

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 Fabrication Studies strand.

PLANNING FOR CTS

Defining Courses

Schools determine which strands and courses will be offered in a particular school, and will 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 course(s) (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 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 achievement 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.

Portfolios

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 Fabrication Studies.

- FAB1010 Fabrication Tools & Materials
- FAB2010 Structural Engineering
- FAB3010 Materials Testing
- FAB3160 Prefabrication Principles.

Community Resources

The community can become a major stakeholder and effective partner in the learning process. The use of community members and resources should be integrated into course planning. Business, industry 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, activities and work settings:

- 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.

Off-campus Excursions

Field excursions are also recommended and should be an important part of teaching and learning throughout the Fabrication Studies 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 supervisor must be provided at all times. Local jurisdiction and school policies must be understood and observed by principals, teachers, parents, supervisors and students.

PLANNING FOR FABRICATION STUDIES

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

Teaching Strategies

A practical “hands on” approach, where theory and practise are developed in concert with one another, is encouraged throughout Fabrication Studies. When teaching content in an applied

setting, lecture-type classes should be avoided as much as possible. Teachers should attempt to integrate theory and practice by engaging students in practical experiences. Students that work on meaningful assignments and useful projects are more easily motivated to develop the required knowledge, skills and attitudes outlined in each course. Refer to the *Career & Technology Studies Manual for Administrators, Counsellors and Teachers* for additional teaching strategies.

Health and Safety and Related Legislation

The health and safety of students and teachers is protected by law. Every worker has the right to be protected from injury and needs to know how to safely use, store and transport hazardous materials. Teachers of Fabrication Studies must ensure that students are working in a safe and healthy environment. Students should therefore be encouraged to work in a safe manner and identify and report existing and potential hazards within the learning environment. Accident prevention is one of the most important concepts a student learns in the Fabrication Studies strand.

Teachers of Fabrication Studies courses should also be aware of the issues addressed in the *Occupational Health and Safety Act*, Worker’s Compensation regulations and local fire and building codes related to this strand.

Off-site Risk Management

Safety and risk management involves exercising situation-specific judgement throughout the course of an off-campus excursion. Judgement is the product of experience, and may include recognizing factors such as dangers imposed by equipment, 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 off-site risk management is group management. Teachers can exercise appropriate group management strategies by focusing attention on:

- pacing and observation distance, including speed of travel, rest stops, distance travelled and maintaining safe distance for observations
- group control, including position of leader, regrouping procedures, signal systems and buddy systems
- the establishment of group rules and norms
- clearly defined task allocations for each student
- objective hazard recognition on the site, including machinery and equipment.

For additional information on health and safety standards in CTS, refer to the *Career & Technology Studies Manual for Administrators, Counsellors and Teachers*.

Instructional Qualifications

Responsibility for instructional planning and delivery of courses in Fabrication Studies will be assumed by Alberta certified teachers having expertise in fabrication processes. See specific courses and the *Career & Technology Studies Manual for Administrators, Counsellors and Teachers* for more detailed information regarding instructional qualifications. Note that where courses or portions of courses require special instructional qualifications, complete courses or portions of courses can be delivered through off-campus learning under the supervision of a certified teacher.

Many of the competencies developed in Fabrication Studies relate directly to a number of recognized trade areas. The *Alberta Apprenticeship and Training Act* clearly outlines who can or cannot work in compulsory and optional trade areas. The Act states: *A person shall not work in a compulsory or optional trade area unless that person:*

- holds a trade certificate*
- is an apprentice in the specified trade*
- is authorized under Section 23 to work or perform one or more tasks in the trade*
- is a student in a student work training program in that trade.*

In addition, in an optional certificated trade area, a person who does not hold a trade certificate, may work in or perform one or more tasks, activities or functions if the employer is satisfied that the person possesses the skills and knowledge in the trade as would be expected from one who would be in possession of a trade certificate.

It should also be noted that the Act spells out the ratio of journeyman to apprentices is a minimum of one apprentice to each journeyman employed. This ruling applies specifically to the Registered Apprenticeship Program.

Selecting Courses

Course planning should take into consideration both physical and human resources present in the school and community.

The scope and sequence chart in Section B of this Guide provides an overview of the Fabrication Studies courses, indicating prerequisites and theme areas. In addition, a brief description of each course can be found in this section following the scope and sequence chart.

Fabrication Studies in Junior High

Most introductory level courses may be offered to junior high school students. Since resources and expertise will vary in each school and community, it is important to assess potential support networks before selecting specific courses and course sequences.

