying new career options and choices, or recognizing a need or desire for further learning.

OR

2. Subject-specific Portfolio –This portfolio can help showcase strengths in a specific area of competency. Some examples include photography, art, music, storytelling, parenting, addictions recovery, and cultural engagement. It can also help identify an area for continued learning.

OR

3. Essential Skills Portfolio –This portfolio can help track skill strengths and identify further improvement in the area of reading, document use, writing, numeracy, oral communication, thinking, working with others, computer use, and continuous learning.

Learning Outcomes:

1. Purpose

Students will:

- establish the goals and overall purpose of the portfolio
- identify the intended audience of the portfolio
- choose type of portfolio

2. Collection

Students will:

- identify a variety of contexts where learning occurred i.e. education, training, employment, projects, community service, hobbies, accomplishments and activities
- gather and organize documents with significant learning experiences

3. Reflection

Students will:

- assess learning that resulted from these experiences
- identify and justify skills transferable to portfolio purpose

4. Evaluation

Students will:

- emphasize strengths to be used toward portfolio
- reorganize skills by theme
- formulate portfolio skill themes

5. Selection

Students will:

- select items that best provide evidence of strengths and accomplishments toward portfolio purpose
- assemble portfolio

6. Celebration

Students will:

- celebrate completion of portfolio and share with others
- describe transferable skills and strengths
- present the portfolio

STUDENT SUCCESS (SS)

Goal Statement

The goal of Student Success is to develop the learning skills, study strategies, and self awareness necessary for students to experience success as life-long learners.

Student Success involves the development of a broad range of core skills. These skills are appropriate for Intermediate, Advanced, and Provincial levels. Of the 13 skill areas listed, 1 – 8 are considered CORE and required outcomes. The additional 5 learning skill areas, 9 – 13, are optional. It is recognized that the exact content of courses may vary.

Note the learning outcomes listed are the same for Fundamental, Intermediate, Advanced, and Provincial levels because of the developmental nature of the content. Accordingly, the depth and breadth at which topics are explored and expectations of student work will vary with each level.

Required Learning Outcomes:

1. Adult Learner Awareness

Students will:

- Describe the challenges and advantages of adult learning and life-long learning
- Describe student responsibilities in a college/university environment
- Evaluate of the spiritual, physical, intellectual, and emotional dimensions of self in relation to returning to school
- Assess the impact of returning to school on family, friends, and coworkers
- Investigate personal wellness (support networks, nutrition, fitness, stress, and habits) and recognize its impact on learning
- Create a learning action plan

2. Learning Preferences

Students will:

- Identify own learning preferences and strengths
- Recognize how personal learning preferences affect perception and processing information
- Recognize learning differences and challenges and their impact on learners
- Examine different applicable strategies

3. Support and Resources

Students will:

- Identify and access personal support systems to address barriers to education (addictions, poverty, abuse, physical limitations, etc.)
- Familiarize themselves with student support services including financial aid officers, education

advisors, accessibility coordinators, counselors, learning specialists, employment services etc.

- Familiarize themselves with course supports available within the institution including writing labs, tutorials, libraries, instructor office hours etc.

4. Communication Skills

Students will:

- Demonstrate active listening
- Ask effective questions to facilitate understanding
- Apply communication strategies in educational settings
- Demonstrate the value and strengths of team and group work

5. Study Skills

Students will:

- Create a learning environment conducive to concentration and focussed study
- Employ study techniques throughout the term to prepare for quizzes, tests, and exams
- Develop critical reading skills (e.g. SQ3R, KWL)
- Navigate textbooks by recognizing and emphasizing key concepts, highlighted sections, chapter summaries, glossaries, and indexes
- Utilize a variety of memory techniques and strategies (e.g. flashcards, mnemonics, self-testing)
- Practice the skills necessary for successful group study experiences
- Apply effective note-taking strategies (e.g. Cornell method, mapping)
- Implement effective study habits (e.g. reviewing, recording, rewriting, summarizing, study partners, use of glossary & index, etc.)

6. Test Taking

Students will:

- Identify sources and effects of test anxiety
- Use effective strategies to manage test anxiety
- Use effective techniques leading up to a test
- Use effective strategies during a test (e.g. Pre-reading test questions, jotting down key things from memory at beginning of test, using weight of question to determine depth of answer required, use of required formulas, using time effectively during a timed test, tips on answering questions)
- Use effective strategies after a test
- Identify common types of academic dishonesty and their consequences
- List the advantages and demonstrate the importance of academic integrity

7. Time Management

Students will:

- Apply strategies for effective time management
- Evaluate different scheduling tools for learners' personal needs
- Develop short-term goals, mid-term goals, and long-term goals
- Create personal schedules including study times, assignments, tests, and personal obligations

8. Technology Skills

Students will:

- Perform tasks in word processing
- Use online tools: spelling and grammar checks, thesaurus, synonym finders, dictionaries, and word-web apps.
- Research information on the Internet
- Utilize library services online
- Bookmark useful references
- Use electronic communication (e.g. emails, social networks, college email, student portals)
- Create and use folders for organizing course work
- Utilize different storage options (e.g. student drives, USB memory sticks, external drives, and cloud services)

Optional Learning Outcomes:

9. Research

Students will:

- Find information and research topics using various sources
- Compile, evaluate, and review information
- Identify plagiarism
- Reference sources appropriately demonstrating an understanding of the different referencing styles (MLA, APA)

10. Online Learning

Students will:

- Identify common assumptions about online learning
- Compare the pros and cons of online learning
- Evaluate if online learning is a suitable personal option
- Identify important strategies for online success
- Explore at least one online learning platform (e.g. Moodle, Blackboard, Brightspace)

11. Presentation Skills

Students will:

- Prepare and/or deliver a presentation

- Practice techniques that affect physical presence (eye contact, face audience, body language)
- Practice speaking skills including projection, speed, tone, clarity, and enthusiasm
- Use humour and practical examples to engage audience
- Use a variety of visuals in presentations (e.g. handouts, props, posters, Power Point presentation)
- Facilitate questions and discussion

12. Financial Aid and Funding Options

Students will:

- Develop a personal budget for the duration of school program
- Identify available funding supports including student loans, bursaries, grants, scholarships, aboriginal funding etc.
- Evaluate personal accomplishments to determine funding eligibility (e.g. identify all community service & volunteer work, awards, affiliations etc.)
- Apply for suitable funding

13. BC Transfer Process

Students will:

- Describe the BC transfer process.
- Describe how the articulation process facilitates transfer between post-secondary institutions
- Define the following terms and describe how they relate to the transfer process: transfer credit, application for transfer credit, letter of permission, course outlines, block transfer, inter-provincial transfer.
- List reasons post-secondary students would transfer between institutions.
- Use the BC Transfer Guide.

WORK EXPERIENCE (WE): PROVINCIAL LEVEL

Goal Statement

Work Experience recognizes that many adults have gained significant workplace skills and knowledge. This course is intended, in part, to provide students who already have a minimum of 270 hours of paid and/or volunteer work with a framework to recognize and reflect on the work experience. The course includes opportunities to demonstrate knowledge of occupational health and safety, effective communication, and workplace ethics, as well as mastery of technical and applied skills, knowledge, and attitude for success in the workplace. It is recognized as a provincial-level elective toward the BC Adult Graduation Diploma.

Learning Outcomes:

1. Occupational Health and Safety

Students will:

- apply hazard recognition and injury prevention skills
- demonstrate knowledge and practice of basic workplace incident and accident response procedures and protocols
- demonstrate knowledge and practice of Worksafe BC's workplace health and safety rights and responsibilities
- analyze hazards or potential hazards in an occupation or industry sector related to a work experience placement (e.g. restaurant industry, construction industry)
- demonstrate knowledge of workplace harassment and discrimination prevention policies

2. Workplace Application

Students will:

- self-identify and describe the type of work done while on work experience
- demonstrate use of employability skills* while on work experience
- exemplify a positive work ethic and meet performance standards of the workplace
- act upon a workplace problem
- express and defend transferable skills acquired from school courses, community participation or workplace experience (ex. accounting, applied math, carpentry, mechanics, video production, cooking, writing, computer skills, presentation skills)

*[Employability Skills as defined by the Conference Board of Canada](#)

3. Work Training and Experience

Students will:

- demonstrate appropriate work habits
- gain exposure to work or training situations

- gather information about vocational choices
- demonstrate interpersonal skills with coworkers and supervisors
- explore and/or participate in required industry training certificates

ENGLISH

ENGLISH

Goal Statement

Mastering English at the ABE Intermediate, Advanced and Provincial levels is an ongoing process that involves development of a variety of core skills in:

- critical and creative thinking
- speaking and listening
- reading, research and reference, and
- written communication.

As students progress through each level of study, they will apply these skills to more challenging materials and tasks. Although these skills are listed as learning outcomes under discrete headings, they are usually integrated into a course, reflecting a holistic approach to language skill acquisition.

Reading, in particular, is a dynamic and interactive process. The reader integrates personal knowledge and experience with information from text to construct meaning. Reading skills are developed in conjunction with critical thinking, writing, speaking, and listening skills. Students should read to understand periodicals, reports, technical materials, and/or literature.

A number of related skills in the areas of cooperative communication, media literacy, and computer literacy are also part of effective personal, academic and workplace communication. Learning outcomes under these skill areas are not required outcomes, but they are highly recommended for inclusion whenever possible in ABE English courses.

ENGLISH: INTERMEDIATE LEVEL

Required Learning Outcomes

1. Critical and Creative Thinking

- recall and interpret information
- identify subject/topic, main ideas, supporting ideas, and sequence
- summarize
- make inferences
- compare and contrast
- classify
- define
- draw conclusions
- analyze information and solve problems (create solutions, identify impact of solutions, modify solutions)
- identify and discuss examples of fact and of opinion
- support a position

2. Speaking and Listening

- ask questions to clarify meaning
- demonstrate effective listening and paraphrasing skills
- use voice and body language effectively
- respond effectively to listener feedback
- deliver an effective oral presentation to inform or persuade
- provide useful input and feedback in a variety of situations (peer editing, group discussion, classroom participation)

3. Reading, Research, Reference

- use context clues and word structure analysis (prefix, suffix, root) to determine meaning
- recognize homonyms, antonyms and synonyms
- use a dictionary and a thesaurus to expand vocabulary
- read to locate specific information
- use a variety of reference materials
- use in-book reference tools (index, table of contents, glossary)
- use skimming and scanning techniques
- develop skills in outlining, memorizing, exam taking and note-taking
- recognize point of view, illogical argument, fallacies, stereotypes, bias and propaganda

4. Written Communication

- understand and use the steps of the writing process: prewriting, drafting, revising, and editing
- gather ideas; define and narrow a topic; evaluate, select and organize source materials
- adjust content and style of writing to suit purpose, audience and situation
- revise and edit work to improve content, organization, word choice, phrasing, sentence and paragraph structure, spelling, punctuation, and mechanics
- write effective paragraphs in a range of rhetorical modes (may include narrative, descriptive, process, compare/contrast, cause/effect, classification, expository, and persuasive)
- write a summary
- write an essay
- understand and avoid plagiarism

Recommended Learning Outcomes

5. Co-operative Communication

- establish co-operative working relationships with others
- recognize and respect diversity and individual differences
- establish goals and priorities
- respond appropriately to thoughts, opinions, non-verbal cues, and work of others
- challenge assumptions constructively

6. Media Literacy

- identify and track a theme, topic, or specified content from a variety of media
- interpret common graphics (graphs, charts, tables)
- review a book, movie, play, television program, documentary, piece of music, or other non-print material

7. Computer Literacy

- use computer programs to create, edit, and publish
- use electronic communication
- format assignments appropriately

8. Creative Writing

- write a creative piece (poetry, blog, journal, story)

ENGLISH: ADVANCED LEVEL

Students who have completed the Advanced Level will have the skills necessary to enter Provincial Level courses and some vocational, career, and technological programs.

Required Learning Outcomes

1. Critical and Creative Thinking

- recall and interpret information (identify subject/topic, main ideas, supporting ideas, and sequence)
- summarize information
- make inferences
 - using prior knowledge
 - identifying purpose and audience
 - evaluating information for accuracy, relevance, and importance
 - recognizing underlying assumptions (bias and tone)
 - synthesizing information
- compare and contrast
- classify
- define
- draw conclusions
- respond to information (create solutions, identify impact of solutions, modify solutions)
- identify and discuss examples of fact and opinion

2. Speaking and Listening

- ask questions to clarify meaning
- demonstrate effective listening skills and respond appropriately to listener feedback
- effectively use voice and body language
- provide useful input and feedback in a variety of situations (peer editing, group discussion, classroom participation)
- respond appropriately to thoughts, opinions, and work of others
- paraphrase ideas
- deliver an effective oral presentation to inform or persuade

3. Reading, Research, Reference

- use context clues and word structure analysis (prefix, suffix, root) to determine meaning
- use a dictionary and a thesaurus to expand vocabulary and to learn homonyms, antonyms and synonyms
- use in-book reference tools (index, table of contents, glossary)
- use skimming and scanning techniques

- read to locate specific information
- recognize point of view, illogical argument, fallacies, stereotypes, bias and propaganda
- use variety of reference materials
- develop note-taking skills
- develop research skills (internet and library catalog searches)
- critically evaluate, make inferences, and draw conclusions

4. Written Communication

- use the steps of the writing process (prewrite, outline, draft, revise, edit)
- write paragraphs and essays in a variety of rhetorical modes including exposition and persuasion
- write a summary
- adjust content and style of writing to suit purpose, audience, and situation
- revise and edit work to improve content, organization, word choice, phrasing, grammar, sentence and paragraph structure, spelling, and punctuation
- recognize and edit for clichés, jargon, slang, and wordiness
- use complex and compound sentence structures
- use parallel constructions and correct misplaced or dangling modifiers
- develop advanced spelling strategies
- write a review of a book, movie, play, television program, documentary, piece of music, or other non-print material
- write paragraphs and essays on demand
- identify, discuss, and evaluate literary elements (plot, theme, character, setting, conflict)
- analyze and respond to editorial comment, magazine articles, technical or investigative writing, or advertising
- gather, evaluate, and organize information into a research assignment using appropriate documentation (MLA or APA)
- understand and avoid plagiarism

Recommended Learning Outcomes

5. Co-operative Communication

- establish co-operative working relationships with others
- recognize and respect diversity and individual differences
- recognize non-verbal cues
- problem-solve
- challenge assumptions constructively

6. Media Literacy

- identify and track a theme, topic, or specified content from a variety of media
- interpret common graphics (graphs, charts, tables)

- critique a variety of media messages

7. Computer Literacy

- use computer programs to create, edit, and publish
- format assignments appropriately
- use electronic communication

8. Creative Writing

- write a creative piece (poetry, blog, journal, story)

ENGLISH: PROVINCIAL LEVEL

The following framework describes learning outcomes for three different English courses at the Provincial level:

- ENGLISH: LITERATURE-BASED (L)
- ENGLISH: TECHNICAL AND PROFESSIONAL (T)
- ENGLISH: ESSENTIAL (E)

Any of the three courses will fulfill the Provincial Level English requirement; the choice depends upon the focus of the course and the needs of the student.

ENGLISH: LITERATURE-BASED (L)

The Literature-based English course (L), models the traditional academic English course, develops skills in the context of reading and writing about literature, including Indigenous First Peoples and Canadian literature, from a variety of genres, and prepares students for post-secondary academic English courses.

