

FORESTRY

SECTION H: LINKAGES/TRANSITIONS

This section of the Guide has been designed to provide an overview of linkages and transitions of CTS courses with a number of organizations. The charts and information presented in this section will assist CTS students and teachers in understanding the potential application of CTS courses as students move into the workplace.

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LINKAGES/TRANSITIONS

LINKAGES

With Other CTS Strands

The Forestry strand provides opportunities for students to develop competencies in one or more forestry-related areas, including:

- personal and/or recreational use
- silviculture
- forest inventory
- forest harvest
- forest products
- forest management.

Each area of forestry links with competencies that are developed in other CTS strands. To facilitate and strengthen these linkages, courses may be designed by combining Forestry courses with courses from other CTS strands; e.g., Agriculture, Community Health, Energy and Mines, Legal Studies, Management and Marketing, Mechanics, Tourism Studies, Wildlife.

Linkages of particular relevance to the design of CTS courses in Forestry include:

Strand	Themes and/or Courses
Career Transitions	Project courses provide opportunities for learning beyond the expectations of given Forestry courses. Practicum courses enable students to work toward obtaining credentials in recognized in the workplace/community. Safety courses provide opportunities to address safety skills relevant to specific sectors of the forest industry. Leadership courses have application in a range of group activities conducted in wilderness/forest environments.
Community Health	Courses within the “Injury Prevention” theme link with a range of workplace competencies developed within the Forestry strand.

Strand	Themes and/or Courses
Legal Studies	Courses within the “Societal Contexts” theme (e.g., Environmental Law, Dispute Resolution, Landmark Decisions) can be contextualized within a forest industry.
Mechanics	Courses within the “Propulsion Systems” and “Guidance and Control Systems” themes can be contextualized within specific forest industry operations (e.g., maintenance of power driven machines).
Tourism Studies	Courses within the “Attractions” theme can be contextualized within a specific forest environment (e.g., outdoor adventure, ecotourism).
Wildlife	Courses within the “Management and Conservation” theme complement the study of forest ecology and forest management practices.

It is important to note that the project, practicum and safety courses in Career Transitions may be combined with Forestry courses to provide opportunities for students to:

- acquire safety competencies and credentials
- develop specific workplace skills
- expand upon a topic in a course or theme
- complete an investigation, project or service.

Additional information regarding connections with other CTS strands is provided in this section (see “Connections with Other CTS Strands”).

Sample courses in Forestry that include courses from other CTS strands are also provided in this section (see “Forestry in Junior High” and “Forestry in Senior High”).

With Other Secondary Programs

The Forestry strand has many links with other core and complementary subject areas across the curriculum. For example, many of the courses in Forestry link with the junior and senior high science programs, and provide opportunities for students to extend and apply related knowledge and skills in practical ways. Courses in the Forestry strand also link with topics developed in the complementary junior high Environmental and Outdoor Education program.

Core and complementary course linkages of particular relevance to CTS courses in Forestry include:

Course/ Program Area	Linkage/Connection
Language Arts	Application of the research process; development of reporting and oral/multimedia presentation skills within a range of industry contexts.
Mathematics	Application of number operations, variables and equations, measurement (i.e., length, area, volume), statistics and probability within the context of forest inventory and sampling practices.
Science	Use of observation and experimentation; knowledge and theory of relevant topics in biology, ecology and earth science; analysis of relationships among science, technology, society and the environment.
Social Studies	Knowledge of the impact of social, economic and environmental perspectives on forests; issue analysis, negotiation, debate and environmental citizenship within a range of industry contexts.
Physical Education	Application of personal fitness and outdoor survival skills to excursions in a forest environment.
Fine Arts	Knowledge and awareness of the significance of forests and outdoor environments in art, music and drama.

