

## SECTION C: PLANNING FOR INSTRUCTION

CTS provides increased opportunity for junior and senior high schools to design courses based on the needs and interests of their students and the circumstances within the school and community. Some strands may be appropriately introduced at the junior high school level. Other strands are more appropriately introduced at the senior high school level or to Grade 9 students. Refer to this section for recommendations regarding the Forestry strand.

### PLANNING FOR CTS

#### Defining Courses

Schools determine which strands and courses will be offered in a particular school, and may combine 1-credit CTS courses into multiple-credit CTS offerings.

Each 1-credit course was designed for approximately 25 hours of instruction. However, this time frame is only a guideline to facilitate planning. The CTS curricula are competency based, and the student may take more or less time to gain the designated competencies within each course.

A multiple-credit CTS offering will usually consist of 1-credit courses primarily from the same strand but, where appropriate, may include courses from other CTS strands. Refer to the *Guide to Education: ECS to Grade 12* (Appendix 1) for more information on course names and course codes.

Course selection and sequencing should consider:

- prerequisite(s)
- supporting courses (other CTS courses that may enhance the learning opportunity if offered with the course)
- course parameters:
  - instructional qualifications, if specialized
  - equipment and facility requirements, if specialized.

The course parameters are defined in Sections D, E and F of this Guide.

#### Degree of Flexibility

The CTS program, while designed using the modular structure to facilitate flexible timetabling and instructional delivery, does not mandate the degree of flexibility a school or teacher will offer. The teacher and school will determine the degree of flexibility available to the student. Within the instructional plan established by the school, the student may:

- be given the opportunity to progress at a rate that is personally challenging
- have increased opportunity to select the courses that develop competencies he or she finds most relevant.

#### Integrating Basic Competencies

The basic competencies relate to managing learning and resources, problem solving and innovation, communicating effectively, working with others and demonstrating responsibility are developed throughout the CTS program, and within each 1-credit course.

Assessment of student achievement on the basic competencies is integrated throughout the other general outcomes. Refer to Section G (Assessment Tools) of this Guide for the description of student behaviours expected at each of the four developmental stages defined for the basic competencies.

Assessment of basic competencies could include input and reflection involving the student, teacher(s), peers and others. Description of the observed behaviour could be provided through a competency profile for the course. Positive, ongoing interaction between the student and teacher will support motivation for student growth and improvement.

## Assessing Student Achievement

Assessing student competency is a process of gathering information by way of observations of process, product and student interaction.

Where appropriate, assessment tools have been defined to assist the teacher and student in the assessment. Refer to Section G (Assessment Tools) of this Guide for copies of the various tools (worksheets, checklists, sample questions, etc.).

A suggested emphasis for each general outcome has also been established. The suggested emphasis provides a guideline to help teachers determine time allocation and/or the appropriate emphasis for each general outcome and the student grade.

## Recognizing Student Achievement

At the high school level, successful demonstration of the exit-level competencies in a course qualifies the student for one credit. Refer to Section A of this Guide for more detailed information about how curriculum and assessment standards are defined in CTS. Refer to the *Career & Technology Studies Manual for Administrators, Counsellors and Teachers* for more information on how student achievement can be recognized and reported at the school and provincial levels.

## Portfolio

When planning for instruction and assessment, consider a portfolio as an excellent tool to provide evidence of a student's effort, progress and achievement. Portfolios will aid students in identifying skills and interest. They also provide the receiving teacher, employer and/or post-secondary institution proof of a student's accomplishments. The make-up and evaluation of the portfolio should be a collaborative agreement between the student and teacher.

## Resources

A comprehensive resource base, including print, software and audio-visual, has been identified to support CTS strands. It is intended that these resources form the basis of a resource centre, encouraging teachers and students to access a

wide selection of resources and other information sources throughout the learning process. Unless otherwise noted, these resources are considered to be suitable for both junior and senior high school students.

Refer to Section I (Learning Resource Guide) to obtain directions for accessing up-to-date information about learning resources that have been identified to support the delivery of CTS courses in this strand.

## Sample Student Learning Guides

In addition to the resources, Sample Student Learning Guides are available (refer to Section J of this Guide). These samples, designed for individual student or small group use, provide an instructional plan for selected courses and include the following components:

- Why take this course?
- What are the entry-level competencies?
- What are the exit-level competencies?
- What resources may be accessed?
- What assignments/activities must be completed?
- What are the timelines?
- How will the final mark be calculated?