The number of courses offered will vary according to the time available throughout Grades 7, 8 and 9 as outlined below:

Time Available	Courses
25 hours	Fabrication Tools & Materials
50 hours	<i>add to the previous course</i> Fabrication Principles
75 – 100 hours	<i>add one or two of the following:</i> Sheet Fabrication 1 Bar & Tubular Fabrication Principles of Machining Production Systems

Where appropriate, junior high school students may study intermediate level courses, particularly in the Materials and Structures theme.

Fabrication Studies in Senior High

Depending on the interest and intent of the students, courses in Fabrication Studies may be clustered in a variety of ways. Students with a general interest in the strand may wish to study courses from the various themes, while those with specific interests may focus on a cluster of courses related to welding, sheet metal, foundry or machining as outlined in the Scope and Sequence chart.

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 in a singular or isolated study. Career profiles, interviews and job shadowing will acquaint students with the many technical and professional careers associated within the field of fabrication.

Students intending to continue their studies in a post-secondary institution and/or through apprenticeship should be aware of the post-secondary and apprenticeship linkages referred to in Section H of this Guide. For example, basic to most trade-related programs is the need to have well-developed print reading and

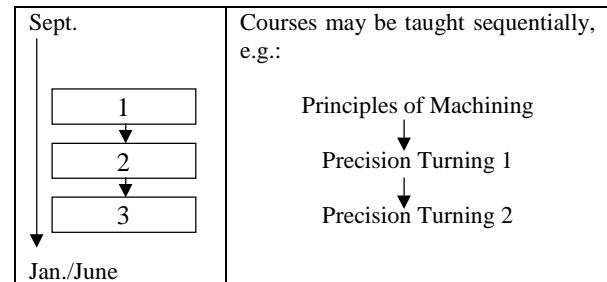
hand-tool skills. Such considerations will affect course selection.

When selecting courses, teachers should refer to the parameters defined for each course in Sections D, E and F of this Guide.

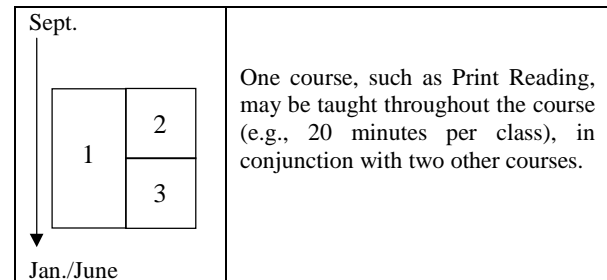
Organizing for Learning

Individual 1-credit courses can be delivered sequentially, concurrently or combined as outlined below:

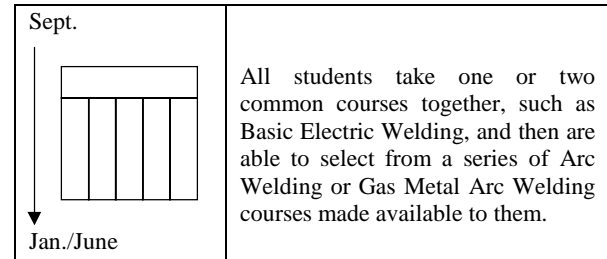
Scenario A



Scenario B

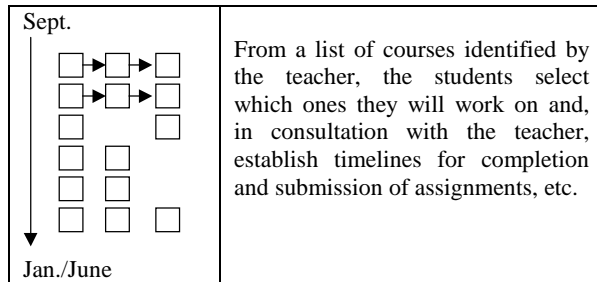


Scenario C



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

Scenario D



Refer to Section H of this Guide for potential transitions students may make into the workplace and/or related post-secondary programs or other avenues for further learning.

Identifying Linkages

Section H of this Guide describes some possible linkages between the Fabrication Studies strand and:

- other CTS strands
- complementary programs, such as art and drama
- core programs; e.g., mathematics, science, social studies and language arts
- off-campus programs.

Note that project courses from the Career Transitions strand may be combined with courses from the Fabrication Studies strand to provide increased opportunity for students to develop expertise and refine their competencies. Project courses are **not** designed to be offered as distinct 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

As in other CTS strands, students will develop awareness of and prepare for future career opportunities. It is recommended that program planning include the integration of relevant career information and experiences. Through the development of career-specific skills, occupational profiles and on-site activities should be used to help students become aware of training requirements and career opportunities related to the fabrication sector of the economy.