Course/ Program Area	Linkage/Connection
Environmental and Outdoor Education	Application of outdoor and personal/group skills to activities conducted in forest environments; application of environmental knowledge/skills to forest ecology, silviculture practices and resource management.
CALM	Awareness of career opportunities and trends; career research and preparation.

Additional information regarding connections between Forestry courses and other core and complementary subject areas is provided in this section (see “Forestry: Connections Across the Curriculum”).

A detailed correlation of the Forestry strand to the Environmental and Outdoor Education program is also provided in this section (see “Forestry: Correlations with Environmental and Outdoor Education 7, 8 and 9”).

TRANSITIONS

To the Workplace

Intermediate and advanced courses are designed to develop knowledge, skills and attitudes that provide transitions to occupations in forestry-related areas. Some career sectors welcome individuals who have basic skills and are prepared to learn through further training from the employer.

The National Occupational Classification (NOC) chart in this section indicates occupations for which the Forestry strand provides a foundation (see “Forestry: Related Occupations”).

To Related Post-secondary Programs

Advanced level courses will assist students to make plans regarding further studies in forestry at post-secondary levels. The Forestry courses provide desirable background and skills for entry into related programs at public and private colleges, technical institutes, universities and vocational colleges in Alberta.

A summary of related programs currently offered at post-secondary institutions in Alberta is provided in this section (see “Forestry: Summary of Related Post-Secondary Programs”).

A number of articulation agreements have been established with post-secondary institutions in Alberta. These agreements provide preferred entrance and/or advanced standing/credit for CTS students who have successfully completed designated courses. A current summary of articulation agreements in place that involve CTS courses is available through the provincial web site. For further information regarding particular articulation agreements, contact the post-secondary institution and/or review its respective calendar.

Further information regarding these and other credentialling opportunities available to CTS students is provided in the *Career & Technology Studies Manual for Administrators, Counsellors and Teachers* (see Appendix 5: Planning Ahead—CTS Transitions into Post-secondary Programs and the Workplace), and also through the provincial web site.

CREDENTIALLING

Students may earn partial or complete credentials recognized in the workplace and/or post-secondary institutions by demonstrating specified competencies within the CTS curriculum. The Forestry strand, in conjunction with courses from the Career Transitions strand, provides opportunities for students to develop competencies that link with a number of credentialling programs.

Of particular significance are credentials available through:

- First Aid certificate courses
- Alberta Safety Council programs
- Alberta Tourism Education Council (ATEC) programs.

Teachers may wish to explore opportunities for linking courses in Forestry with these and/or other credentialling programs. A partial list of credentialling opportunities relevant to CTS courses in Forestry is provided in this section (see “Credentialling Opportunities in Forestry”).

LINKAGES – Forestry: Connections with Other CTS Strands

Other CTS Strands

Forestry Courses	Agriculture	Career Transitions	Communication Technology	Community Health	Construction Technologies	Cosmetology Studies	Design Studies	Energy and Mines	Electro-Technologies	Enterprise and Innovation	Fashion Studies	Financial Management	Foods	Fabrication Studies	Information Processing	Legal Studies	Logistics	Management and Marketing	Mechanics	Tourism Studies	Wildlife
Theme: Social and Cultural Perspectives																					
FOR1010: Why Forestry?		■	■												■						■
FOR1020: Forest Regions of Canada		■	■												■						■
WLD1030: Outdoor Experiences 1		■	■	■																	■
FOR2010: Making a Difference		■	■												■						■
FOR2030: Managing Alberta Forests		■	■												■	■					■
WLD2030: Outdoor Experiences 2		■	■	■											■	■					■
FOR3010: Issues in Forestry		■	■					■							■	■					■
Theme: Technology and Applications																					
FOR1050: Mapping & Aerial Photos		■	■	■				■													■
FOR1060: Measuring the Forest 1		■	■	■																	■
FOR2060: Measuring the Forest 2		■	■	■																	■
FOR2070: Harvest Practices		■	■		■				■						■			■	■		■
FOR3060: Measuring the Forest 3		■	■												■						■
FOR3070: The Forest Marketplace		■	■		■										■			■			■
FOR3080: Forest Technology Applications		■	■					■	■						■						■
Theme: Management and Conservation																					
FOR1090: Forest Ecology 1	■	■						■							■						■
FOR1100: Forests Forever 1	■	■													■						■
FOR2100: Forests Forever 2	■	■													■						■
FOR2120: Users in the Forest	■	■						■							■	■					■
FOR3090: Forest Ecology 2	■	■						■							■						■
FOR3110: Silviculture	■	■		■				■							■				■		■
FOR3120: Integrated Resource Management	■	■						■							■	■					■