Sample Student Learning Guides have been developed for the following courses in Forestry:

- Forest Regions of Canada
- Forest Ecology 1.

## PLANNING FOR FORESTRY

The following suggestions are provided to assist teachers and school and school system administrators as they plan to deliver courses in the Forestry strand.

### Selecting Courses

The scope and sequence chart in Section B provides an overview of the Forestry courses, indicating prerequisites and theme areas. Brief descriptions of each of the courses follow the scope and sequence chart in Section B.

Course planning should take into consideration course sequences that link with both physical and human resources present in the school and community. Although not required, it is recommended that FOR1010: Why Forestry? be a prerequisite/corequisite to all multiple-credit offerings in the Forestry strand.

***Forestry in Junior High***

The introductory level courses may be offered at the junior high level. As each school and community will vary in terms of available resources, it is important to consider potential education partners prior to selecting course sequences.

The number of courses offered will vary according to time available throughout Grades 7, 8 and 9. Individual courses may be clustered and offered within a school year or over a span of a few years. Junior high students may not complete all the learner expectations for each course that is offered.

Two sample offerings based on introductory level courses are outlined below.

*Sample A: 50 hours of instruction*

<b>EMPHASIS OF COURSE CLUSTER</b>
Introduction to Forestry
<b>COURSES OFFERED</b>
FOR1010 Why Forestry? FOR1020 Forest Regions of Canada
<b>RATIONALE/KEY LEARNINGS</b>
Students examine the economic, environmental and social significance of forests, describe the impact of individuals on forests, and conduct research on forest regions of Canada.  This CTS offering complements the junior high science and social studies programs, and can be linked with other CTS strands including Tourism and Wildlife.

*Sample B: 75 hours of instruction*

<b>EMPHASIS OF COURSE CLUSTER</b>
Personal/Recreational Use of Forests
<b>COURSES OFFERED</b>
FOR1090 Forest Ecology 1 WLD1030 Outdoor Experiences 1 FOR2010 Making a Difference
<b>RATIONALE/KEY LEARNINGS</b>
Students investigate the structure and functioning of forest ecosystems, develop basic skills required for responsible participation in a range of outdoor forest activities, and propose individual and shared actions that foster environmental stewardship.  This CTS offering complements the junior high core science program and complementary Environmental and Outdoor Education program, and can be linked with other CTS strands including Tourism and Wildlife.

Where appropriate, junior high school students may also take intermediate level courses, particularly in the Technology and Applications theme.

***Forestry in Senior High***

All introductory, intermediate and advanced level courses may be offered to senior high students. Three sample multiple-credit CTS offerings, based on intermediate and advanced level courses and designed to be delivered to senior high school students, are outlined below.

*Sample C: 75 hours of instruction*

<b>EMPHASIS OF MULTIPLE-CREDIT OFFERING</b>
Forest Inventory (assuming junior high background)
<b>1-CREDIT COURSES OFFERED</b>
FOR2060 Measuring the Forest 2 FOR3060 Measuring the Forest 3 FOR3080 Forest Technology Applications
<b>RATIONALE/KEY LEARNINGS</b>
Students demonstrate appropriate strategies for sampling fibre and non-fibre values of the forest, explain management applications of data collected from a forest survey, and research applications of technology in forest inventory practices.
This multiple-credit offering can be linked with other CTS strands including Agriculture, Career Transitions, Information Processing, Tourism and Wildlife.

*Sample D: 100 hours of instruction*

<b>EMPHASIS OF MULTIPLE-CREDIT OFFERING</b>
Silviculture and Forest Harvest (assuming junior high background)
<b>1-CREDIT COURSES OFFERED</b>
FOR3090 Forest Ecology 2 FOR3110 Silviculture FOR2070 Harvest Practices FOR3070 The Forest Marketplace
<b>RATIONALE/KEY LEARNINGS</b>
Students investigate relationships among soil, water, air, trees and the environment, demonstrate techniques in establishing, growing, harvesting and processing tree crops, and research the production and marketing of forest products in Canada.
This multiple-credit offering can be linked with other CTS strands including Career Transitions, Management and Marketing, Mechanics and Wildlife.