Required Learning Outcomes

1. Critical and Creative Thinking

- recognize tone, including irony and understatement in poetry, short stories and drama
- evaluate arguments for validity, reliability, currency and objectivity
- recognize structural elements associated with particular standard formats for literary communications
- demonstrate an awareness and understanding of the power of language in literary communications; the importance of word choice and organization in furthering the problem solving process (initiating, developing and organizing thought); and the influence of communication formats on language choice and usage
- analyze literary elements in various genres

2. Speaking and Listening

- interact effectively in formal or informal situations
- adjust speaking style to suit audience, purpose, and situation
- use effective presentation aids to enhance communications
- deliver a research-based oral presentation to inform or persuade and respond effectively to feedback
- give and respond effectively to feedback during presentations
- demonstrate a critical understanding of arguments

3. Reading, Research and Reference

- evaluate the effectiveness of one's own and others' written material using criteria that include the following:

- plain language
- coherence and organization
- consistency in the application of usage conventions
- relevance to argument of supporting evidence and examples
- appropriateness to intended purpose and audience
- attention to detail
- summarize, make inferences, draw conclusions and critically evaluate
- paraphrase main ideas in written material
- distinguish between implicit and explicit messages
- apply prior knowledge and experience to assist understanding of new material
- use a variety of strategies and sources to gather and evaluate information, including print sources, library resources and the Internet
- evaluate the influences, writing style and background of authors in order to understand their writings
- read and demonstrate an understanding of short stories, poetry, drama and the novel, including works by Indigenous First Peoples and Canadian authors
- place literature in its historical and cultural context
- describe the social and personal benefits of reading literature

4. Written Communication

- apply the writing process
- demonstrate effective organization, support, and sentence structure
- gather, evaluate, synthesize, and organize information into a research paper of approximately 1500 words using an appropriate documentation style (e.g., MLA, APA, or Chicago)
- understand and avoid plagiarism
- produce writing on demand
- write literary essays using appropriate structure, development techniques, and literary conventions
- discuss literary terms (such as conflict, theme, character, mood, tone, irony, foreshadowing, point of view, and setting) in the analysis of works studied

Recommended Learning Outcomes

5. Cooperative Communication

- collaborate and consult effectively with others by:
 - interacting confidently
 - assuming responsibility for roles in teams
 - respecting and promoting respect for the contributions of other team members
 - demonstrating a commitment to the team and to project goals
- employ cooperative problem-solving skills

- use a variety of resources and technologies when working with others
- reflect on and assess contributions to group work

ENGLISH: TECHNICAL AND PROFESSIONAL (T)

The Technical and Professional English course (T) develops skills required in the context of reading and writing technical, professional and academic documents generated in the modern workplace, and it prepares students for entry into postsecondary courses in many academic, career, and technical programs.

Required Learning Outcomes

1. Critical and Creative Thinking

- recognize tone, including irony and understatement in writing for technical and professional purposes
- evaluate argument for validity, reliability, currency and objectivity
- recognize structural elements associated with particular standard formats for technical and professional communications
- demonstrate an awareness and understanding of the power of language in technical and professional communications; the importance of word choice and organization in furthering the problem solving process (initiating, developing and organizing thought); and the influence of communication formats on language choice and usage

2. Speaking and Listening

- interact effectively in formal or informal situations
- adjust speaking style to suit audience, purpose, and situation
- use effective presentation aids (e.g. diagrams, line drawings, overheads) to enhance communications
- deliver a research-based oral presentation to inform or persuade and respond effectively to feedback
- demonstrate a critical understanding of arguments

3. Reading, Research and Reference

- evaluate the effectiveness of one's own and others' written material (technical, business, or informational) using criteria that include the following:
 - plain language
 - coherence and organization
 - consistency in the application of usage conventions
 - relevance to argument of supporting evidence and examples
 - appropriateness to intended purpose and audience
 - attention to detail
- summarize, make inferences, draw conclusions and critically evaluate

- paraphrase main ideas in written material
- distinguish between implicit and explicit messages
- apply prior knowledge and experience to assist understanding of new material
- use a variety of strategies and sources to gather and evaluate information, including print sources, library resources and the internet
- evaluate the influences, writing style and background of particular authors in order to understand their writings
- read and analyze the content, purpose and organization of a variety of written material used in workplace and professional situations (e.g. letters, memos, email, reports, proposals)
- interpret technical and professional information conveyed in graphic and other non- verbal ways

4. Written Communication

- apply a writing process approach (pre-write, draft, revise, edit)
- produce work that demonstrates effective organization, support (e.g. examples, evidence) and sentence structure
- gather, evaluate, synthesize, and organize information into a research paper of approximately 1500 words using an appropriate documentation style (e.g. APA, MLA or Chicago)
- understand and avoid plagiarism
- produce writing on demand (e.g. business writing, essays, and exams)
- create a variety of effective technical and professional writing
- recognize and use language specific to technical and professional writing
- gather information and organize it into functional writing assignments (e.g. simple reports, letters and memos)
- edit own work fully for coherence and accuracy
- monitor spelling, grammar, mechanics and syntax using appropriate techniques and resources as required, including electronic technology
- write effectively, adjusting for audience, purpose and situation to inform, persuade, and interact in formal and informal situations
- organize information and ideas to clarify thinking and achieve desired effect

Recommended Learning Outcomes

5. Cooperative Communication

- describe the value and limitations of collaborative work
- collaborate and consult effectively with others in completing communications tasks through means that include:
 - interacting confidently
 - assuming responsibility for roles in teams
 - respecting and promoting respect for the contributions of other team members
 - demonstrating a commitment to the team and to project goals
- employ advanced problem-solving skills in cooperative communication activities

- use a variety of resources and technologies when working with others
- evaluate group processes and individual roles in and contributions to group processes

ENGLISH: ESSENTIAL (E)

The Essential English course (E) develops skills that will enable students to perform the tasks required by their occupation or other aspects of daily life and to graduate with the Adult Graduation Diploma, but is not recommended for entry into post-secondary education.

Required Learning Outcomes

1. Critical and Creative Thinking

- recognize elements of clear communication
- demonstrate organizational thought processes to solve problems
- evaluate argument for validity, reliability, currency and objectivity
- demonstrate an understanding of how communication formats influence language choices and usage
- record, organize and store information read, heard or viewed
- support a position by citing specific details from what has been read, heard or viewed
- explore diverse perspectives to develop or modify one's point of view
- assess one's own knowledge and use of language
- assess information for completeness, accuracy, currency, relevance, balance or perspectives and bias
- analyse different presentations of the same information to reconsider positions
- assess ways in which language reflects and influences values and behavior

2. Speaking and Listening

- interact effectively in formal or informal situations
- adjust speaking style to suit audience, purpose, and situation
- use effective presentation aids (e.g. diagrams, line drawings, overheads) to enhance communications

3. Reading, Research and Reference

- evaluate the effectiveness of one's own and others' written material (informational) using criteria that include the following:
 - plain language
 - coherence and organization
 - consistency in the application of usage conventions
 - relevance to argument of supporting evidence and examples
 - appropriateness to intended purpose and audience
 - attention to detail

- summarize, make inferences, draw conclusions and critically evaluate
- paraphrase main ideas in written material
- distinguish between implicit and explicit messages
- apply prior knowledge and experience to assist understanding of new material
- use a variety of strategies and sources to gather and evaluate information, including print sources, library resources and the internet
- interpret details in and draw conclusions from information presented in a variety of print and graphic formats, including electronic formats
- read articles, books, stories and poetry

4. Written Communication

- gather information and organize it into functional writing assignments (e.g. simple reports, letters and memos)
- edit own work fully for coherence and accuracy
- monitor spelling, grammar, mechanics and syntax using appropriate techniques and resources as required, including electronic technology
- write effectively, adjusting for audience, purpose and situation to inform, persuade, and interact in formal and informal situations
- organize information and ideas to clarify thinking and achieve desired effect

Recommended Learning Outcomes

5. Cooperative Communication

- describe the value and limitations of collaborative work
- collaborate and consult effectively with others in completing communications tasks through means that include:
 - interacting confidently
 - assuming responsibility for roles in teams
 - respecting and promoting respect for the contributions of other team members
 - demonstrating a commitment to the team and to project goals
- employ advanced problem-solving skills in cooperative communication activities
- use a variety of resources and technologies when working with others
- evaluate group processes and individual roles in and contributions to group processes

FIRST PEOPLES STUDIES

FIRST PEOPLES STUDIES

Vision Statement

Students will become more aware of First Peoples and their ways of knowing, their relationship with community and the land, and their history before and after European contact.

Background

In 2001, the ABE Social Sciences Working Committee determined that there were a number of Social Science courses with First Nations content and focus coming forward for articulation and recognized the need for more First Nations input. A working group was formed to gain input from First Nations educators in order to design a structure for First Nations goals and objectives within the Social Sciences and to come up with topics and specific learning outcomes for intermediate, advanced and provincial level First Nations Studies courses. After much discussion, the First Nations Working Group felt that First Nations Studies courses, or courses with First Nations content, needed to have their own articulation working committee in order to honour the holistic, multidisciplinary nature of First Nations Studies as an academic discipline. Courses in First Nations Studies may encompass the goals, content, and objectives of one or more disciplines such as the sciences, social sciences, humanities, and fine arts.

In 2002, the chairs of the First Nations working group made presentations to the Social Sciences Working Committee, the ABE Articulation Steering Committee and the Deans and Directors of Developmental Education, with all three groups passing motions supporting the establishment of a First Nations ABE Articulation Working Committee. Support was also obtained from the British Columbia First Nations Coordinators and the First Nations Articulation Committee at the post- secondary level.

In 2004, the British Columbia Council on Admissions and Transfer approved the establishment of a First Nations ABE Articulation Working Committee. The committee met for the first time in March 2005 at the Native Education Centre.

In 2011, the First Nations ABE Articulation Working Committee was renamed the Indigenous Adult Basic Education Articulation Working Committee.

In 2020, the Indigenous ABE Articulation Working Committee recommended that the language in this section of the guidebook use the more inclusive and affirmative term First Peoples consistently instead of Indigenous or First Nation(s) or Aboriginal(s) with the exception of this background section. In addition, the Working Committee recommended changing its name to the First Peoples ABE Articulation Working Committee.

Overview

The First Peoples Adult Basic Education Articulation (FPABE) Working Committee has a primary mandate to review curriculum in ABE programming to ensure that knowledge of First Peoples and their ways of knowing, their relationship with community and the land, and their history before and after European contact is present in any First Peoples curriculum approved by this working committee. For curriculum submission in First Peoples studies, this is a straightforward process; however, the committee also receives curriculum that spans two articulation committees' areas of responsibility.

Curriculum submitted for approval will include programs and courses where this committee has primary

approval responsibility, i.e., First Peoples Studies at the ABE level. This curriculum will be reviewed against our primary mandate and use the broad learning objectives identified for First Peoples studies. Additionally, the FPABE committee will work with other subject-related working group articulation committees. The FPABE working group will review the curriculum against the committee's primary purpose, while the relevant working group will review the curriculum against its specific content and skill objectives. For example, First Peoples English courses must be approved by both FPABE and English ABE Articulation before being submitted to the ABE Steering Committee for approval. Ethnobotany or First Peoples Science courses will be reviewed by FPABE and Science/Biology Articulation Committees.

The interest of the FPABE committee is to support the development of curriculum across ABE programming that is respectful of First Peoples and promotes success of learners. As such, the First Peoples ABE Articulation Working Committee provides a listing of learning outcomes, primarily applicable to First Peoples courses, but they may also be useful to the curriculum designer who is preparing materials that will proceed to other articulation committees.

Articulation Process

The FPABE Articulation Working Committee identifies two different pathways for curriculum submissions:

- Curricula focusing on First Peoples Studies articulated solely by the FPABE committee. This curriculum is community-collaborated, culturally relevant content-based curricula.
- Multiple articulations, where curriculum such as English, sciences, or math with a First Peoples focus, will require articulation through both the FPABE Committee and other articulation committee(s).

Refer to Appendix A for a flowchart describing the FPABE articulation process. It is recommended that courses be submitted using the course template available on the BCCAT website and that course submissions indicate which type of course it is (of the two bulleted types shown above).

It is also recommended that courses be submitted to committee members via email prior to the annual meeting date.

All courses will be reviewed according to the general vision, overview, goals, and learning objectives. Each course that is specifically First Peoples in focus will be articulated against the specific learning objectives for its level.

The FPABE committee shall follow protocol by requesting the host institution invite a First Peoples community representative, such as an Elder, to welcome and participate with the committee, in order to represent the host territory and its worldview.

Goal Statements

The committee:

- Provides support to all educators and students in BC for the development of culturally relevant curricula.
- Assists other working committees in course development outcomes by integrating First Peoples wisdom and knowledge to meet FPABE articulation committee standards.
- Considers the academic outcomes identified at the Fundamental through Provincial levels in other

content areas (English, math, sciences) but focuses specifically on the goals identified by this articulation committee.

- Supports student achievement of course outcomes with a focus on local First Peoples content whenever possible.
- Requires that curriculum submitted will:
 - Be developed in respectful consultation with local First Peoples communities.
 - Display evidence of direct and experiential methods that reinforce First Peoples perspectives through use of First Peoples paradigms.
 - Demonstrate local First Peoples involvement in course development, such as fluent speakers, community resource persons, and culturally relevant materials.
 - Demonstrate creative ways to assess and evaluate achievement of students that encourage and acknowledge First Peoples ways of knowing.

Some Examples of Strategies for Integrating First Peoples Ways of Knowing

- Having elders teach
- Engagement in community and cultural activities
- Preparing and sharing traditional food (feasting)
- Participating in talking circles
- Land-based learning (e.g. field trips)
- Learning and practicing cultural protocols (e.g. acknowledgement of traditional territory)
- Storytelling and creating imagery
- Dramatization
- Project-based learning

Required Learning Outcomes of First Peoples Studies Courses

(For courses in First Peoples Fine Arts, please see the separate First Peoples Fine Arts Guidelines at the end of this section.)

The goals of the curriculum are broadly applicable to all levels, fundamental through provincial. Participants in all First Peoples courses should be encouraged to acquire a range of skills and abilities. The skills and abilities listed here apply in general to all levels, fundamental through provincial, with the recognition that particular outcomes may be more or less applicable at each level.

Learners in any First Peoples Studies or Indigenous Studies course will be able to:

1. Identify and articulate past and present forces shaping First Peoples identity, such as culture, land, family, community, language, holistic perspectives, protocol, resistance, hegemony, values, worldview, knowledge, wisdom, and technology.
2. Identify the history, elements, and intergenerational effects of colonization and decolonization.
3. Recognize that while First Peoples share some common values and perspectives, they are also distinct, diverse, dynamic and evolving. For courses to be articulated solely by FPABE, the

committee reserves the right to use Social Science learning outcomes as a standard.

Examples of Outcomes at the Fundamental Level of First Peoples Studies

Students will be able to:

1. Identify and articulate their cultural background and influences
2. Explore and express an appreciation for their personal history, qualities, abilities, beliefs, interests, dreams, skills, strengths, and values
3. Identify intrinsic and extrinsic educational barriers, develop coping strategies, and identify supports and support systems.

Examples of Outcomes at the Intermediate Level of First Peoples Studies

Students will be able to:

1. Practice appropriate protocol(s) of distinct First Peoples communities, such as recognizing the traditional territories.
2. Analyze how First Peoples are classified, such as language families and cultural groups of Canada.
3. Analyze the effects of contact and colonization on First Peoples, including the impact of certain policies such as the residential school system.
4. Examine challenges faced by specific First Peoples populations such as women, veterans, elders, and youth.
5. Explain the significance of languages and oral traditions in First Peoples cultures.
6. Compare and contrast traditional and contemporary methods and systems of governance.
7. Analyze key issues regarding Aboriginal rights and titles, such as the land question.
8. Investigate the traditional technologies within an area of study, such as ethnobotany.
9. Analyze the relationship of First Peoples communities with the natural and spiritual world.
10. Evaluate the challenges of economic development, while recognizing traditional relationships with the land, plants and animals.
11. Examine family structures and child rearing practices, including kinship roles and obligations within First Peoples communities.
12. Distinguish between gender roles in First Peoples contemporary and traditional culture.

Examples of Outcomes at the Advanced Level of First Peoples Studies

Students will be able to:

1. First Peoples Diversity
 - Demonstrate an awareness of First Peoples diversity within B.C.
 - Identify leaders and accomplishments of B.C. First Peoples
 - Discuss various ways of identifying First Peoples (Métis, First Nations, Aboriginal, Indigenous, Inuit, etc.)
 - Locate and name B.C. First Peoples and language families
 - Identify B.C. tribal associations

2. Values, Traditions, and Roles in Community & Family

- Describe family and cultural background
- Explore the clan system and other social structures
- Read for meaning and clarify values regarding law and justice
- Identify roles and responsibilities in community (chief, headman, healer, midwife, hunter, warrior, etc.)
- Discuss roles and responsibilities in the family (parent, grandparent, aunt, uncle, etc.)

3. History of First Peoples in B.C.

- Discuss the pre- and post-contact history of First Peoples living in B.C.
- Explain the impacts of European contact and settlement.