Provides many direct links with competencies in this strand. Students will reinforce, extend and apply a substantial number of knowledge and/or skill components in practical situations.



Provides some links with competencies developed in this strand, usually through the application of related technologies and/or processes.



LINKAGES – Forestry in Junior High

Course Emphasis	Forestry Courses	Mechanics Courses	Wildlife Courses	Tourism Studies Courses
Forest Ecology (3 courses)	Why Forestry? <i>FOR1010</i>		Natural History of Wildlife <i>WLD1020</i>	
	Forest Ecology 1 <i>FOR1090</i>			
Forest Inventory (4 courses)	Why Forestry? <i>FOR1010</i>		Measuring the Value <i>WLD2020</i>	
	Mapping & Aerial Photos <i>FOR1050</i>			
	Measuring the Forest 1 <i>FOR1060</i>			
Logging and Timber Utilization (5 courses)	Why Forestry? <i>FOR1010</i>	Engine Fundamentals <i>MEC1040</i>		
	Forest Regions of Canada <i>FOR1020</i>	Mechanical Systems <i>MEC1130</i>		
	Harvest Practices <i>FOR2070</i>			
Personal and Recreational Use (6 courses)	Why Forestry? <i>FOR1010</i>		Angling & Fish Management <i>WLD1080</i>	The Attractions Sector <i>TOU1070</i>
	Mapping & Aerial Photos <i>FOR1050</i>		Outdoor Experiences 1 <i>WLD1030</i>	
			Outdoor Experiences 2 <i>WLD2030</i>	

LINKAGES – Forestry in Senior High

Course Emphasis	Forestry Courses	Wildlife Courses	Tourism Studies Courses	Career Transitions Courses
Personal and Recreational (3 credits) Prerequisite: Outdoor Experiences 1	Making a Difference <i>FOR2010</i>	Outdoor Experiences 2 <i>WLD2030</i>	Adventure & Ecotourism <i>TOU3110</i>	
Silviculture (5 credits) Prerequisite: None	Forest Ecology 1 <i>FOR1090</i> Forest Ecology 2 <i>FOR3090</i> Silviculture <i>FOR3110</i> Forest Technology Applications <i>FOR3080</i>			Project 2A <i>CTR2110</i>
Harvest and Forest Products (5 credits) Prerequisite: Measuring the Forest 1 and 2	Managing Alberta Forests <i>FOR2030</i> Harvest Practices <i>FOR2070</i> The Forest Marketplace <i>FOR3070</i> Measuring the Forest 3 <i>FOR3060</i>			Project 2A <i>CTR2110</i>
Environmental Stewardship (3 credits) Prerequisite: None	Making a Difference <i>FOR2010</i>	Issues in Wildlife 1 <i>WLD2090</i>		Project 2A <i>CTR2110</i>
Forest Management (5 credits) Prerequisite: None	Issues in Forestry <i>FOR3010</i> Users in the Forest <i>FOR2120</i> Integrated Resource Management <i>FOR3120</i>	Interactions <i>WLD2060</i>		Project 2A <i>CTR2110</i>