*Sample E: 125 hours of instruction*

<b>EMPHASIS OF MULTIPLE-CREDIT OFFERING</b>
Forest Management (assuming junior high background)
<b>1-CREDIT COURSES OFFERED</b>
FOR2030 Managing Alberta Forests FOR2100 Forests Forever 2 FOR2120 Users in the Forest FOR3010 Issues in Forestry FOR3120 Integrated Resource Management
<b>RATIONALE/KEY LEARNINGS</b>
Students research the goals of forest management, and agencies/frameworks used to manage forested lands in Alberta. They focus attention on different users in the forest, the planning principles involved in integrated resource management, and individual/shared actions that foster environmental stewardship.
This multiple-credit offering can be linked with other CTS strands including Agriculture, Career Transitions, Energy and Mines, Legal Studies, Tourism and Wildlife.

Courses could also be clustered into multiple-credit offerings that develop competencies relevant to career opportunities within a specific industry.

**Organizing for Learning**

A “learn by doing” approach is recommended for the Forestry strand. Essentially, the teacher’s role becomes that of guide and partner in the learning process. The “learn by doing” approach requires the teacher to be facilitator and coach, rather than subject-based expert, as students actively participate in learning by doing and discovering.

Small group instruction is a good way to foster learning by doing and discovering. Small groups enable students to be active participants in learning, and develop independent and responsible learning habits. As students work in small group situations they will share information, solve problems, develop consensus, and help each other learn content and processes.

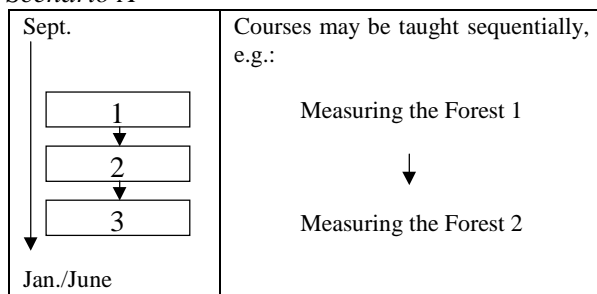
The community has a key role in education and can be an effective partner in the learning process. The use of community members and resources should be integrated into course planning. Business, industry, post-secondary and government agencies offer a wide range of services and resources, as do local clubs, service groups and institutions. When planning for the use of community resources, teachers should ensure that related presentations and/or activities:

- are consistent with student knowledge and skill levels
- demonstrate sound pedagogy
- are exemplary of approved health and safety standards
- provide a balanced approach to curriculum topics and related issues.

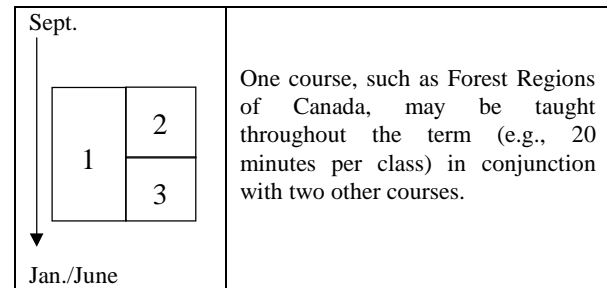
Before selecting courses, teachers should refer to the course parameters outlined in Sections D, E and F of this Guide.

Individual 1-credit courses can be delivered sequentially, concurrently or combined. For example, although the courses in the Technology and Applications theme are sequential, they can be combined with courses from the Social and Cultural Perspectives theme or the Management and Conservation theme.

*Scenario A*

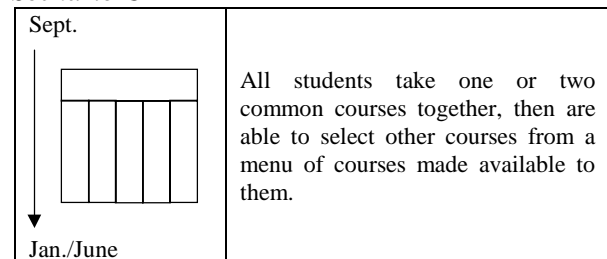


*Scenario B*

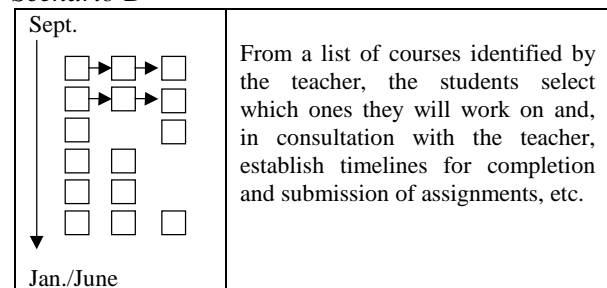


Teachers can also allow students to progress at a rate that is personally challenging; e.g.:

*Scenario C*



*Scenario D*



Plans for learning must address social, environmental and economic perspectives related to sustainable forest management and provide opportunities for students to become involved in learning experiences that reflect a broad understanding of issues related to forest use. Presentations of course content that reflect a singular or narrow view of social, economic or environmental concerns are not consistent with learner expectations and must be avoided.



As in all CTS strands, students will identify, explore and prepare for future career opportunities. It is recommended that instructional planning include the integration of relevant career investigations throughout each course, rather than as a singular or isolated study. Career profiles, interviews and job shadowing will acquaint students with the many technical and professional careers associated with the forest industry.

### Instructional Qualifications

Responsibility for instructional planning and assessment of courses in Forestry will be assumed by Alberta certified teachers. A background in science and/or forest industry will be an asset to those who provide instruction in Forestry courses, particularly at the intermediate and advanced levels. Teachers may find it desirable to access sources of instructional support available from forest industry, professional forestry associations and consultants, and relevant government agencies (e.g., Alberta Environmental Protection).

To ensure compliance with safety and industry standards, some courses require that components of instruction be provided by person(s) having additional credentials granted by industry, government or community organizations. Forestry courses requiring additional instructor qualifications are identified in the following chart.

COURSE	ADDITIONAL INSTRUCTOR QUALIFICATIONS	
	Required	Recommended
WLD1030: Outdoor Experiences 1	Standard Level First Aid Certificate	First Aid in the Wilderness Certificate
FOR1060: Measuring the Forest 1	Standard Level First Aid Certificate	
WLD2030: Outdoor Experiences 2	Standard Level First Aid Certificate	First Aid in the Wilderness Certificate
FOR2060: Measuring the Forest 2	Standard Level First Aid Certificate	
FOR3090: Forest Ecology 2	Standard Level First Aid Certificate	

Refer to the corresponding course in Section D, E or F of this Guide for further information regarding each instructor qualification. In some instances it may be desirable to have other qualified individuals in the community work with the teacher in delivering courses (or parts thereof) that require additional instructor qualifications.

### Sensitive Issues

Some Forestry courses contain topics of a sensitive nature. Teachers will need to be respectful of family and community values in selecting appropriate courses to offer in Forestry. For example, courses that reference the consumptive use of forests and examine different methods of forest harvest (i.e., FOR2070, FOR3070) may be sensitive in some communities.

Ethical issues surrounding the sustainable management of forests may also be sensitive for some students (i.e., FOR1100, FOR2100, FOR2120, FOR3010). Emphasis should be placed on a “process” for conflict analysis and not on particular positions that may be expressed.

For further clarification of provincial policy on sensitive issues, refer to the *Policy, Regulations and Forms Manual* (Controversial Issues in Education, Policy 1.7.1). Teachers and administrators should also review jurisdictional policies related to sensitive issues.

## **Health, Safety and Related Legislation**

Facilities used to support a Forestry program must ensure a safe learning/working environment. Students must be aware of federal, provincial and local regulations governing the tasks they perform, and establish appropriate personal and environmental health and safety procedures for courses that involve:

- the use of specialized hand/power equipment
- the handling and storage of hazardous materials
- outdoor trips and field-based investigation.

Students must understand immediate and potential hazards associated with the tasks they perform, and the possible impact of these hazards on self, others and the environment.

Of particular significance from the perspective of health and safety are courses that involve outdoor trips in forest environments (e.g., WLD1030, WLD2030). These courses require that both student and instructor have prior knowledge of survival techniques and are able to provide first aid in remote locations.

For additional information on health and safety standards, refer to the *Career & Technology Studies Manual for Administrators, Counsellors and Teachers* (Appendix 3).