4. Trade, Language, Culture, and Relationship with the Land

- Identify the impact of fur trade, the gold rush, and resource extraction.
- Locate inter-tribal trade routes in B.C.
- Explain the importance and significance of social gatherings in First Peoples communities.
- Compare coastal and interior lifestyles (seasonal rounds, settlements, housing, transportation, etc.

Examples of Outcomes at the Provincial Level of First Peoples Studies

Students will be able to:

1. Practice appropriate protocol(s) of distinct First Peoples communities, such as recognizing the traditional territories of host First Peoples.
2. Analyze how First Peoples peoples are classified, such as language families and cultural groups of Canada.
3. Analyze the effects of contact and colonization on First Peoples, including the impact of certain policies such as the residential school system.
4. Examine challenges faced by specific First Peoples populations such as women, veterans, elders, and youth.
5. Explain the significance of languages and oral traditions in First Peoples cultures.
6. Compare and contrast traditional and contemporary methods and systems of governance.
7. Analyze key issues regarding Aboriginal rights and titles, such as the land question.
8. Investigate the traditional technologies within an area of study, such as ethnobotany.
9. Analyze the relationship of First Peoples communities with the natural and spiritual world.
10. Evaluate the challenges of economic development, while recognizing traditional relationships with the land, plants and animals.
11. Examine family structures and child rearing practices, including kinship roles and obligations within First Peoples.
12. Distinguish between gender roles in First Peoples contemporary and traditional culture.

First Peoples Fine Arts Course Guidelines Goal Statements

Requires that curriculum submitted will:

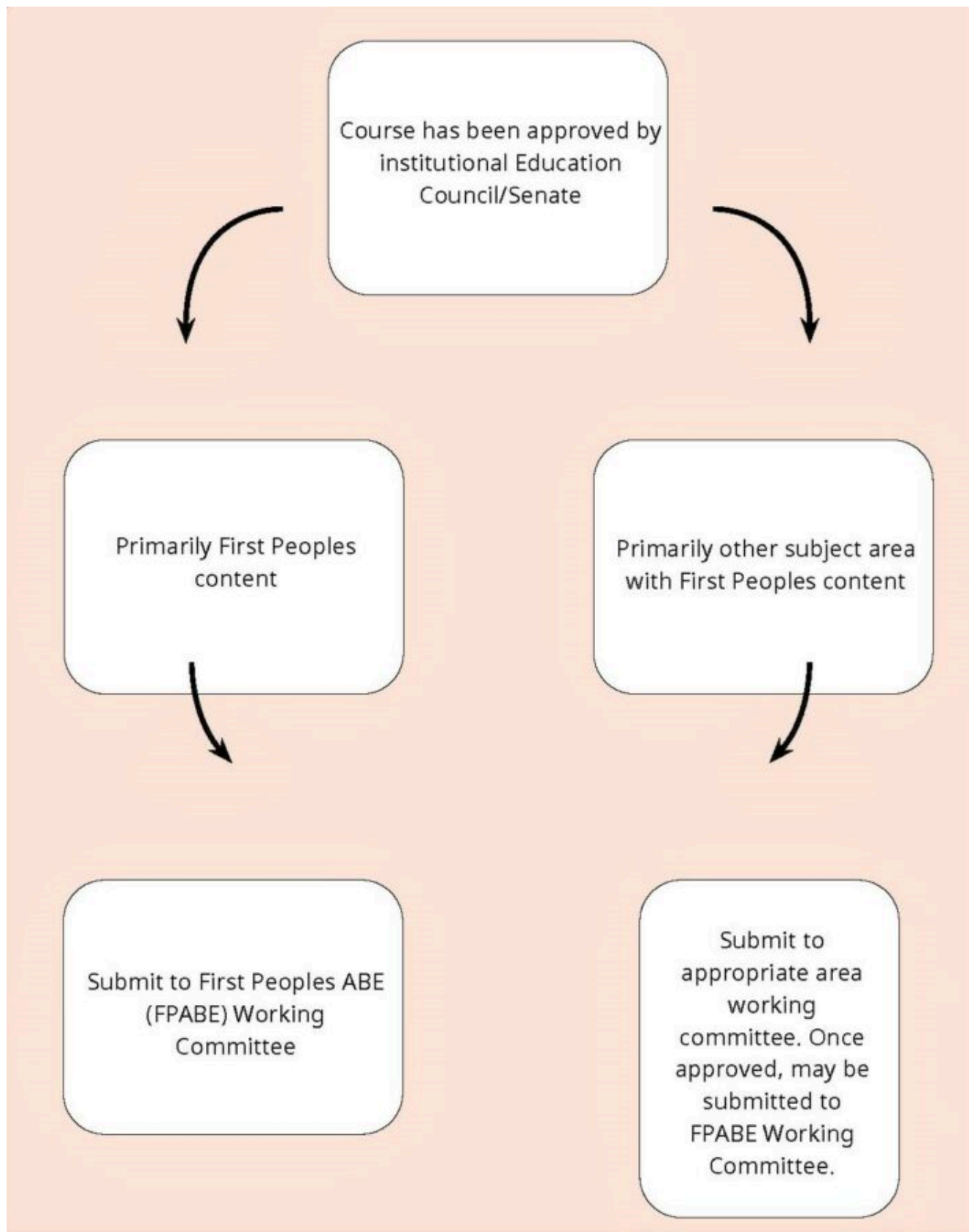
1. Be developed in collaboration with the local First Peoples communities
2. Incorporate traditional and contemporary First Peoples arts and the traditional arts making processes
3. Acknowledge that art is a reflection of traditional and contemporary First Peoples culture and worldviews
4. Address ethical considerations and protocols related to the First Peoples arts.

Required Learning Outcomes

Learners in any First Peoples Fine Arts course will be able to:

1. Describe the connection between First Peoples artistic expression and past and present First Peoples identity, collectivity, and worldview
2. Recognize that while First Peoples art and culture share some common values and perspectives, they are also distinct, diverse, dynamic and evolving.

APPENDIX A INDIGENOUS ABE PROVINCIAL ARTICULATION PROCESS



MATHEMATICS

MATHEMATICS

MATHEMATICS: INTERMEDIATE LEVEL—DEVELOPMENTAL

Goal Statement

The goal of Intermediate Mathematics is to enable adult learners to acquire mathematical knowledge, skills, and strategies needed to enter appropriate higher level courses or to satisfy personal or career goals.

I. Core Learning Outcomes

1. Estimating Skills/Calculator Use

It is expected that learners will be able to:

- estimate answers to problems
- use a scientific calculator to calculate and solve problems involving adding, subtracting, multiplying and dividing whole numbers, fractions and decimals
- check that answers and solutions to problems are reasonable in the context of the given question

2. Measurement

It is expected that learners will be able to:

- use the common metric units for temperature, length, area, volume/capacity, and mass
- use the common Imperial or US customary units for temperature, length, area, volume/capacity, and force
- convert between and within metric and Imperial or US customary units using tables and/or calculators
- take and read measurements with common measuring tools (e.g. thermometer, ruler, measuring tape, triple beam balance, bathroom scale, stop watch, Vernier caliper, micrometer) (optional)
- describe and apply precision, accuracy and tolerance (optional)
- estimate in metric and Imperial or US customary units of measurement (optional)

3. Perimeter, Area, and Volume

It is expected that learners will be able to:

- find perimeters of triangles, squares, rectangles, parallelograms, trapezoids, circles and composite figures by measuring and using formulas
- find areas of the above shapes by measuring and using formulas
- find the surface areas of cubes, rectangular solids, cylinders, cones, spheres, and composite solids by using formulas
- find the volumes of cubes, rectangular solids, cylinders, cones, spheres, and composite solids by using formulas

- distinguish between concepts of perimeter and area and their respective units

4. Ratio and Proportion

It is expected that learners will be able to:

- read, write, interpret, and compare ratios
- read, write and identify proportions and use them to solve problems
- use ratio and proportion to interpret and make scale drawings
- use proportions to solve problems involving similar triangles

5. Percent

It is expected that learners will be able to:

- use ratios and proportions to solve problems involving:
 - finding the percent when the part and whole are known
 - finding the part when the percent and whole are known
 - finding the whole when the part and percent are known

6. Geometry

It is expected that learners will be able to:

- name and draw points, lines, rays, segments, and angles
- name and draw triangles, quadrilaterals, other common polygons, and circles
- construct with a compass and straight edge:
 - the perpendicular bisector of a line segment
 - the bisector of an angle
 - a copy of an angle (optional)
 - parallel lines (optional)
 - 30° , 45° , and 60° angles (optional)
- classify and distinguish among acute, right, obtuse, straight, reflex, complementary and supplementary, and vertically opposite angles
- describe the angle relationships created when parallel lines are cut by a transversal
- measure angles with a protractor
- classify triangles according to sides and angles
- identify similar and congruent figures

7. Statistics

It is expected that learners will be able to:

- conduct a survey to collect data
- tabulate the data
- calculate median, mean, mode, and range

- graph the data
- interpolate and extrapolate from the information provided

8. Signed (Rational) Numbers

It is expected that learners will be able to:

- add, subtract, multiply, and divide signed (rational) numbers
- demonstrate order of operations with signed (rational) numbers
- graph signed (rational) numbers on the number line
- define absolute value

9. Algebra

It is expected that learners will be able to:

- explain the use of variables
- evaluate algebraic expressions using substitution
- combine like terms and remove parentheses
- solve first degree equations in one variable
- translate a problem into an equation
- use equations to solve problems
- solve simple formulas for one variable
- use formulas to solve problems

II. Additional Learning Outcomes

To complete the course, students should choose option A or B:

A. This option helps prepare students for math at the advanced level.

1. Powers, Roots, and Scientific Notation

- read and write numbers expressed as powers
- calculate powers with integral exponent
- use the rules of exponents to calculate products and quotients of powers with the same base
- use the rules of exponents to calculate the powers of powers
- express numbers using scientific notation
- convert between scientific and standard notation
- read and write numbers expressed as roots
- calculate using roots

2. Polynomials

- add and subtract polynomials
- multiply and divide polynomials by a monomial

- factor out the greatest common factor from polynomials

3. Trigonometry

- name the parts of a right triangle
- find the missing side of a right triangle using the Pythagorean Theorem
- find the measure of an unknown side or angle of a right triangle using sine, cosine, or tangent ratios
- solve problems using right angle trigonometry

4. Graphing

- draw a Cartesian co-ordinate system
- plot and name points in a Cartesian co-ordinate system
- given an equation in two variables:
 - determine if an ordered pair is a solution
 - find ordered pairs which are solutions
- create a table of values
- graph linear equations
- determine the slope of a line given two points on the line
- relate slope to grade and pitch
- find x- and y-intercepts
- solve problems using graphs of linear equations

B. This option is intended for students exiting the ABE structure at the Intermediate Level and contains additional material pertaining to specific vocations

MATHEMATICS: INTERMEDIATE LEVEL—ALGEBRAIC

Estimation is a skill that should be emphasized. Students should also be strongly encouraged to check answers and that solutions are reasonable in the context.

Learning Outcomes

1. Operations with Rational Numbers

It is expected that learners will be able to:

- write fractions as decimals and decimals as fractions
- add, subtract, multiply, divide, and simplify rational numbers
- use order of operations
- graph rational numbers on the number line
- define absolute value

2. Measurement

It is expected that learners will be able to:

- use the common metric units for temperature, length, area, volume/capacity, and mass
- use the common Imperial or US Customary units for temperature, length, area, volume/ capacity, and force
- convert between and within metric and Imperial or US Customary units using tables and/or calculators
- use proportional reasoning for conversions

3. Perimeter, Area, and Volume

It is expected that learners will be able to:

- find perimeters of triangles, squares, rectangles, parallelograms, trapezoids, circles and composite figures using formulas
- find areas of the above shapes using formulas
- find the surface areas of cubes, rectangular solids, right cylinders, spheres, and composite solids using formulas
- find the volumes of cubes, rectangular solids, right cylinders and cones, spheres, and composite solids using formulas
- distinguish between concepts of perimeter and area and their respective units

4. Ratio, Proportion and Percent

It is expected that learners will be able to:

- read, write, interpret, and compare ratios
- read, write and identify proportions and use them to solve problems

- use ratio and proportion to interpret and make scale drawings
- use ratio and proportion to solve problems involving similar triangles
- use ratio and proportion to solve problems including:
 - finding percent when part and whole are known
 - finding part when percent and whole are known
 - finding whole when part and percent are known

5. Algebra

It is expected that learners will be able to:

- explain the use of variables
- evaluate algebraic expressions using substitution
- combine like terms and remove parentheses
- solve first degree equations in one variable
- translate a problem into an equation
- use equations to solve problems
- solve simple formulas for a given variable
- use formulas to solve problems

6. Linear Equations and Graphing

It is expected that learners will be able to:

- draw a Cartesian co-ordinate system
- plot and name points in a Cartesian co-ordinate system
- given an equation in two variables:
 - determine if an ordered pair is a solution
 - find ordered pairs which are solutions
- graph equations of the form $x = a$ and $y = b$,
- define slope and relate to grade and pitch
- graph linear equations using
 - slope and y-intercept
 - two intercepts
 - a table of values
- find x- and y-intercepts
- determine the equation of a line, $y = mx + b$, given
 - its graph
 - its slope and a point on the line
 - two points on the line
- solve problems using graphs of linear equations

7. Powers, Roots, and Scientific Notation

It is expected that learners will be able to:

- read and write numbers expressed as powers
- evaluate powers with integral exponents
- apply laws of exponents to simplify expressions
- express numbers using scientific notation
- convert between scientific and standard notation
- determine the square root of a perfect square
- express a square root as a mixed radical in simplest form (numerical radicands only)
- approximate square roots of real numbers using a calculator

8. Polynomials

It is expected that learners will be able to:

- distinguish between monomials, binomials, trinomials and other polynomials in one variable only
- apply the laws of exponents to variable expressions with integral exponents
- evaluate polynomials by substitution
- add, subtract, and multiply polynomials in one variable
- factor polynomials by removing the largest common factor
- factor binomials of the form $a^2x^2 - b^2y^2$
- factor trinomials of the form $ax^2 + bx + c$ with $a = 1$ ONLY
- divide a polynomial by a monomial

9. Trigonometry

It is expected that learners will be able to:

- name parts of a triangle
- find missing side of a right triangle using the Pythagorean Theorem
- find the measure of an unknown side or angle of a right triangle using sine, cosine, or tangent ratios
- solve problems using right angle trigonometry

MATHEMATICS: ADVANCED LEVEL—DEVELOPMENTAL

Goal Statement

The goal of Advanced Developmental Mathematics is to provide students with sufficient algebra, geometry, and trigonometry to satisfy grade 11 prerequisites for some vocational, career, technical, and/or further academic programs.