LINKAGES – Forestry: Connections Across the Curriculum

Across the Curriculum

Forestry Courses	Junior High							Senior High											
	Language Arts	Social Studies	Mathematics	Science	Health & PLS	Physical Education	Fine Arts	English	Social Studies	Mathematics	Science (General)	Biology	Chemistry	Physics	CALM	Physical Education	Fine Arts	Social Sciences	Second Language
Theme: Social and Cultural Perspectives																			
FOR1010: Why Forestry?	■	■	■	■				■	■		■				■		■		
FOR1020: Forest Regions of Canada	■	■	■	■				■	■		■	■			■		■		
WLD1030: Outdoor Experiences 1						■										■			
FOR2010: Making a Difference	■	■	■	■				■	■								■		
FOR2030: Managing Alberta Forests	■	■	■	■				■	■										
WLD2030: Outdoor Experiences 2						■										■			
FOR3010: Issues in Forestry	■	■	■	■				■	■										
Theme: Technology and Applications																			
FOR1050: Mapping & Aerial Photos		■	■	■		■										■			
FOR1060: Measuring the Forest 1			■	■		■						■				■			
FOR2060: Measuring the Forest 2			■	■		■						■				■			
FOR2070: Harvesting Practices	■	■		■				■				■				■			
FOR3060: Measuring the Forest 3				■								■							
FOR3070: The Forest Marketplace	■	■		■				■	■							■			
FOR3080: Forest Technology Applications	■	■		■				■	■										
Theme: Management and Conservation																			
FOR1090: Forest Ecology 1				■								■							
FOR1100: Forests Forever 1	■	■		■				■			■								
FOR2100: Forests Forever 2	■	■		■				■			■								
FOR2120: Users in the Forest	■	■		■				■			■								
FOR3090: Forest Ecology 2				■								■							
FOR3110: Silviculture				■							■	■			■				
FOR3120: Integrated Resource Management	■	■		■				■							■				

Provides many direct links with course content. Students will reinforce, extend and apply a substantial number of knowledge and/or skill components in practical contexts.



Provides some links with course content, usually through the application of related technologies and/or processes.



LINKAGES – Forestry: Connections with Environmental and Outdoor Education 7, 8 and 9 ★

CTS Courses: Forestry

Themes/Topics: Environmental and Outdoor Education	Why Forestry?	Forest Regions of Canada	Outdoor Experiences 1	Mapping & Aerial Photos	Measuring the Forest 1	Forest Ecology 1	Forests Forever 1	Making a Difference	Managing Alberta Forests	Outdoor Experiences 2	Measuring the Forest 2	Harvest Practices	Forests Forever 2	Users in the Forest	Issues in Forestry	Measuring the Forest 3	The Forest Marketplace	Forest Technology Applications	Forest Ecology 2	Silviculture	Integrated Resource Management
	FOR 1010	FOR 1020	WLD 1030	FOR 1050	FOR 1060	FOR 1090	FOR 1100	FOR 2010	FOR 2030	WLD 2030	FOR 2060	FOR 2070	FOR 2100	FOR 2120	FOR 3010	FOR 3060	FOR 3070	FOR 3080	FOR 3090	FOR 3110	FOR 3120
OUTDOOR CORE																					
Regard for self, others and the environment			X	X	X					X	X					X					
Trip preparation and safety			X							X											
Safe and comfortable outdoor living skills			X							X											
Applying information for safe route planning			X	X						X											
Environmentally responsible outdoor activities			X		X					X	X					X				X	
Physical fitness for outdoor activities																					
PERSONAL AND GROUP DEVELOPMENT																					
Respect and appreciation for self and others	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Setting realistic goals	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Personal communication skills	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Relationship of individuals to groups	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Group process skills	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ENVIRONMENTAL CORE																					
Diversity of environments and life forms	X	X				X													X		
Interactions within environments	X	X				X													X	X	
Natural and human changes to the environment	X					X	X						X		X				X		
Air, water and soil cycles	X					X													X	X	
The sun as the primary energy source on Earth						X													X		
OUTDOOR EXPEDITIONS																					
Skill and judgement in outdoor expeditions			X	X	X					X	X					X					X
Positive self-concept and regard for others			X							X											
Group problem solving and group living skills			X							X											
Regard for environments and responsible outdoor judgement			X	X	X					X	X					X				X	
ENVIRONMENTAL INVESTIGATIONS																					
Environmental investigation skills		X				X													X	X	
Strategies for responding to environmental concerns							X	X					X		X						X
COMMITMENT TO ACTION																					
Outdoor recreation as part of healthy lifestyle			X							X											
Appreciation of environments through respectful use	X		X				X	X		X			X		X						X
Responsible use of local and global environments	X		X				X	X		X			X		X						X
Plans to make personal growth a lifelong process								X							X						