## **Addressing Safety in Off-Campus Excursions**

Outdoor trips and field-based investigations are recommended and should be an important part of teaching and learning throughout the Forestry strand. Safety must be a prime consideration in planning off-campus learning experiences. Both teachers and students should engage in activities commensurate with their level of training and ability. Adequate instructional support, guidance and supervision must be provided at all times. Local jurisdiction and school policies must be understood by principals, teachers, parents, supervisors and students.

## ***Preparation and Risk Anticipation***

The preparation stage is an important part of any off-campus learning experience. At this stage of planning, potential risks can be anticipated and either avoided or moderated. The preparation stage should focus attention on:

- trip administration, including the use of parental permission forms, health information forms, school/system authorization forms and accident report forms as required
- a review of laws and regulations relevant to the learning site and activities that will be undertaken
- assessment of the learning site in terms of potential hazards and risks that may be present
- group size and the level of supervision that will be required (i.e., supervisor/student ratio)
- a briefing of parents, school administrators, government/industry authorities or others who should be informed regarding itineraries, participants and emergency response plans
- pre-trip logistics, including transportation, equipment, facility and departure date/time considerations
- student preparation, including the development of background knowledge/experience and training in specific skill areas.

## ***On-Site Risk Management***

Safety and risk management involves exercising situation-specific judgement throughout the course of off-campus learning. Judgement is the product of experience, and may include recognizing factors such as dangers imposed by equipment or animals, deteriorating weather, a decline in physical strength, or a more challenging task. Many of the hazard recognition skills can be taught in the classroom in the preparation stage.

A significant aspect of on-site risk management is group management. Teachers can exercise appropriate group management strategies by focusing attention on:

- pacing, including speed of travel, rest stops, distance travelled and fitness level of students
- maintaining a safe distance for observations

- group control, including position of leader, signal systems and buddy systems
- the establishment of group rules and norms
- clearly defined task allocations for each student
- objective hazard recognition in the field, including machinery and equipment, weather, terrain, flora and fauna
- subjective hazard recognition in the field, including level of group energy and level of cooperation.

### ***Emergency Response***

If students have been well prepared for field-based learning experiences and appropriate group management strategies exercised, the teacher will have maximized opportunities for effective response to an emergency situation. An effective emergency response action plan should include consideration of:

- a suitable approach to the accident site
- first-aid supplies and techniques
- a strategy for signalling assistance
- an evacuation plan
- group management throughout the emergency situation.

### **Identifying Linkages**

Section H of this Guide describes linkages within CTS and with core and complementary programs.

In particular, teachers should be aware of the linkages of Forestry with biology components in the junior and senior high science program, and also with environmental components in the junior high Environmental and Outdoor Education Program. The Forestry strand is designed to reinforce, extend and apply related learnings in these courses. Collaborative planning at the school level will ensure meaningful learning experiences through effective integration of these courses.

The Career Transitions strand of CTS provides project, practicum, safety and leadership courses that may be combined with courses in Forestry to

increase opportunity for students to develop expertise, refine their competencies and/or obtain credentials.

### ***Using “Project” Courses***

Students may use one or more of the 10 project courses to expand learning beyond the competencies outlined in particular Forestry courses. For example, a silviculture or forest inventory project may require more than the 25, 50 or 75 hours available through courses by that name. In these instances, project courses from the Career Transitions strand may be accessed so as to provide sufficient time for completion of learning and the task. For each project course, the teacher and student establish specific learning outcomes, assessment criteria, resources and timelines.

### ***Using “Practicum” Courses***

Students may use one or more of the four practicum courses to extend the competencies developed in particular Forestry courses in order to attain a recognized credential offered by an agency external to the school. For example, students who plan to work in the forest industry may wish to access a practicum course from the Career Transitions strand in order to obtain a “Bear Awareness and Avoidance” certificate. Practicum courses must be supervised by both a qualified teacher and an experienced professional authorized to supervise trainees for the credential.

Project and practicum courses are **not** designed to be offered as isolated courses and should **not** be used to extend Work Experience 15, 25 and 35 courses.

### **Improving Smooth Transitions to the Workplace and/or Post-secondary Programs**

Refer to Section H of this Guide for potential transitions students may make into:

- the workplace
- related post-secondary programs or other avenues for further learning.