Learning Outcomes

1. Operations with Real Numbers

It is expected that learners will be able to:

- write fractions as decimals and repeating decimals as fractions
- add, subtract, multiply and divide rational numbers
- evaluate powers with rational bases and integer exponents
- demonstrate the order of operations with rational numbers
- evaluate radicals with rational radicands and distinguish between exact answers and approximate answers
- simplify, add, subtract, multiply and divide square roots

2. First Degree Equations and Inequalities

It is expected that learners will be able to:

- solve first degree equations, in one variable, including those involving parentheses
- solve formulas for a given variable when other variables are known
- solve formulas for a given variable
- solve first degree inequalities in one variable
- solve practical problems that can be solved using a first degree equation

3. Polynomials

It is expected that learners will be able to:

- distinguish between monomials, binomials, trinomials and other polynomials (in one variable only)
- apply the laws of exponents to variable expressions with integral exponents
- evaluate polynomials by substitution
- add, subtract, and multiply polynomials
- factor polynomials by removing the largest common factor
- factor binomials of the form $a^2x^2 - b^2y^2$ and trinomials of the form $x^2 + bx + c$
- solve quadratic equations using the law of zero products

Optional Outcomes:

- factor trinomials of the form $ax^2 + bx + c$

4. Rational Expressions and Equations

It is expected that learners will be able to:

- simplify, by factoring, rational expressions consisting of polynomial numerators and either monomial, binomial, or trinomial denominators
- determine values for which a rational expression is undefined
- multiply and divide rational expressions
- add and subtract rational expressions consisting of monomial and/or binomial denominators
- solve simple rational equations and check solutions

5. Linear Equations

It is expected that learners will be able to:

- graph a linear equation including the forms $x = a$ and $y = b$
- given a linear equation or its graph, determine its
 - slope
 - x - and y -intercepts
- determine the equation of a line, $y = mx + b$, given
 - its graph
 - its slope and a point on the line
 - two points on the line

6. Systems of Linear Equations

It is expected that learners will be able to:

- solve a system of first degree equations in two unknowns by graphing, substitution, and elimination methods
- solve practical problems that can be solved using a system of equations

7. Radical Expressions and Equations

It is expected that learners will be able to:

- simplify square roots with variable radicands
- add, subtract, multiply and divide square roots with variable radicands
- solve equations with one square root containing a polynomial radicand and check for extraneous solutions

8. Trigonometry

It is expected that learners will be able to:

- solve right triangles using one or more of
 - the sine ratio
 - the cosine ratio
 - the tangent ratio
 - the Pythagorean theorem
 - the angle sum property of triangles

Optional Outcomes:

- evaluate sine and cosine for angles from 0° to 180°
- solve triangles using the Law of Cosines or the Law of Sines, excluding the ambiguous case

9. Optional Learning Outcomes

Students must complete one of the following four optional topics:

A. The Quadratic Equation

It is expected that learners will be able to:

- solve quadratic equations by factoring
- solve equations of the form $x^2 + bx + c = 0$ by completing the square
- solve quadratic equations by using the quadratic formula
- graph $y = ax^2 + bx + c$ and determine its
 - x - and y -intercepts
 - vertex
- solve practical problems that can be solved using a quadratic equation

B. Statistics

It is expected that learners will be able to:

- determine the mean, median, mode, range and standard deviation of a set of data
- represent data graphically using broken line graphs and bar graphs
- understand how the normal curve can be used to describe a normally distributed population
- calculate z -scores and determine areas under the normal curve
- use areas under the normal curve to analyze data in terms of the probability of various events

C. Financial Mathematics

It is expected that learners will be able to:

- solve simple interest problems using the formula, $i = prt$ (for any variable)
- solve compound interest problems for A or P using $A = P\left(1 + \frac{r}{n}\right)^{nt}$

- find the effective interest rate using $E. R. = \left(1 + \frac{r}{n}\right)^n - 1$
- solve annuity problems using $A = \frac{nP[(1+\frac{r}{n})^n - 1]}{r}$ (for A or P only)
- find periodic payment using $P = \frac{A(\frac{r}{n})}{1 - (1 + \frac{r}{n})^{-nt}}$
- determine the finance charge on a loan
- determine the interest rate on a loan using tables or appropriate technology

D. Geometry

It is expected that learners will be able to:

- classify triangles according to angles and sides
- use the properties of triangles to determine the measure of sides and angles
- determine the measure and/or congruence of angles given a transversal and two parallel lines
- use the triangle congruence theorems in simple guided proofs

MATHEMATICS: ADVANCED LEVEL—ALGEBRAIC

Goal Statement

The goals for Advanced Algebraic Mathematics are (1) to provide students with sufficient mathematical knowledge for academic, career, and technical programs whose admission requirements include Math 11 equivalence and (2) to prepare students to enter Provincial Level mathematics courses.

Learning Outcomes

It is expected that learners will use a scientific calculator to evaluate complex expressions with emphasis on using special keys to perform a variety of functions. The use of a graphing calculator or other technology is optional.

1. Basic Algebraic Skills Review

Note: A review of the following basic algebraic skills is suggested but not required. It is expected that learners will be able to:

- perform operations with real numbers including absolute value and exponential notation
- simplify expressions using rules for order of operations including nested parentheses and properties of exponents
- translate common language into algebraic expressions
- evaluate algebraic expressions by substitution

2. Solving Linear Equations and Inequalities

It is expected that learners will be able to:

- solve first degree/linear equations in one variable
- manipulate simple formulas to isolate a specified variable
- solve and graph linear inequalities in one variable
- write set-builder and/or interval notation for the solution set or graph of an inequality
- use linear equations, formulas and linear inequalities to solve applied problems
- find the union (disjunction) and intersection (conjunction) of sets
- solve and graph compound inequalities
- solve absolute value equations

3. Graphing Relations and Functions

It is expected that learners will be able to:

- write linear equations in slope-intercept form
- graph linear equations using a table of values
- graph linear equations using the y-intercept and slope and using x- and y-intercepts
- graph horizontal and vertical lines

- find the slope of a line given two points on the line
- find the equation of a line given graphic data: the slope and y-intercept, the slope and one point, or two points on the line
- determine whether a pair of lines is parallel, perpendicular or neither
- find the equation of a line parallel or perpendicular to a given line and through a given point
- use the definition of function and the vertical line test to distinguish between functions and non-functions
- use and interpret function notation to evaluate functions for given x-values and find x-values for given function values
- determine the domain and range of a function
- use a table of values to graph linear functions and non-linear functions such as quadratic, cubic, square root, reciprocal, and absolute value functions

Optional Outcomes:

- graph exponential functions
- analyze functions to determine line of symmetry, vertices, asymptotes, and intercepts
- understand and demonstrate transformations in graphs resulting from the following changes in the defining equation: translation, reflection, dilation
- use a graphing calculator or other appropriate technology to graph equations
- identify an appropriate graph for a given relation
- develop a model function from a given graph or set of data
- perform linear regression using a graphing calculator to fit a linear function to data
- graph linear inequalities in two variables

4. Systems of Linear Equations and Inequalities

It is expected that learners will be able to:

- solve systems of linear equations in two variables by graphing, substitution and elimination methods
- determine if a system of equations will have one, infinite, or no solution(s)
- use systems of linear equations to solve applied problems

Optional Outcomes:

- solve systems of linear equations in three variables and applied problems using such systems
- graph the solution for a system of linear inequalities in two variables
- use a graphing calculator or other appropriate technology to solve systems of linear equations and inequalities

5. Polynomial Expressions, Equations and Functions

It is expected that learners will be able to:

- identify the degree, terms and coefficients of a polynomial
- distinguish between monomials, binomials, trinomials, and other polynomials
- add, subtract, multiply polynomials
- divide polynomials by monomials
- factor polynomials using an appropriate strategy or a combination of techniques: common factors, difference of squares, difference and sum of cubes, perfect square trinomials, trial/error, or grouping
- solve polynomial equations using the principle of zero products
- solve applied problems using polynomial equations/ functions

Optional Outcomes:

- divide polynomials by binomials using long division
- divide polynomials and binomials using synthetic division

6. Variation, Rational Expressions, and Equations

It is expected that learners will be able to:

- identify situations and find values for which a rational expression will be undefined
- simplify rational expressions
- add, subtract, multiply and divide rational expressions
- solve rational equations
- manipulate formulas involving rational expressions to isolate a specified variable
- solve applied problems that can be modeled with rational equations
- simplify complex rational expressions
- express variations in the form of equations (direct, inverse, joint, combined)
- solve problems involving direct, inverse, joint and combined variation

7. Radical Expressions and Equations

It is expected that learners will be able to:

- identify situations and find values for which a radical expression will be undefined
- write radicals as powers with rational exponents and vice versa
- use rational exponents to simplify radical expressions
- simplify, add, subtract, multiply and divide radical expressions (numeric or algebraic)
- rationalize denominators containing radicals (including the use of conjugates)
- solve equations involving radical expressions or powers with rational exponents and check for extraneous roots
- manipulate formulas involving powers and square roots to isolate a specified variable
- solve applied problems which can be modeled by radical equations, and determine if solutions are reasonable given the context of the problem

Optional Outcomes:

- identify imaginary and complex numbers and express them in standard form
- add, subtract, multiply, and divide complex numbers

8. Quadratic Equations and Functions

It is expected that learners will be able to:

- solve quadratic equations by factoring, principle of square roots, completing the square and the quadratic formula
- use the discriminant to identify the number and type of solutions of a quadratic equation
- write a quadratic equation given its solutions
- solve rational and radical equations reducible to a quadratic pattern and check that answers are reasonable
- solve selected polynomial equations that can be factored simplifying to linear and/or quadratic factors
- graph quadratic functions of the form $f(x) = a(x - h)^2 + k$ and demonstrate translations, reflections and stretching/shrinking resulting from changes in the function equation
- find the vertex, line of symmetry, minimum or maximum values, x - and y -intercepts, domain and range, given the function $f(x) = a(x - h)^2 + k$
- rewrite $f(x) = ax^2 + bx + c$ as $f(x) = a(x - h)^2 + k$ by completing the square
- solve problems that can be modeled using quadratic equations such as maximum and minimum problems

Optional Outcomes:

- solve quadratic equations having complex number solutions
- use a graphing calculator or other appropriate technology to graph and solve quadratic equations
- solve quadratic inequalities by graphing
- solve polynomial and rational inequalities algebraically

9. Trigonometry

It is expected that learners will be able to:

- label the sides of a right triangle with respect to a given angle
- determine sine, cosine, and tangent ratios of an angle in a right triangle using the side lengths
- use a scientific calculator to find the trigonometric value for a given angle and to find an angle given its trigonometric value
- solve right triangles and applied problems using the basic trigonometric ratios, the Pythagorean theorem, and sum of the angles (180°)
- use the Law of Sines and the Law of Cosines to solve non-right (oblique) triangles and applied problems

Optional Outcomes:

- use $\frac{1}{2}bc\sin A$ to find the area of a triangle
- determine the quadrant for positive and negative angles in standard position
- identify coterminal angles
- determine primary trigonometric function values for angles in standard position
- identify reference angles
- evaluate primary trigonometric functions for any angle in a variety of conditions
- solve trigonometric equations involving the primary functions over a specific domain
- use the trigonometric definitions to deduce unknown trigonometric values from given values

10. Optional Topics

Learners may wish to complete either A or B but these outcomes are not required.

A. Geometry

- recall the properties of parallel lines, similar and congruent figures, polygons, angle relationships, angle measurements, and basic compass and straightedge construction
- demonstrate an understanding of the following properties of a circle:
 - the perpendicular bisector of a chord passes through the centre of the circle
 - the line joining the midpoint of a chord to the centre is perpendicular to the chord
 - the line through the centre, perpendicular to a chord, bisects the chord
 - central angles containing equal chords or arcs are equal (the converse is also true)
 - inscribed angles containing the same or equal chords (on the same side of chord) or arcs are equal
 - an inscribed angle equals half the central angle containing the same or equal chords (on the same side of chord) or arcs are equal
 - an inscribed angle in a semicircle measures 90°
 - opposite angles of a cyclic (inscribed) quadrilateral are supplementary
 - a tangent is perpendicular to the radius at the point of contact (the converse is also true)
 - tangents from an external point are equal
 - the angle between a chord and tangent equals the inscribed angle of the opposite side of the chord (the converse is also true)
- demonstrate and clearly communicate deductive reasoning in the solution of applied problems

B. Data Analysis

- explain the uses and misuses of statistics
- demonstrate an understanding of mean, median, mode, range, quartiles, percentiles, standard deviation, the normal curve, z-scores, sampling error and confidence intervals
- graphically present data in the form of frequency tables, line graphs, bar graphs, and stem and leaf plots
- design and conduct a statistics project, analyze the data, and communicate the outcomes

MATHEMATICS: ADVANCED LEVEL—FOUNDATIONS

Learning Outcomes

It is expected that learners will use various problem-solving strategies throughout the course

- guess and check
- look for a pattern
- make a systematic list
- draw or model
- eliminate possibilities
- simplify the original problem
- work backward
- develop alternative approaches

CORE LEARNING OUTCOMES

1. Skills Review

It is recommended that a review of the following skills be implemented throughout the course as needed, but are not required.

A. Basic Algebra

It is expected that learners will be able to:

- use the terms rational, irrational, and integer to classify numbers
- use order of operations with real numbers
- solve first degree equations and inequalities
- solve word problems by translating them into mathematical equations
- solve simple formulae for a given variable

B. Linear Relations

It is expected that learners will be able to:

- write linear equations in slope-intercept form
- graph linear equations using a table of values
- graph linear equations using the y-intercept and slope and using x- and y-intercepts
- given a graph, find the slope of the line
- draw a graph to represent a rate
- interpret slope as an average rate of change
- interpret domain and range from a graph
- solve problems that involve linear relations
- use function notation

- determine whether a relation is a function

C. Systems of Linear Equations

It is expected that learners will be able to:

- solve a system of first-degree equations in two unknowns by graphing, substitution and/or elimination
- solve practical problems using a system of equations

D. Right Triangle Trigonometry

It is expected that learners will be able to:

- solve problems involving right triangles, using sine, cosine, or tangent ratios, the angle sum property of triangles and the Pythagorean Theorem

2. Rates

It is expected that learners will be able to:

- interpret rates in a given context, such as the arts, business, and health sciences
- solve rate problems using proportions
- determine unit rates
- convert units by dimensional analysis (multiplying by one)
- solve a contextual problem that involves rate or unit rates

3. Systems of Linear Inequalities

It is expected that learners will be able to:

- graph a linear inequality in two variables
- graph the solution for a system of linear inequalities in two variables
- use the graph to solve optimization problems

4. Quadratic Functions

It is expected that learners will be able to:

- factor (GCF, difference of squares, trinomials of the form $x^2 + bx + c$)
- solve quadratic equations by factoring or using the quadratic formula
- identify, from a graph, the vertex, intercepts, domain, range, and axis of symmetry
- determine the vertex using the vertex formula
- determine whether the y-coordinate of the vertex is a maximum or minimum
- graph a quadratic function using the vertex, intercepts, or a table of values
- solve problems that involve the characteristics of a quadratic function

5. Geometry

It is expected that learners will be able to:

- classify and distinguish among acute, right, obtuse, straight, reflex, complementary and supplementary, and vertically opposite angles
- generalize, using inductive reasoning, the angle relationships created when parallel lines are cut by a transversal and the angle sum property of a triangle
- use deductive reasoning to determine the measures of angles in a diagram that involves parallel lines, angles and triangles
- measure angles with a protractor
- classify triangles according to sides and angles
- explain the difference between similar and congruent shapes
- solve problems that involve similar triangles
- derive proofs that involve the properties of angles and triangles

6. Statistics

It is expected that learners will be able to:

- determine and interpret the mean, median, mode, range and standard deviation of a set of data
- represent data graphically
- interpret and analyze graphs and identify bias
- understand how the normal curve can be used to describe a normally distributed population
- calculate z-scores
- solve problems that involve standard deviation and normal distribution
- interpret statistical data using: confidence intervals, confidence levels, and margin of error

7. Trigonometry

It is expected that learners will be able to:

- solve triangles using Law of Cosines and Law of Sines, excluding the Ambiguous Case
- solve contextual problems involving Law of Cosines and Law of Sines

8. Measurement

It is expected that learners will be able to:

- draw a scale diagram of a 2-D shape
- solve problems involving scale diagrams of 2-D shapes and 3-D objects
- use proportions to determine the scale factor or a missing dimension of a 2-D shape or 3-D object
- determine from a scale diagram the area of 2-D shapes and the volume of 3-D objects
- determine the effect of a change in scale factor on area and volume

9. Logical Reasoning

It is expected that learners will be able to:

- make conjectures by observing patterns
- find a counterexample to disprove a given conjecture
- determine if a given argument is valid, and justify the reasoning
- compare, using examples, inductive and deductive reasoning
- prove a conjecture, using deductive reasoning
- use problem-solving strategies to solve problems or play games
- analyze and prove conjectures, using inductive and deductive reasoning, to solve problems

OPTIONAL LEARNING OUTCOMES

Learners may wish to complete either A, B, or C but these outcomes are not required.

A. Financial Math

It is expected that learners will be able to:

- solve consumer problems involving percentage (sales tax, discounts, etc.)
- determine and compare wages in various situations
- solve simple and compound interest problems
- solve problems involving different forms of credit

B. Permutations, Combinations, and Simple Probability

It is expected that learners will be able to:

- evaluate factorial notation
- evaluate permutation and combination notation
- solve related applied problems
- compute the probability of a simple event
- distinguish between experimental and theoretical probability

C. Project

Possible topics might include:

- create a variation on a puzzle or a game
- research a historical event or person involving math
- research an area of interest that involves math
- collect and interpret data, using statistical methods

MATHEMATICS: ADVANCED LEVEL—BUSINESS/TECHNICAL

Goal Statement

The goal of Advanced Business/Technical Mathematics is to provide the student with practical applications useful in future vocational training, careers, or personal life.