★September 1997: All practical arts courses replaced by Career and Technology Studies.

TRANSITIONS – Forestry: Related Occupations

Information for this chart was obtained from the National Occupational Classification (NOC) descriptions.

Educational Requirements:

D: High School Education
C: Apprenticeship

B: College or Vocational Education
A: University

STRAND-RELATED OCCUPATIONS		EDUCATION REQUIREMENTS			
Occupation Profile	NOC#	D	C	B	A
Arborist	2225			✓	✓
Biochemist	2112				✓
Biologist and Related Scientist	2121				✓
Botanist	2121				✓
Chemist	2112				✓
Chainsaw and Skidder Operators	8421	✓			
Environmental Auditor	2263				✓
Environmental Education Specialist	4161				✓
Environmental Engineer	2131				✓
Forest Technologist	2223			✓	
Forester/Forestry Scientist	2122				✓
Forestry Professionals	2122				✓
Forestry Worker	8422			✓	
Hazardous Waste Management Technician	2263			✓	
Hydrologist	2113				✓
Inspectors in Public and Environmental Health and Occupational Health and Safety	2263			✓	✓
Interpretive Naturalist	2121			✓	✓
Labourers in Wood, Pulp and Paper Processing	9614	✓			
Land Surveyor	2154				✓
Land Use/Community Planner (Urban, Regional, Park)	2153				✓
Logging and Forestry Labourers	8616	✓			
Logging Machinery Operators	8241	✓			
Lumber Graders and Other Wood Processing Inspectors and Graders	9436	✓			
Other Wood Processing Machine Operators	9434	✓			
Paper Converting Machine Operators	9435	✓			
Papermaking and Coating Control Operators	9234	✓			
Papermaking and Finishing Machine Operators	9433	✓			
Pollution Control Technician	2231			✓	
Pulp Mill Machine Operators	9432	✓		✓	
Pulping Control Operators	9233	✓		✓	
Primary Production Managers (except Agriculture)	0911				✓
Sawmill Machine Operators	9431	✓			
Silviculture and Forestry Workers	8422	✓		✓	
Supervisors, Forest Products Processing	9215	✓		✓	
Supervisor, Logging and Forestry	8211	✓		✓	
Utilities Managers	0912			✓	✓