Learning Outcomes

1. Operations with Real Numbers

It is expected that learners will be able to:

- add, subtract, multiply and divide rational numbers
- evaluate powers with rational bases and integer exponents
- demonstrate the order of operations with rational numbers
- evaluate radicals and distinguish between exact answers and approximate answers
- write numbers in scientific notation, convert from scientific notation to standard notation, and multiply and divide numbers expressed in scientific notation
- use a scientific calculator

2. First-Degree Equations and Inequalities

It is expected that learners will be able to:

- solve first-degree equations, in one variable, including those involving parentheses
- solve formulas for a given variable
- solve first-degree inequalities in one variable
- solve practical problems using a first-degree equation

3. Equations and their Graphs

It is expected that learners will be able to:

- plot points on a coordinate system
- use ordered pairs to name points on the coordinate system
- determine whether a given point is a solution to an equation in two variables

Optional Topics

- recognize and create any of the graphs of the following relations:
 - $y = ax + b$ (linear)
 - $y = ax^2 + bx + c$ (quadratic)
 - $y = a/x$ (reciprocal)
 - $y = a(bx)^{1/2}$ (square root)
 - $y = a(bx)^c$ (exponential) where a, b, c are real numbers

- given the graph of an equation, determine the following, where appropriate:
 - x - and y -intercepts
 - vertex
 - slope

Optional Learning Outcomes

Learners must complete a minimum of three of the following:

A. Systems of Equations

It is expected that learners will be able to:

- solve systems of linear equations in two variables graphically and/or algebraically
- solve practical problems

B. Consumer Mathematics

It is expected that learners will be able to:

- solve consumer problems involving unit prices, wages earned in various situations, taxation, simple and compound interests, and exchange rates
- solve budget problems
- solve investment and credit problems involving interest

C. Finance

It is expected that learners will be able to:

- solve problems involving compound interest
- find the effective interest rate
- solve annuity problems
- solve loan, mortgage, and borrowing problems
- determine the finance charge on a loan

D. Data Analysis I

It is expected that learners will be able to:

- determine the mean, median, mode and range from a set of data
- interpret and/or construct frequency tables, broken line graphs, bar graphs, histograms, stem-plots and other visual representations from a set of data
- design a simple statistical experiment, collect the data, analyze and communicate the results

E. Data Analysis II

It is expected that learners will be able to:

- find quartiles and the percentile represented by a given data value
- calculate the standard deviation of a set of data using appropriate technology
- use z-scores to analyze normally distributed data

F. Geometry

It is expected that learners will be able to:

- use any of the following angle properties to determine an angle in a drawing:
 - vertically opposite angles
 - corresponding angles, alternate interior angles, and angles on the same side of the transversal
 - angles on a line
 - angles on a point
 - complementary and supplementary angles
 - angle sum of a triangle
- classify triangles and quadrilaterals according to their sides and angles
- draw triangles given:
 - three sides
 - two sides and an included angle
 - two angles and a side
- draw quadrilaterals given various combinations of sides, angles, and diagonals

G. Trigonometry

It is expected that learners will be able to:

- solve right triangles using one or more of
 - the sine ratio
 - the cosine ratio
 - the tangent ratio
 - the Pythagorean theorem
 - the angle sum property of triangles

Optional Topic

- solve triangles using the Law of Sines (excluding the Ambiguous Case) and the Law of Cosines

H. Measurement

It is expected that learners will be able to:

- complete simple conversions
- solve problems involving composite figures, with reference to perimeter, area, volume and surface area

- calculate maximum and minimum values, using tolerances, for lengths, areas and volumes
- enlarge or reduce a dimensional object according to a specified scale

I. Trades Option

It is expected that learners will be able to solve applied problems (as related to a specific trade) using:

- unit conversions
- algebra
- geometry
- right triangle trigonometry
- ratio and proportion
- percentage

J. Health Option

It is expected that learners will be able to solve applied problems (as related to the health field) using:

- ratio and proportion
- unit conversion
- percentage

MATHEMATICS: PROVINCIAL LEVEL—ALGEBRA AND TRIGONOMETRY

Goal Statement

The goals of the Provincial Algebra and Trigonometry are to prepare adult learners with the knowledge and skills in algebra and trigonometry necessary for entry to technical, vocational and career programs that require Math 12 equivalency as a prerequisite and for future study in higher-level math courses at college/university.

Learning Outcomes

1. Algebra Review

Note: the following outcomes are suggested, but not required. It is expected that learners will be able to:

- recognize subsets and identify properties of real numbers
- use interval notation to write a set of numbers
- evaluate absolute value of a real number and find the distance between two real numbers
- use rules for order of operations and properties of exponents to simplify expressions
- add, subtract, and multiply polynomials and factor a polynomial completely
- determine the domain of a rational expression, simplify rational expressions, perform operations with rational expressions and simplify complex rational expressions
- use properties of exponents to simplify radical expressions
- rationalize the denominator or numerator in a rational expression
- use properties of radicals to simplify and combine radicals
- define imaginary and complex numbers, express them in standard form, and perform operations with complex numbers
- solve linear equations, equations with absolute value, quadratic equations, radical equations, and equations reducible to a quadratic form
- solve linear inequalities, combined inequalities, and absolute value inequalities and graph the solutions on a number line
- solve applied problems using linear and quadratic equations
- solve equations of variation and applied problems involving variation
- solve systems of linear equations in two variables and in three variables
- distinguish between consistent/inconsistent and dependent/independent systems
- use systems of linear equations to solve applied problems

2. Functions and Graphs

It is expected that learners will be able to:

- find the distance between two points in the plane and find the midpoint of a segment
- apply the distance formula and mid-point formula to solve problems

- recognize graphs of common functions: linear, constant, quadratic, cubic, square root, absolute value, reciprocal
- use the vertical line test to identify functions
- graph functions and analyze graphs of functions, identifying: domain and range; intervals on which the function is increasing, decreasing or constant
- write formulas or functions to model real life applications
- determine whether a graph is symmetric with respect to the x -axis, y -axis, and the origin
- identify even or odd functions and recognize their symmetries
- graph transformations of functions: translations, reflections, stretchings and shrinkings
- graph functions defined piecewise
- find the sum, difference, product and quotient of two functions and determine their domains
- find the composition of two functions f and g , finding formulas for $f(g(x))$ and $g(f(x))$, identifying the domain of the composition and evaluating the composite function
- given an equation defining a relation, write an equation of the inverse relation
- given a graph of a relation or function, sketch a graph of its inverse
- use the horizontal line test to determine if a function is one-to-one and therefore has an inverse that is a function
- find a formula for the inverse of a function
- find $f^{-1}(f(x))$ and $f(f^{-1}(x))$ for any number x in the domains of the functions when the inverse of a function is also a function

Optional Learning Outcomes:

- use a graphing utility to graph functions
- decompose a function as a composition of two functions

3. Polynomial and Rational Functions

It is expected that learners will be able to:

- graph quadratic functions and analyze graphs of quadratic functions identifying the vertex, line of symmetry, maximum/minimum values, and intercepts
- solve applied problems involving maximum and minimum function values
- determine the behaviour of the graphs of polynomial functions of higher degree using the leading coefficient test
- determine whether a function has a real zero between two real numbers
- recognize characteristics of the graphs of polynomial functions including real zeros, y -intercept, relative maxima and minima, domain and range
- divide polynomials using long division
- use synthetic division to divide a polynomial by $x - r$
- use the remainder and factor theorems to find function values and factors of polynomial
- list the possible rational zeros for a polynomial function with integer coefficients
- factor polynomial functions and find the zeros

- find a polynomial with specified zeros
- solve polynomial and rational inequalities

Optional Learning Outcomes:

- fit a quadratic function to data when three data points are given
- use a graphing utility to graph polynomial functions, determine the real zeros and estimate the relative maxima and minima of a function
- graph a rational function identifying all asymptotes
- determine and analyze complex roots of a polynomial

4. Exponential and Logarithmic Functions

It is expected that learners will be able to:

- evaluate exponential functions including functions with base e
- recognize the inverse relationship between exponential and logarithmic equations
- graph exponential and logarithmic functions including transformations and analyze the graphs in terms of: x - or y -intercepts, asymptotes, increasing or decreasing, domain and range
- convert between exponential and logarithmic equations
- find common and natural logarithms using a calculator
- use basic and inverse properties of logarithms: $\log_b b=1$, $\log_b 1=0$, $\log_b bx =x$, $b\log_b x =x$
- use the product rule, quotient rule and power rule to expand or condense logarithmic expressions
- use the change of base property to find a logarithm with base other than 10 or e
- solve exponential and logarithmic equations
- use exponential and logarithmic equations to model and solve real-life applications including exponential growth and decay

Optional Learning Outcomes

- use a graphing utility to graph exponential and logarithmic functions
- use a graphing utility to solve exponential and logarithmic equations

5. Trigonometric Functions

It is expected that learners will be able to:

- identify angles in standard position, positive and negative angles, coterminal angles and reference angles
- convert between degree and radian measures of angles
- find the length of an arc, radian measure of central angle, or radius of a circle using the formula $s = r \diamond$
- identify special angles on a unit circle
- determine the six trigonometric functions of an angle in standard position given a point on its

terminal side

- find the exact values of the trigonometric functions of special acute angles 30° ($\pi/6$), 45° ($\pi/4$), and 60° ($\pi/3$) or any angles that are multiples of these special angles
- graph the six trigonometric functions and state their properties
- graph transformations of the sine and cosine functions and determine period, amplitude, and phase shift
- recognize and use the reciprocal, quotient and Pythagorean identities
- apply the sum or difference formulas and double angle formulas to find exact values and to verify trigonometric identities
- recognize and use inverse trigonometric function notation
- use a calculator to evaluate inverse trigonometric functions
- find exact values of composite functions with inverse trigonometric functions
- solve trigonometric equations over the interval $(0, 2\pi)$
- use trigonometric functions to model and solve real-life problems

Optional Learning Outcomes

- use the Law of Sines and the Law of Cosines to solve oblique triangles
- solve applied problems using the Law of Sines and the Law of Cosines
- find the area of a triangle given the lengths of any two sides and the measure of the included angle: $\text{Area} = \frac{1}{2}(bc \sin A) = \frac{1}{2}(ac \sin B) = \frac{1}{2}(ab \sin C)$
- convert between linear speed and angular speed of an object moving in circular motion using the formula $v = r\omega$
- use the graphing utility to graph trigonometric functions
- use half-angle formulas to find exact values
- use a graphing utility to verify or to approximate the solutions of a trigonometric equation

6. Sequences and Series

It is expected that learners will be able to:

- find terms of sequences given the general or n th term
- find a formula for the general or n th term of a given sequence
- use summation notation to write a series and evaluate a series designated in summation notation
- construct the terms of a sequence defined by a recursive formula
- recognize and write terms of arithmetic and geometric sequences
- use n th term formulas for arithmetic and geometric sequences to find a specified term, or to find n when an n th term is given
- find the sum of the first n terms of arithmetic and geometric sequences
- find the sum of an infinite geometric series, if it exists
- use sequences and series to model and solve real-life problem

Optional Learning Outcomes:

- use a graphing utility to find the sum of n terms of a sequence

7. Optional Topics

Learners may wish to complete any of the following topics but these outcomes are not required:

A. Conic Sections

- recognize the equations of the four basic conics: circles, ellipses, hyperbola and parabola
- write the standard forms of equations of circles, ellipses, and hyperbola with centre at origin and translated centre (h, k)
- find the centre and radius of a circle, given its equation, and sketch the graph
- find the centre, vertices and foci of an ellipse, given its equation, and sketch the graph
- find the centre, vertices, foci and asymptotes of a hyperbola, given its equation, and sketch the graph
- find the vertex, focus and directrix of a parabola, given its equation, and sketch the graph
- solve nonlinear systems of equations
- use nonlinear systems of equations to solve applied problems
- use a graphing utility to graph conic sections
- use a graphing utility to solve nonlinear systems

B. Permutations and Combinations

- evaluate factorial notation
- evaluate permutation and combination notation
- solve related applied problems
- use the fundamental counting principle (factorial)

C. Binomial Expansion

- expand a power of a binomial using Pascal's triangle or factorial notation
- find a specific term of a binomial expansion
- find the total number of subsets of a set of n objects

D. Probability

- compute the probability of a simple event
- distinguish between experimental and theoretical probability
- classify events as dependent or independent

E. Calculus

- understand and find the limits of polynomial and rational expressions
- find the slope of a line tangent to a curve at a point on the curve
- determine the equation of a line tangent to a curve at a given point
- use the definition of a derivative to find the derivative of certain polynomials

- find derivatives using the power rule
- use the derivative to graph and analyze functions in terms of: increasing/decreasing intervals, minimum/maximum points, concave up/concave down intervals, and inflection points
- solve applied maximum/minimum problems

MATHEMATICS: PROVINCIAL LEVEL—CALCULUS

Goal Statement

ABE Provincial Level Calculus is designed to (1) provide students with the mathematical knowledge and skills needed for post-secondary academic and career programs and (2) ease the transition from Provincial level Mathematics to first year calculus at college/ university.

1. Prelude to Calculus

It is expected that learners will be able to:

- demonstrate an understanding of the concept of the limit and notation used in expressing the limit of a function
- evaluate the limit of a function analytically, graphically and numerically
- distinguish between the limit of a function as x approaches a and the value of the function at $x = a$
- demonstrate an understanding of the concept of one and two-sided limits
- evaluate limits at infinity
- determine vertical and horizontal asymptotes using limits
- determine continuity of functions at a point $x = a$
- determine discontinuities and removable discontinuities
- determine continuity of polynomial, rational, and composite functions

Optional Outcomes:

- determine continuity of trigonometric functions
- determine limits of trigonometric functions

2. The Derivative

It is expected that learners will be able to:

- define and evaluate the derivative at $x = a$ as: $f'(x) = \lim_{x \rightarrow a} \frac{f(x) - f(a)}{x - a}$
- distinguish between continuity and differentiability of a function
- determine the slope of a tangent line to a curve at a given point
- calculate derivatives of elementary, rational and algebraic functions
- distinguish between rate of change and instantaneous rate of change
- apply differentiation rules to applied problems
- use Chain Rule to compute derivatives of composite functions
- solve rate of change application problems
- determine local and global extreme values of a function
- solve applied optimization (max/min) problems

Optional Outcomes:

- calculate derivatives of trigonometric functions and their inverses
- calculate derivatives of exponential and logarithmic functions
- use logarithmic differentiation
- calculate derivatives of functions defined implicitly
- solve related rates problems
- use Newton's Method

3. Applications of the Derivative

It is expected that learners will be able to:

- determine critical numbers and inflection points of a function
- compute differentials
- use the First and Second Derivative Tests to sketch graphs of functions
- use concavity and asymptotes to sketch graphs of functions

Optional Outcomes:

- differentiate implicitly
- understand and use the Mean Value Theorem
- apply L'Hopital's Rule to study the behaviour of functions

4. Antiderivatives

It is expected that learners will be able to:

- compute antiderivatives of linear combinations of functions
- use antidifferentiation to solve rectilinear motion problems
- use antidifferentiation to find the area under a curve
- evaluate integrals using integral tables and substitutions

Optional Outcomes:

- use antidifferentiation to find the area between two curves
- compute Riemann sums
- apply the Trapezoidal Rule
- solve initial value problems

5. Differential Equations

It is expected that learners will be able to:

- derive a general solution of differential equations and find a particular solution satisfying initial conditions

- derive differential equations that explain mathematical models in the applied sciences

SCIENCES

SCIENCE

SCIENCES: GENERAL AND APPLIED SCIENCE

Adult Education in the sciences recognizes the worth of adult experience and the desire to further understand the world around us, ourselves, and our relationship to the natural world. General Science programs can best promote such understanding by offering courses that provide opportunities for students:

- to develop critical thinking skills;
- to increase their understanding of the concepts and principles of science;
- to recognize the uses and limitations of scientific methods;
- to acquire the skills and understand the processes and applications of science.

An applied science course will stress the practical applications of scientific concepts and skills, enabling adult learners to pursue further education, training, and/or employment opportunities.

GENERAL AND APPLIED SCIENCE: INTERMEDIATE LEVEL

Learning Outcomes

The learner will be able to:

- Understand and gain an appreciation for the methods by which scientific knowledge is obtained and organized, so that the learner can apply these methods of problem solving to everyday life.
- Understand the fundamental concepts and terminology from the three primary branches of science: biology, chemistry, and physics. Some learners may also study other branches of science such as astronomy, earth science, or meteorology. The exposure to these subject areas should show the variation, diversity and similarities between all branches of science as well as illustrate the effects of science in the learner's everyday life.
- Understand the methodology of a controlled experiment, and the necessity of performing experiments in order to acquire scientific knowledge.

The course is not limited to units in biology, chemistry and physics, but may be expanded to suit individual or local needs. No time allotments have been suggested, but it is assumed that the average completion time for Intermediate Science will be similar to that for the same level subjects in English and Mathematics.

Topic Outline

A. Introductory Science

This unit may be taught independently or incorporated throughout the remaining units.

- Define science and its limits
- Explain and use the scientific method
- Demonstrate the skills and techniques of science (ex: experimental design, use of tables, graphs and calculations)
- Use appropriate instruments to make measurements
- Solve problems using SI units
- Relate science and technology to our modern world
- Demonstrate and identify ethical conduct in all scientific and related activities

B. Biology

Describe the function and structure of the cell and cover 6 of the following biology subtopic outcomes from any of the 4 topics below:

- The Cell
 - Identify the parts of the microscope and demonstrate its use
 - Explain cell theory
 - Define cell division
 - Identify the structure and function of DNA and how it relates to heredity

- Solve simple Mendelian genetic scenarios
- Human Nutrition
 - Identify energy and nutrients needed by the human body and plan a healthy diet
 - Identify special foods and diets and describe worldwide food needs
 - Explore the importance of microorganisms as it relates to human health and nutrition
- Human Biology
 - Identify the parts of the skeletal and muscular systems
 - Explain the function of blood and trace its circulation
 - Identify the parts and functions of the respiratory system
 - Describe the digestive system and the function of the digestive organs
 - Identify the parts of the nervous system
 - Identify and explain the structures and functions of the reproductive system
- Ecosystem science
 - Understand how interactions between organisms and their environments affect individuals, populations, communities, or ecosystems
 - Understand the processes and patterns of biological evolution
 - Explore Ethnobiology and Indigenous land use practices
 - Identify plant structure and function
 - Describe the nutrient cycle within a selected ecosystem

C. Chemistry

- Atomic Theory
 - Describe the different states of matter
 - Describe how matter is organized into elements, compounds and mixtures
 - Identify the subatomic components of atoms
 - Describe the organization of the periodic table
 - Use the periodic table to determine the properties of elements and their characteristics
 - Write the formula for a simple ionic compounds

D. Physics

- Define energy, power, work and force
- Describe the law of conservation of energy
- Differentiate between different forms of energy

Cover 4 of the following physics subtopic outcomes from any of the 4 topics below:

1. Machines

- Apply the concept of work to simple machines to solve quantitative problems
- Solve problems involving simple machines, levers, inclined planes, wedges, pulleys, wheels

and axles

- Solve problems involving other machines: gears, pulley systems, hydraulic systems

2. Energy

- Solve quantitative problems involving thermal energy
- Solve quantitative problems involving electrical energy
- Solve quantitative problems involving conservation of energy

3. Electrical Circuits

- Choose and use appropriate instruments to measure voltage and current
- Draw simple circuit diagrams and solve quantitative problems involving Ohm's Law
- Solve quantitative problems involving energy and work
- Explain the use of switches, fuses, and other components of an electrical circuit

4. Motion in one dimension

- Identify scalar and vector quantities and distinguish between distance and displacement
- Interpret graphs of non-accelerated motion
- Solve quantitative problems involving velocity
- Solve quantitative problems work, energy and power

E. The fifth unit

May be chosen from the above or from other topics such as:

- Astronomy
- Chemistry expanded
 - Categorize compounds as ionic or covalent.
 - Write the formula and name for simple covalent compounds
 - Balance double replacement reactions
 - Recognize different types of chemical reactions
- Disease
- Medicine
- Earth science
- Environmental Science
- Meteorology
- Artificial intelligence
- Engineering
- Robotics

Lab Requirements

All Intermediate General Science courses must include experiment and/or field time of at least 10% of the total time or contents. Experiments and/or field exercises should be relevant to the selected units and emphasize those techniques and skills appropriate for this level of course. A minimum of 1 lab or activity from each of topics A, B, C, and D must be included.

GENERAL AND APPLIED SCIENCE: ADVANCED LEVEL

Adult learners will demonstrate their knowledge, skill and understanding of science at an Advanced Level. (For outcomes at an Advanced level see the relevant outcomes for specific sciences in this guide.) This material may be organized around a central unifying theme. All courses must include experiments and/or field activities of at least 10% of the total time or contents as appropriate. Experiments and/or field activities should be relevant to the course and emphasize those techniques and skills appropriate for the level of the course.

GENERAL AND APPLIED SCIENCE: PROVINCIAL LEVEL

Adult learners will demonstrate their knowledge, skill and understanding of science at a Provincial Level. Courses will include provincial level material from one or more of Biology, Chemistry, Physics or Earth Sciences. (For outcomes at a Provincial level in these sciences see the relevant outcomes in this guide.) This material may be organized around a central unifying theme. All courses must include experiments and/or field activities of at least 10% of the total time or contents as appropriate. Experiments and/or field activities should be relevant to the course and emphasize those techniques and skills appropriate for the level of the course.

SCIENCES: BIOLOGY

Goal Statement

Biology is the study of living organisms and life processes. The life and cultural experiences of adult learners serve as a basis for further study of macro and micro environments. Students gain the knowledge and skills to build an appreciation and understanding of the natural world and their role in it. The study of Biology helps cultivate critical thinking skills and fosters students' ability to make sound and ethical decisions about themselves, their homes, their workplaces and the global community. The courses should inspire further discovery and exploration in the life sciences.

Learning Outcomes

Biology learners will:

- Obtain the prerequisite knowledge and skills that will provide a basis for further academic and career / vocational education and training
- Demonstrate awareness of the diversity and interconnectedness of organisms
- Integrate traditional knowledge focusing on local First People's content
- Use scientific methods to evaluate information and to interpret experiences
- Communicate about life sciences in their own words and cite references appropriately
- Work independently and also as part of a team, where appropriate
- Evaluate media regarding issues in life sciences
- Demonstrate an awareness of ethical issues relevant to life sciences

All biology courses must include a minimum of seven dedicated laboratory and /or fieldwork activities, wherein biology learners will:

- Write a lab report
- Demonstrate familiarity with common lab and field equipment and its use
- Conduct lab and field procedures safely and ethically
- Demonstrate microscope skills
- Collect and record data effectively
- Analyze and interpret data collected
- Communicate results and conclusions

BIOLOGY: ADVANCED LEVEL

Core Topics

A. Cell Biology

- Identify the levels of biological organization
- Describe organic macromolecules and their monomers:
 - Proteins
 - Carbohydrates
 - Lipids
 - Nucleic Acids
- Describe the cell theory
- Describe and compare major structures and their functions in prokaryotic and eukaryotic cells
- Outline the processes of photosynthesis and cellular respiration and explain their roles in living systems
- Explain cell division in terms of sexual and asexual reproduction

B. Evolution

- Cite evidence for evolutionary theory
- Explain the mechanisms of evolution
- Discuss the origin of life

C. Diversity of Life

- Demonstrate an understanding of classification
- Identify major taxonomic groups
- Identify structures and distinguishing characteristics and describe life processes for the following groups:
 - Viruses
 - Bacteria
 - Protists
 - Fungi
 - Plants – nonvascular and vascular
 - Animals – invertebrates and vertebrates

D. Ecology

- Describe energy flow and nutrient cycles within ecosystems
- Characterize ecosystems and the interactions therein
- Describe ecological changes over time
- Define biosphere and characterize biomes

- Explore and analyze ecological issues, such as:
 - Climate change
 - Habitat destruction and/or restoration
 - Biodiversity
 - Species extinctions
 - Environmental stewardship

Options

The following topics may be included:

- Bioethics
- Ethnobotany
- Resource management
- Applied ecology
- Methods in ecology
- Behavioural ecology
- Genetics
- Parasitology
- Local topics

Laboratory Skills

All biology courses must include a minimum of seven dedicated laboratory and/or fieldwork activities, wherein biology learners will:

- Conduct lab and field procedures safely and ethically
- Demonstrate familiarity with common lab and field equipment and its use
- Demonstrate microscope skills
- Collect and record data effectively
- Analyze and interpret data collected
- Communicate results and conclusions

BIOLOGY: PROVINCIAL LEVEL

Human Biology:

Core Topics

A. Cell Biology

- Explain the role of molecules, including water, carbohydrates, proteins, lipids, and nucleic acids
- Describe major structures and functions of cells and their components, including the basic mechanisms of
 - Gene expression
 - Membrane transport
 - DNA replication
- Describe the role of enzymes and their importance to cellular processes.
- Outline the processes of cellular respiration
- Describe and compare mitosis and meiosis

B. Genetics

- Describe the principles of inheritance
- Solve basic genetics problems
- Describe the role of DNA in heredity
- Explore modern applications of genomics and biotechnology

C. Human Biology

- Apply the concept of homeostasis
- Demonstrate knowledge of integration of tissues, organs, and systems
- Identify structures and describe functions of at least six of the following:
 - Skeleto-muscular system
 - Digestive system
 - Cardiovascular system
 - Blood and immunity
 - Respiratory system
 - Endocrine system
 - Nervous and sensory system
 - Excretory system
 - Reproductive system

Options

The following topics may be included:

- Bioethics
- Cancer
- Human development
- Local topics
- Nutrition
- Photosynthesis
- Public health issues

Laboratory Skills

All biology courses must include a minimum of seven dedicated laboratory and /or fieldwork activities, wherein biology learners will:

- Write a formal lab report
- Demonstrate familiarity with common lab and field equipment and its use
- Conduct lab and field procedures safely and ethically
- Demonstrate microscope skills
- Collect and record data effectively
- Analyze and interpret data collected
- Communicate results and conclusions

BIOLOGY: PROVINCIAL LEVEL

Ecology:

Core Topics

A. Cell Biology

- Explain the role of molecules, including water, carbohydrates, proteins, lipids, and nucleic acids
- Describe major structures and functions of cells and their components, including the basic mechanisms of
 - Gene expression
 - Membrane transport
 - DNA replication
- Describe the role of enzymes and their importance to cellular processes.
- Outline the processes of cellular respiration
 - Describe and compare mitosis and meiosis

B. Bioenergetics

- Outline the processes of photosynthesis and cellular respiration and their relationship to one another

C. Plant Anatomy and Physiology

- Describe the major plant tissue types and their functions
- Describe the functions of plant control and reproductive systems

D. Animal Anatomy and Physiology

- Apply the concept of homeostasis
- Demonstrate knowledge of integration of tissues, organs and systems
- Identify structures and describe functions of the following systems:
 - Respiratory system
 - Cardiovascular system
 - Skeleton-muscular system
 - Reproductive system
 - Nervous and sensory systems

E. Ecology

- Use fundamentals of classification to identify organisms
- Explain how plant and animal diversity enables adaptation to environments
- Explain the principles of population dynamics: population growth, density, distribution, and regularity

- Explain ecosystem dynamics: energy flow and nutrient cycling
- Explain community dynamics, including community structure, diversity, and interspecific relationships
- Demonstrate knowledge of the challenges to biome integrity

Laboratory Skills

All Provincial Biology courses must include a minimum of seven dedicated laboratory and / or fieldwork activities. The learning outcomes for these are described in the Overall Learning Outcomes for biology.

SCIENCES: CHEMISTRY

Goal Statement

Chemistry is an essential part of the everyday world. A knowledge and understanding of its principles is the base on which applications in health, environment and industrial development are founded. The chemistry courses will foster understanding of science as a vital part of a sustainable society, develop practical laboratory skills, and provide a basis for further education and training.

The Learning Outcomes

Chemistry learners will:

- Obtain the prerequisite body of knowledge and skills that will provide a basis for further education and training
- Demonstrate an awareness of chemistry in everyday life
- Integrate traditional knowledge focusing on local First People's Content
- Demonstrate an awareness of chemistry in solutions to environmental challenges
- Apply scientific method to investigate phenomena
- Communicate effectively using the language of chemistry
- Carry out all duties in an ethical, professional manner, including the collection and treatment of data
- Work independently and also as part of a team, where appropriate
- Handle equipment and chemicals in a safe and effective manner with regard to personal safety and the safety of others

A minimum of eight labs will be completed covering the core concepts.

CHEMISTRY: ADVANCED LEVEL

Core Topics

A. Measurement

- Demonstrate the concepts of precision and accuracy and how they differ
- Perform calculations using significant figures and scientific notation
- Utilize dimensional analysis to perform conversions with the SI system

B. Properties of Substances

- Differentiate and classify matter based on phase and composition
- Identify chemical or physical properties and changes of substances

C. Atomic Structure

- Analyze the historical development of atomic theory and related laws
- Describe the Bohr and Wave Mechanical model of the atom and cite evidence for these models including absorption and emission spectra
- Write electron configurations
- Relate average atomic mass to isotopes and their natural abundance

D. Periodic Trends

- Use the periodic table to determine atomic composition of elements
- Use the periodic table to predict electron arrangement of chemical families in order to predict trends in ion charge, reactivity, ionization energy, electronegativity, electron affinity, atomic radii, and ionic radii

E. Mole Concept

- Define a mole and its significance
- Perform calculations including molar and formula mass, mole to mass conversions, percent composition by mass of compounds, and determine empirical formula

F. Bonding

- Define covalent and ionic bonding
- Use electronegativity to predict bond types
- Draw Lewis structures, predict molecular shapes, and determine polarity

G. Nomenclature

- Write IUPAC names for compounds given the formula and write formula for compounds given the names for the following types of compounds:
 - Covalent compounds

- Ionic compounds
- Compounds containing polyatomic ions
- Compounds containing transition metals
- Acids

H. Chemical Reactions

- Balance equations
- Classify and predict single and double replacement reactions (including precipitation and neutralization) and combustion reactions
- Classify synthesis, decomposition, exothermic and endothermic reactions
- Perform stoichiometric calculations including mass-to-mass, limiting reagent, and percent yield

I. Solutions

- Predict solubility and conductivity of polar and non-polar compounds
- Define Arrhenius acids and bases, and relate them to the pH scale
- Calculate concentrations
- Perform stoichiometric calculations involving solutions including titrations
- Perform calculations involving dilutions

J. Organic Chemistry

- Classify substances as organic and differentiate the types of bonding between carbon atoms
- Write IUPAC names and draw structures of hydrocarbons
- Categorize organic compounds based on their functional groups

Optional Topics

Options may include additional organic chemistry, nuclear chemistry, gas laws, green chemistry, and environmental ethics

Laboratories

Chemistry laboratories are an essential component of the study of chemistry.

During laboratories, students reinforce theory through practice. Laboratories develop skills in safety, procedures, techniques, data collection, analysis, and communication.

All chemistry courses must include a minimum of eight labs covering the core concepts, wherein chemistry learners will:

- List the safety and protective equipment available in a laboratory setting
- Demonstrate the appropriate procedures and techniques for dealing with particular hazards and hazardous materials
- Follow instructions and procedures
- Handle appropriate equipment for measuring mass, volume, and temperature

- Prepare solutions
- Perform titrations
- Collect and record measurements precisely
- Analyze and interpret data
- Communicate results and conclusions

CHEMISTRY: PROVINCIAL LEVEL

Core Topics

A. Reaction Kinetics

- Describe the collision model of chemical reactions
- Describe activation energy, endothermic and exothermic reactions using potential and kinetic energy diagrams
- Describe the factors that affect reaction rate including temperature, concentration, surface area, and catalysts

B. Equilibrium

- Explain the nature of chemical equilibrium using examples
- Apply Le Chatelier's Principle
- Calculate equilibrium constants of homogenous and heterogeneous systems and equilibrium concentrations from equilibrium constants
- Calculate K_{sp} and solubility

C. Acid-Base

- Describe Bronsted-Lowry acids and bases including acid-base pairs
- Predict the relative strengths of acids
- Calculate $[H^+]$, $[OH^-]$, pH, and pOH from any one known
- Calculate pH from K_a or K_b
- Describe the characteristics of a buffer system

D. Oxidation-Reduction

- Assign oxidation states to elements in compounds
- Identify oxidizing and reducing agents
- Balance redox equations
- Describe the components of electrochemical and electrolytic cells
- Predict the voltage, E_o , of electrochemical and electrolytic cells
- Describe the applications of oxidation-reduction to everyday and industrial processes

E. Gas Laws

- Use the appropriate units and conversions for pressure, volume, and temperature
- Apply Boyle's, Charles', Gay-Lussac's, and the Combined Gas Laws to predict pressure, volume, or temperature
- Describe an ideal gas and make calculations using the Ideal Gas Law

Options

Options may include: organic functional groups, thermochemistry, nuclear chemistry, biochemistry, environmental ethics, and industrial applications.