LINKAGES – Forestry: Summary of Post-secondary Programs

	PUBLIC COLLEGES									APPRENTICESHIP TRADE	PRIVATE COLLEGES					TECH. INST.	Banff	UNIVERSITIES				VOCATIONAL COLLEGES						
	Alberta College of Art & Design	Fairview College	Grande Prairie Regional College	Grant-MacEwan Community College	Keyano College	Lakeland College	Lethbridge Community College	Medicine Hat College	Mount Royal College		Olds College	Red Deer College	Alberta College	Augustana University College	Canadian Union College	Concordia College	King's University College, The	North American Baptist College	Northern Alberta Institute of Technology	Southern Alberta Institute of Technology	Banff Centre	Athabasca University	University of Alberta	University of Calgary	University of Lethbridge	AVC - Calgary	AVC - Edmonton	AVC - Lac La Biche
Biological Sciences (including degree programs in Biochemistry, Biology, Botany, Entomology, Genetics, Microbiology & Zoology)			1t2t	2t		1t		1t2t	2t	2t		B	B	B	B						B	BMP hD	BMP hD	BM				
Biological Sciences/Biomedical Engineering Technology (certificate & diploma programs with various specializations)										1t							D											
Environmental Science (various specializations in Conservation & Reclamation, Environmental Monitoring & Conservation Enforcement, Fish & Wildlife, Parks & Recreation, and Renewable Resource/Watershed Management)					1t	D	CD			CD				B2t	B		D		V		B	CM	B					C(34 w)
Environmental Technology/Water & Wastewater Technician									CD								C											C
Forestry, Forest Science/Technology			1t			1t		1t	1t	1t		1t		1t			D				BMP hD		1t					C
Forest/Logging Operations																										C	VC	
Petroleum/Mineral Resource/Land Management										D								V	V									
Leisure, Tourism & Society/ Recreation Administration/Leisure (degree programs with various specializations)						C		1t		2t		1t	1t								BM	B	BM					
Physical Education (degree programs with various specializations)			2t	1t		1t		2t	D1t	2t		B	2t	1t							BMP hD	BM	BM					
Recreation, Leadership & Management/Leisure Services (certificate and diploma programs with various specializations)						CD	D	D										D								C	C	

CODES: B Bachelor's Degree D Diploma (2 years) w weeks
M Master's Degree V Varies m months
Ph.D. Doctoral Degree 1t One-year transfer y years
C Certificate (1 year or less) 2t Two-year transfer

*Information taken from "It's About Time: To Start Thinking About Your Future," Advanced Education and Career Development, 1995.

CREDENTIALLING – *Credentiailling Opportunities in Forestry*

The following credentialling opportunities link with courses in the Forestry strand. Further information (including current contacts) for these and other credentialling opportunities available to CTS students is available through the provincial web site.

Credential/Certificate	Training/ Credentialling Agency	Related CTS Strands/Courses	Program Description
All Terrain Vehicle Rider	Alberta Safety Council	FOR2120: Users in the Forest FOR3120: Integrated Resource Management CTR3040–3080: Practicum Courses	An industry-based credentialling program that offers certification in ATV use for recreational or industrial purposes. Deals with pre-ride inspection, range signals, riding strategies, circles, turns, stops and traversing hills. Certificates are issued upon successful completion of an examination.
Bear Awareness and Avoidance: • Basic • Advanced	Alberta Safety Council	WLD1030: Outdoor Experiences 1 FOR2030: Outdoor Experiences 2 FOR1060: Measuring the Forest 1 FOR2060: Measuring the Forest 2 CTR3040–3080: Practicum Courses CTR2210: Workplace Safety	A safety awareness program that offer certification at two levels. Each course deals with species recognition and bear biology, bear behaviour, avoiding bear problems and bear deterrents. Certificates are issued upon successful completion of an examination.
First Aid in the Wilderness	St. John Ambulance	WLD1030: Outdoor Experiences 1 WLD2030: Outdoor Experiences 2 FOR1060: Measuring the Forest 1 FOR2060: Measuring the Forest 2 CTR3040–3080: Practicum Courses CTR2210: Workplace Safety	A credentialling program designed for individuals who work, live or play in wilderness or remote areas. Deals with how to cope with emergencies and provide first aid in remote settings where medical services are not available. Certificates are issued upon successful completion of an examination.
Canadian Tourism Industry Certification: • Outdoor Guide • Freshwater Angling Guide • Hunting Guide	Alberta Tourism Education Council	WLD1030: Outdoor Experiences 1 WLD2030: Outdoor Experiences 2 CTR3040–3080: Practicum Courses	Industry-based certification programs that address standards established by the tourism industry. Certificates are awarded to individuals who demonstrate occupational standards through written and practical testing.