Laboratories

Chemistry laboratories are an essential component of the study of chemistry.

During laboratories, students reinforce theory through practice. Laboratories develop skills in safety, procedures, techniques, data collection, analysis, and communication.

All chemistry courses must include a minimum of eight labs covering the core concepts, wherein chemistry learners will:

- List the safety and protective equipment available in a laboratory setting
- Demonstrate the appropriate procedures and techniques for dealing with particular hazards and hazardous materials
- Follow instructions and procedures
- Handle appropriate equipment for measuring mass, volume, and temperature
- Prepare solutions
- Perform titrations
- Collect and record data effectively
- Analyze and interpret data
- Communicate results and conclusions
- Write formal laboratory reports
- Participate in experimental design

SCIENCES: PHYSICS

Goal Statement

Since physics is the study of the fundamental laws of nature, it is relevant to a wide range of human concerns and achievements. Technological change, which stems from an understanding of physics, is often accompanied by extensive social change, to which each of us must adapt.

Moreover, the concepts of physics have profound effects on the way we think about the universe, our societies, our work and ourselves. At the most immediate level, physics is essential to academic studies and career training in a wide range of fields.

Advanced and Provincial Level Physics should therefore aim to foster and develop, as part of general education, a scientific way of thinking and a basic knowledge of scientific ideas. Numerical examples and derivation of formulae will be algebra based. The courses should also nurture an understanding of science as an integral part of society's culture and provide groundwork for further academic, career, or vocational training.

Learning Outcomes

Physics learners will:

- Use the language and concepts of physics to describe how physical processes, devices and phenomena work
- Obtain the prerequisite body of knowledge and skills that will provide a basis for further academic and career/vocational training
- Use scientific processes in an ethical and appropriate manner
- Integrate traditional knowledge focusing on local First People's Content
- Appreciate and apply the physics of everyday phenomena
- Link physics to their own practical experience
- Work effectively as a member of a team in a responsible and respectful manner
- Handle equipment and lab materials in a responsible and effective manner with regard to their own safety and the safety of others
- Apply scientific concepts, recognizing their strengths and weaknesses, to broader societal issues
- Critically evaluate controversial points of view around issues where science offers information or perspective
- Apply mathematical skills to solve physics based problems
- Develop critical thinking skills

PHYSICS: ADVANCED LEVEL

Core Topics

A. Measurement

- Solve problems involving SI units
- Maintain the correct number of significant numbers in calculations
- Use uncertainties in measurement
- Define vector and scalar quantities

B. Kinematics

- Use the language and concepts of kinematics to describe motion
- Analyze and solve kinematics in one dimension
- Construct and interpret displacement versus time curves
- Construct and interpret velocity versus time graphs
- Solve problems involving uniform acceleration

C. Dynamics

- Use the language and concepts of dynamics to describe forces and energy
- Analyze and solve dynamics in one dimension using free body diagrams
- Apply Newton's laws of motion in one dimension
- Solve problems involving:
 - Friction forces
 - Gravity forces including Newton's Law of Universal Gravitation
- Analyze and solve problems in kinetic and potential energy
- Analyze and solve problems in energy conservation
- Solve problems involving work and power
- Solve problems involving impulse and conservation of momentum in one dimension.

D. Electricity

- Use the language and concepts of electricity to describe electrical phenomena
- Analyze and solve problems using Coulomb's law
- Analyze and solve problems involving Ohm's law
- Define and distinguish between electric potential difference, resistance and current
- Solve simple DC resistance problems involving series, parallel and combination circuits

E. Heat

- Use the language and concepts of thermodynamics to describe the transfer of heat energy
- Define and distinguish between temperature, heat energy and specific heat capacity

- Analyze and solve problems in heat energy
- Demonstrate an understanding of the different mechanisms of heat transfer

F. Waves

- Use the language of physics to describe wave phenomena
- Define and distinguish between amplitude, wavelength, frequency, wave speed and period
- Analyze and solve problems involving wave phenomena including refraction, reflection and total internal reflection
- Describe various wave phenomena and the conditions which produce them

Options:

The following topics may be useful to students going on to further physics courses:

- Atomic and nuclear physics
- Modern physics
- Optics

Laboratories:

There should be one laboratory from each topic and a minimum of seven laboratories. Laboratory skills must include:

- Collecting data through observation:
 - Record a measurement to the appropriate level of precision
 - Recognize that all measured values have an uncertainty
- Constructing graphs:
 - Choose appropriate scales
 - Determine line of best fit
 - Label correctly
- Drawing conclusions from observations and data:
 - Identify and discuss sources of error
 - Calculate and interpret the slope of a line
 - Relate conclusion to objectives
- Calculating experimental error:
 - Determine % error and % difference where appropriate
- Completing formal lab reports

PHYSICS: PROVINCIAL LEVEL

Core Topics

A. Measurement & Mathematics Skills

- Review problems involving SI units, significant figures and uncertainties in measurement.
- Resolve, add and subtract vectors using trigonometry

B. Kinematics in Two Dimensions

- Use the language and concepts of kinematics to describe motion in two dimensions
- Analyze and solve kinematics in two dimensions

C. Dynamics in Two Dimensions

- Use the language and concepts of dynamics to describe forces, energy and momentum
- Analyze and solve dynamics in two dimensions using free body diagrams:
 - Newton's Laws
 - Torque, Translational and Rotational Equilibrium
 - Momentum
 - Energy Conservation
 - Uniform circular motion

D. Electrostatics

- Use the language and concepts of physics to describe electrostatic phenomena
- Analyze and solve electrostatic forces and electric fields in two dimensions
- Analyze and solve electric potential and electric potential energy

E. Electromagnetism

- Use the language and concepts of physics to describe electromagnetic phenomena
- Analyze and solve problems involving magnetic forces and magnetic fields in two dimensions
- Analyze and solve problems involving electromagnetic induction; includes Faraday's law and Lenz's law
- Describe devices that operate using electromagnetic induction

Options:

The following topics may be useful to students going on to further physics courses:

- AC circuits
- Astronomy
- Electronics

- Fluids
- Kirchhoff's laws
- Nuclear physics
- Quantum physics
- Relativity

Laboratories:

There should be one laboratory from each topic and a minimum of seven laboratories. Laboratory skills must include:

- Collecting data through observation:
 - Record a measurement to the appropriate level of precision
 - Recognize that all measured values have an uncertainty
- Constructing graphs:
 - Choose appropriate scales
 - Determine line of best fit
 - Label correctly
- Drawing conclusions from observations and data:
 - Identify and discuss sources of error
 - Calculate and interpret the slope of a line
 - Relate conclusion to objectives
- Calculating experimental error:
 - Determine % error and % difference where appropriate
- Writing formal laboratory reports
- Participate in experimental design

SOCIAL SCIENCES

SOCIAL SCIENCES

The ABE Social Science curriculum provides an analytic and critical approach to social science topics. The overall purpose is to encourage learners to explore society from many perspectives. ABE Social Science provides learners with a variety of conceptual tools to analyze and assess these perspectives. It allows learners to assemble these perspectives and articulate a point of view. Finally, it enables learners to revise their points of view through experiencing the different values and cultures of other people.

Goal Statement

The goals of the curriculum are broadly applicable to all levels, Fundamental through Provincial. Learners will:

1. Become aware of some past and present forces shaping society
2. Experience different perspectives on these shaping forces: cultural, economic, gender,
3. Geographic, historic, legal, political, psychological, racial, spiritual, etc.
4. Analyze and assess these issue perspectives to build a point of view
5. Revise their point of view through experiencing other social and cultural perspectives

Provincial Outcomes

In addition to the generic outcomes for all Social Science students, Provincial level students are expected to be able to:

1. Establish and test hypotheses concerning values
2. Extrapolate a common theme from disparate information
3. Report on research using MLA/APA standards
4. Write essays that demonstrate a synthesis of complex information
5. Generate a personal point of view about some aspect of society based on their research
6. Create or apply strategies to compare aspects of society

SOCIAL SCIENCE: INTERMEDIATE LEVEL

Canada from 1815 to World War I

Intermediate Social Science students will:

- A. Identify and use sources of information from:
 - Libraries by using media and non-media sources
 - Direct sources such as interviews, surveys and observation
- B. Extract and report information from media and non-media sources using
 - Regional, national, global, contour and relief maps some of which include latitude and longitude, scale and distance
- C. Extract and organize information into a range of formats, such as:
 - Notes, outlines, and reviews
 - Maps, graphs, and tables
- D. Analyze information in a variety of ways by:
 - Finding and comparing main ideas with other material and sources of information
- E. Demonstrate the ability to communicate through written and non-written methods that may include summaries, papers, projects, presentations and tests.

1. Identity, Culture and Society:

- A. Identify and describe selected groups within Canadian society, including aboriginal and immigrants
- B. Evaluate the impact of interactions among selected Aboriginal peoples, European explorers, and settlers
- C. Evaluate the impact of immigration on Canadian society

2. Governance

- A. Describe the evolution of government in Canada, including the BNA Act.
- B. Examine political, economic, social, and geographical factors that led to Confederation and to the development of Canada's provinces and territories, including the Red River Northwest Rebellions.
- C. Describe the structure and function of Canada's federal, provincial, and local governments.
- D. Describe the roles and responsibilities of the three branches of Canadian government (executive, legislative and judicial).

E. Describe the impact that select legislation had on aboriginals

3. Economy and Industrialization

A. Describe the impact of Macdonald's National Policy on Canada

B. Identify the impact of industrialization on Canada's economy

C. Examine the development of British Columbia's economy in selected regions

D. Describe the impact that industrialization had on aboriginals

4. Geography and Environment

A. Identify and describe the political divisions and physiographic regions of Canada as well as the geological processes that formed these regions.

B. Examine the impact of select resource development in British Columbia

SOCIAL SCIENCE: ADVANCED LEVEL

General Outcomes

It is expected that Advanced Social Studies students will:

1. Identify sources of information from resource books, texts, periodicals, interviews as well as digital media.
2. Extract, summarize and report information from a variety of media.
3. Analyze information by finding main ideas, asking evocative questions and comparing main ideas with other material.
4. Demonstrate the ability to communicate through a variety of methods including essays, summaries, debates, maps, charts, graphs and presentations.
5. Clarify personal values and positions in society.
6. Distinguish between fact and opinion and identify statements that reflect consistent or contradictory views.

I. Canadian History

1. Review the history of Aboriginal people living in Canada.
2. Explain the effects of European settlement.
3. Identify Canada's international contributions from World War 1 to the present, including participation in peace keeping roles.
4. Describe major social, economic, and political changes within Canada and their impact including: The Great Depression, the evolution of women's rights, technological advancement, globalization, and climate change.

II. Culture

1. Define multiculturalism and evaluate this term within a Canadian context, past and present.
2. Recognize different ethnic groups within Canada and review their contributions and challenges from 1900 to the present.
3. Distinguish between the distinct cultures and values of local Aboriginal groups.
4. Define racism, assimilation, inequity and integration.
5. Evaluate the social, political and economic contributors to the Canadian identity.

III. Canadian Government, Law and Citizenship

1. State the purpose and origins of government.
2. Identify political ideologies and Canadian political parties.
3. Describe major features of the Canadian Charter of Rights and Freedoms.
4. Outline the roles and responsibilities of each of the levels and branches of Federal, Provincial, Territorial, Municipal and Aboriginal governments in Canada.
5. Identify the rationale for law in a democratic society.
6. Outline the stages of passing a law.

7. List the avenues to affect change within the current political system.

IV. Economics

1. Identify micro and macroeconomic terms and concepts including: capital, labour, technology and transport.
2. Differentiate between needs and wants.
3. Describe supply and demand economics by giving a historical overview.
4. Provide examples of community and regional development and evaluate their benefits and challenges.
5. Identify issues in economics such as planning, taxation, government spending, free and fair trade practices and consumer society.
6. Identify current economic issues including globalization, climate change.

SOCIAL SCIENCE: PROVINCIAL LEVEL

Geography - Generic Topic Outline

The focus is on Physical and Human Geography.

I. Demography:

By the end of this unit the student will be able to:

1. Distribution and density
 - Explain factors which influence population distribution and density
 - Explain the relevance and limits of methods used to measure the distribution and growth of human populations.
2. Population growth and control
 - Describe how population growth, the standard of living of a country or region, and the rate of consumption of resources are all related.
 - Discuss the various predictions for population growth and the various ideas for limiting the rate of population growth.
3. Food consumption and Distribution; Analyze factors that determine food consumption and distribution.
4. Migration
 - Describe the movements and the motives for the movement away from migrants' original locations.
 - Evaluate the impact of emigration on the country or region of origin and immigration on the new country or region.
 - Describe current migration patterns and the reasons for this migration

II. Meteorology & Climatologic:

By the end of this unit the student will be able to

1. Earth and sun relationships
 - Describe the relationships between the earth and the sun.
 - Describe how the energy from the sun and from within the Earth is distributed and changed by Earth's systems.
2. Atmosphere, structure and composition
 - Explain how the Earth's atmosphere evolved and its relationship to the hydrosphere, the lithosphere and the biosphere.
 - Describe the structure and function of the atmosphere and explain why the temperature of

the atmosphere increases and decreases as you go through the various layers.

3. Insolation and temperature

- Describe the relationship between insolation, topography and the temperature of various parts of the Earth's surface.
- Explain how energy is transferred and transformed as it moves through the Earth's atmosphere, hydrosphere and lithosphere.

4. Atmospheric pressure and winds

- Describe the major atmospheric circulation patterns in the upper and lower atmosphere and explain the differences between surface and upper atmospheric winds.
- Explain how surface winds affect the ocean currents and how the oceans affect air pressure and therefore wind direction and velocity.

5. Moisture, humidity and precipitation

- Explain the relationship between moisture, humidity and precipitation.
- Describe the various forms and patterns of precipitation and the geographic conditions that determine what type and pattern of precipitation occurs.

6. Weather Systems and Hazards

- Be able to map weather and be able to interpret a weather map.
- Describe the Earth's major weather systems and the various mechanisms that drive these systems.
- Describe and explain major weather events such as El Nino, cyclonic storms and monsoons.
- Identify the possible impacts of weather especially storms on humans.
- List the precautions to take to prevent loss of life or damage to property from storms.

7. Climate and Climate Change

- Differentiate between climate and weather.
- Describe the numerous geographic factors that determine the climate of various regions of the Earth including geomorphology and ecology.

III. Geomorphology:

By the end of this unit the student will be able to

1. Rocks:

- Describe the formation of various igneous, sedimentary and metamorphic rocks and classify common rocks based on their mineralogy and texture.

2. Tectonic forces

- Explain the evidence for the Plate Tectonic theory and how it explains many of Earth's major processes such as volcanism and earthquakes.
- Describe the tectonic forces and the resultant landforms.

3. Weathering and Gradational forces

- Explain the physical and chemical processes that break rock down into sediments and soils.
- Identify and describe landforms caused by erosive forces such as moving water, glaciers and wind and describe how each is formed.
- Identify and describe landforms caused by deposition by moving water, glaciers and wind and describe how each is formed.
- Describe the changes to the land surfaces of the Northern Hemisphere during and after the last Ice Age.

4. Geophysical hazards

- Relate the location, depth and intensity of earthquakes to plate margins.
- Discuss the factors that determine the amount of destruction caused by an earthquake and the other geologic processes that may result from an earthquake including tsunamis.
- Describe the conditions that lead to a flood and how humans can be protected from erosion by water including flood events
- Describe how human activity often causes or contributes to geophysical hazards such as landslides and increases their effects.
- List the steps that people in high-risk areas should take to minimize the impact of geophysical hazards on their person and property.

IV. Cartography:

By the end of this unit the student will be able to

1. Types of maps: Explain the various types of maps and the strengths and weaknesses of each type.
2. Scale
 - Explain the scale on a map and use the scale to calculate distances.
 - Define and describe the uses of small and large scale maps.
- Grids
 - Discuss the purpose of map grids.
 - Use latitude and longitude and UTM coordinates to describe the location of various features.

V. Resources:

By the end of this unit the student will be able to

1. Renewable/non renewable

- Explain the difference between renewable and non renewable resources.
- Give examples of renewable and non renewable resources.
- Describe the environmental, economic and social aspects of resource management and use.
- State the importance of an integrated and sustainable approach to resource management.

2. Energy types

- Analyze the relationship between increased energy use and the economic development of some countries.
- Evaluate the impacts on the environment and the limits of non-renewable energy resource development.
- Describe the benefits and costs of using alternate energy resources.
- Describe the benefits of energy conservation and reduced consumption to the economy and the environment.
- Evaluate how you can play your part in sustaining energy resources.

History - Generic Topic Outline

The focus is on world history since 1900.

General Outcomes for Provincial Level History

1. Interpret and evaluate information from artifacts, oral tradition, original documents and other primary sources.
2. Explain Canada's role and place during each period of world history.

The World at the Beginning of the Century

1. Explain the role of nationalism and imperialism leading up to Great War.
2. Discuss the role of technological change leading up to and during the course of World War I.
3. Discuss the importance and results of the Russian Revolution and civil war.

The World after World War I

1. Describe Treaty of Versailles and League of Nations and explain their importance.
2. What was the impact of war reparations on Germany?
3. Discuss rise of Japanese imperialism.
4. Discuss Indian nationalism and the problems of China in the context of imperialism.
5. What were the economic and social changes in Europe and North America in the 20s.

The World in the 30s: Depression & Dictatorship

1. Discuss the Great Depression including its causes and consequences.
2. Explain the rise of Hitler and the Nazi Party out of the Weimar Republic in Germany.
3. Discuss Franklin Roosevelt and the New Deal.
4. Trace Stalin's rise to power and modernization of Russia.

World War II

1. What were the origins and causes of World War II?
2. Discuss the events and results of World War II.

The Cold War and Reconstruction

1. Discuss the origins and major events of the Cold War.
2. What was the Iron Curtain?
3. Trace Western Europe's move towards the European Union.
4. Discuss the rise of the Asian economies.

The Third World and China

1. Discuss the rise of the Peoples' Republic of China.
2. Discuss the end of the European empires and its impact on Africa and southern Asia.
3. Explain the advent of globalization.
4. Discuss the events leading to the current situation in the Middle East.

Contemporary Issues

1. Discuss the rise of fundamentalism in world religions.
2. Discuss current events in a historical context.

Economics - Generic Topic Outline

The focus is on providing an introduction to some of the basic concepts of economics.

General Outcomes for Provincial Level History.

I. Introduction

1. Origins and history of economics
2. Terminology
3. Definitions of economic terms
4. Scarcity
5. Modern economic systems and their evolution – communism, socialism, capitalism, fascism

II. Production

1. Explanation of production
2. Factors of production (land, labour, capital, entrepreneur)
3. Organizations of production (single ownership, partnership, corporation, state ownership, cooperatives)
4. Large-scale production – advantages and disadvantages
5. Monopoly – an assessment of its various forms (pool, holding company, merger) and its growth

III. Exchange

1. The price system
2. Money
3. Credit and banking
4. Marketing and transportation
5. International trade and foreign exchange

IV. Distribution

1. Elements of distribution, such as:
 - National income
 - Wage determination
 - Interest and savings
 - Interest rates
 - Profits
2. The Labour Movement (history and development)
3. Labour problems
4. Labour legislation
 - Collective bargaining
 - Contracts
 - The right to strike
 - Strike alternatives, labour laws

V. Consumption of Goods

1. Principles of consumption
2. Saving and investing

VI. The Role of Government

1. Federal, provincial and municipal expenditures
2. Increasing public expenditures
 - Social services
 - National defense
 - Crown corporations
 - Debts – national and provincial
3. Sources of government revenue
 - Advantages and disadvantages of various types of taxation
 - Federal taxation

- Provincial taxation
- Municipal taxation

VII. Economics and Business

1. The balance sheet (assets and liabilities)
2. Costs and cost control
3. Reasons for business failure

VIII. Current Events

1. Domestic issues (issues of local and national concern)
2. International issues

Psychology Core Learning Outcomes

Provincial Level Psychology

I. Introduction to Psychology

1. Explore the history of psychology
2. Define psychology, and list and explain its goals
3. Describe and compare quantitative and qualitative research strategies
4. Explain how statistics are used in psychological research
5. Describe ethical issues in psychological research
6. Discuss the development of psychology as an empirical science

II. Biological basis of behaviour and mental processes

1. Describe the structure, function and organization of the nervous system
2. Describe the structure and function of the major regions of the brain
3. Evaluate scientific advances that have been developed to analyze brain behaviour and disease
4. Describe the relationship between the endocrine glands and the nervous system
5. Compare the effects of genetics, evolution and environment on behaviour

III. Thinking, Language and Intelligence

1. Explain how thinking involves the manipulation and understanding of information.
2. Recognize that information is classified into categories, containing similar properties known as concepts.
3. Compare the different strategies and obstacles involved in problem solving and decision-making.
4. Discuss theories of intelligence.
5. Explain how intelligence and personality may be influenced by heredity and environment.
6. Provide examples of how intelligence is measured.

IV. Learning and Memory

1. Define learning from a psychological perspective.
2. Describe classical and operant conditioning.
3. Explain observational and cognitive learning approaches.
4. Discuss the roles of biology and culture in learning.
5. Describe encoding.
6. Describe sensory, short-term, and long-term memory systems.
7. Describe retrieval.
8. Investigate strategies for improving memory.

V. Social and Cultural Psychology

1. Discuss the influence of cultural beliefs, values and attitudes on adjustment and personal growth.
2. Discuss predominant sociological theories.
3. Identify the various types of schemas and explain how they influence our perceptions of others.
4. Monitor changes in thinking, understanding, and attitudes about yourself and others around you.
5. Identify factors that help human beings adjust effectively to life's challenges.
6. Explain how ethnicity, gender, and socioeconomic status affect people and their behaviour.
7. Distinguish between perception, attraction, social judgment, and attitude formation.
8. Identify basic social and cultural categories and discuss how these affect behaviour.
9. Explain the effects of the presence of others on individual behaviour.
10. Describe how social structure can affect intergroup relations.
11. Discuss the nature and effects of bias and discrimination toward groups such as indigenous peoples, immigrants, and refugees.
12. Discuss the circumstances under which conformity, compliance, and obedience are likely to occur.

VI. Theories of Personality

1. Define personality.
2. Explain the characteristics of the psychodynamic, cognitive-behavioural, humanistic and trait approaches.
3. Compare and contrast various forms of personality assessment.

VII. Motivation and Emotion

1. Describe the theories of motivation.
2. Apply motivational concepts to the behaviour of humans and other animals.
3. Investigate the role of biology and learning in motivation and emotion.
4. Describe theories of emotion.
5. Discuss cultural factors in emotions and motivations.

VIII. Stress, Health and Healing

1. Identify the sources of stress, and explain the psychological and physiological reactions to stress.

2. Evaluate physiological, psychological and social aspects of stress.
3. Identify and explain cognitive and behavioural strategies to deal with stress and promote health.
4. Investigate different holistic approaches to deal with stress and promote health.
5. Explain factors, prevention strategies and treatments related to the development of substance abuse or addictive behaviour.

IX. Psychological Disorders and Treatment

1. Define psychological disorders such as anxiety disorders, dissociative disorders, somatoform disorders, mood disorders, and personality disorders and identify the various criteria used to determine the diagnosis.
2. Explain schizophrenia and describe the three subtypes.
3. Discuss psychodynamic, humanistic-existential, behaviour, cognitive, and biomedical therapies.
4. Describe the effectiveness of psychotherapy.

Law - Core Learning Outcomes

Upon completion of this course the learner will be able to explain basic features and demonstrate an understanding of the Canadian legal system through the following learning outcomes

I. Assess the history and purpose of law in Canadian Society by explaining and differentiating among the following terms

1. Differentiate between laws and rules
2. Explain the need for laws
3. Differentiate between law and justice
4. Differentiate between law and morality
5. Identify the divisions of law
6. Examine the historical influences on and development of Canadian law: early British law, the feudal system, common law, legal reforms, and aboriginal law

II. Analyze the evolution of human rights and how this relates to the Canadian Constitution through the following

1. Discuss the BNA Act, the Statute of Westminster, and the Bill of Rights as it relates to the evolution of human rights
2. Identify the various sections of the Canadian Charter of Rights and Freedoms (CCORAF), including the reasonable limits clause and notwithstanding clauses
3. Compare and contrast the federal and provincial divisions of power
4. Describe the methods of enforcing rights and freedoms and explain how this relates to rights guaranteed by the CCORAF and human rights legislation and grounds for discrimination

III. Examine how the federal government is structured and relate it to how new laws are made

1. Explain what roles the executive, legislative, and judicial branches of the federal government each have in the formation of law

2. Describe the steps as to how a federal law is passed
3. Identify the various levels within the Canadian federal and provincial court systems
4. Analyze the role of individuals and interest groups in creating new laws

IV. Classify the various types of Canadian law

1. Identify and explain sources of Canadian law: common, statute, and constitutional
2. Identify the categories of law: international, domestic, substantive, procedural, public, and private

V. Examine the nature of crime

1. Summarize key aspects of the Criminal Code
2. Classify “summary, indictable, and hybrid” offences
3. Differentiate the elements of a criminal offense: actus reus and mens rea
4. Identify “parties” to an offence
5. Explain the criminal court system

VI. Examine the process of police investigation, arrest, and bringing the accused to trial

1. Discriminate the levels of police: federal, provincial, municipal, aboriginal
2. Explain key features of a police investigation and the identification and collection of evidence including the following steps
 - arrest and detention procedures
 - legal rights and bail procedures

VII. Differentiate among the following Criminal Offences

1. offences against the person and property
2. other offences, including drug, gambling, fraud, and mischief, driving, and prostitution

Classify and examine the following criminal defences

1. mental state defences
2. justification defences
3. other defences, including mistake of law and fact, double jeopardy, alibi, and entrapment

VIII. Examine the various roles of the following in trial procedure

1. courtroom participants and their roles
2. the role of juries and jury selection
3. presentation of evidence and types of evidence
4. charges to the jury
5. reaching a verdict

IX. Demonstrate an awareness of the process and objectives of the following in the Correctional system

1. sentencing
2. appeals and the types of traditional sentences
3. restorative justice and victims of crime
4. the provincial and federal correctional system
5. parole and pardons

X. Recognize and differentiate key features of the youth criminal justice system through the following documents and procedures

1. the current youth justice act
2. the legal rights of youths
3. youth trial procedures
4. youth sentencing options

XI. Explain and differentiate civil law disputes and resolution through the following processes

1. crime and torts
2. private law procedures
3. civil courts and trial procedures
4. civil remedies and sentencing
5. alternative dispute resolutions

XII. Differentiate and explain negligence and unintentional torts through the following legal terminologies

1. negligence, duty of care, standard of care, and causation
2. types of liability
3. the defences to negligence
4. intentional interference with the person and with property
5. the defences to intentional interference
6. defamation to character and defences to defamation to character

XIII. Examine marriage, divorce, and the family in a legal framework as they relate to the following terms

1. the changing family structure
2. the essential and formal legal requirements for marriage
3. annulment, separation, access, and divorce
4. the division of family property and asset
5. spousal and child support
6. domestic contracts and common law contracts

XIV. Distinguish contract law from other types of law as they relate to the following legal terms

1. the types of contracts
2. the elements of a contract
3. invalidating factors
4. carrying out the contract
5. the sale of goods
6. consumer protectionism
7. landlord and tenant law
8. employment law

Law - Non-Core Outcomes

I. Identify and explain key legal features of wills, including the following

1. the requirements for preparing a will
2. who can make, change, and revoke a will
3. the terms and duties associated with a will
4. provisions in a will
5. death without a will
6. contesting a will

II. Explain how Canadian law relates to First Nations, Metis and Inuit Peoples (Aboriginal) in the following areas

1. Identify the purpose and provisions of the current act pertaining to aboriginals
2. Examine the history of treaty making
3. Examine the arguments for and against recognition of aboriginal title
4. Discuss the process of negotiating land claim agreements
5. Describe the relationship of the present Constitution to aboriginal and treaty rights.

III. Explain Canadian emigration and immigration law including the following events and issues

1. the main events in the history of immigration and immigration policy and law
2. the main provisions of the current act pertaining to immigrants
3. the terms associated with immigration and emigration
4. the 'points system' for selecting immigrants
5. how refugee claims are made and decided upon
6. the appeals procedures
7. Identify key issues in Canadian immigration law

IV. Discuss current law as it relates to the environment with consideration of

1. major legal, social, and economic issues related to protecting the environment

2. how tort law is applicable to protecting the environmental
3. Canada's current environmental protection act
4. Canada's law as it relates to parks and endangered species
5. the need for international cooperation and laws
6. the effect of globalization on Canadian law

V. Directions to Future Submitters of Courses under the Social Science Section

Please submit course proposals to the chair of the committee at least one month prior to the annual meeting. If this is not possible, contact the chair. Please ensure that the course proposals reflect the goal statements, competencies and generic skills as outlined in the Articulation Handbook.

Provincial Level Social Justice

Students will be able to:

I. Defining Social Justice

1. Use Social Studies inquiry processes and skills to ask questions; gather, interpret, and analyze ideas and communicate findings and decisions.
2. Examine definitions, frameworks, and interpretations of social justice
 - definitions of social justice in local contexts
 - equity and equality
 - values, morality, ethics
 - social service, social responsibility
 - justice
3. Define and describe social injustices in Canada and the world affecting individuals, groups, and society
 - individual ideas, thoughts, beliefs, and actions
 - group ideas, thoughts, beliefs, and actions
4. Identify governmental and non-governmental issues of social justice and injustice
 - discriminatory legislation
 - Canadian Charter of Rights and Freedoms
 - human rights codes
5. Assess various approaches individuals, groups, and institutions use to promote social justice
 - activism, advocacy, and ally-building
 - dispute and conflict resolution processes and practices

II. Recognizing and Analyzing Social Injustice

1. Assess and compare the significance of people, places, events or developments at particular times

and places, and determine what is revealed about issues of social justice in the past and present.

- Use criteria to rank the most important people, places, events, or developments in the current unit of study.
 - Compare how different groups assess the significance of people, places, events, or developments.
2. Assess the justification for competing accounts after investigating points of contention, reliability of sources, and adequacy of evidence, including data.
 - Compare and contrast multiple accounts of the same event and evaluate their usefulness as historical sources.
 - Examine what sources are available and what sources are missing and evaluate how the available evidence shapes your perspective on the people, places,
 3. Compare and contrast continuities and changes for different groups and individuals at different times and places.
 - Compare how different groups benefited or suffered as a result of a particular change.
 4. Determine and assess the long- and short-term causes and consequences, and the intended and unintended consequences, of an event, legislative and judicial decision, development, policy, or movement.
 - Assess whether the results of a particular action were intended or unintended consequences.
 - Evaluate the most important causes or consequences of various events, decisions, or developments.
 5. Explain different perspectives on past and present people, places, issues, and events, and distinguish between worldviews of the past or present.
 - Explain how the beliefs of people on different sides of the same issue influence their opinions.
 6. Make reasoned ethical judgments about controversial actions in the past or present after considering the context and standards of right and wrong.
 7. Evaluate social system dynamics
 - privilege and power
 - diverse belief systems and worldviews
 - traditional and unceded territories of Indigenous peoples
 - inclusive and non-inclusive language
 - investigate the connection between access to resources and social injustice.
 8. Explore social justice issues.
 - race, poverty, LGBTQ2+ rights, status of women, Indigenous peoples, disabilities and other

marginalized groups.

III. Social Justice Non-Core Outcomes

1. Explore social injustices around the world.
 - equality for women
 - ethnic and religious minorities
 - political rights and freedoms
2. Evaluate social justice issues related to globalism and globalization.
3. Investigate controversial actions in environmental and ecological justice.
4. Conduct a self-assessment of one's own attitudes and behaviors as related to social justice.