

## Course Parameters for Energy and Mines

### Facilities

Some courses in the Energy and Mines scope and sequence can be delivered in a typical classroom setting. Refer to Attachment 4: CTS without Labs in this appendix. Others require access to more specialized in-school and off-campus facilities, such as:

- outdoor environments
- science, design, construction, fabrication and mechanics laboratories
- observation and training sites sponsored by relevant industry, government and/or post-secondary agencies
- resource centres equipped with computer hardware/software and audio-visual material.

Also desirable, though not essential, are instructional facilities that have:

- water and sinks
- display and storage areas for specimens and artifacts
- whiteboards/bulletin boards
- fresh air and fume extraction
- an exterior exit
- telephone service.

Courses that require access to facilities in addition to those present in a typical classroom setting are identified in the Course Parameters. For more information, see the corresponding course in Sections D, E and F of the *Guide to Standards and Implementation*.

### Equipment

An equipment list is provided in the Course Parameters chart. Though not exhaustive, the list identifies recommended and optional equipment for meeting the course outcomes.

Equipment for courses in Energy and Mines can be obtained through a combination of purchasing, borrowing, renting, improvising and constructing. When choosing a suitable option for obtaining equipment, give consideration to:

- adequacy of budgets for purchase
- capabilities regarding in-school maintenance and storage
- the logistics and cost of renting
- potential for loan from industry, government or post-secondary agencies
- joint purchases with other organizations in the community
- opportunities for improvising or constructing.

Teachers may find it desirable to develop a list of additional materials and supplies required for specific learning activities planned within each course.

### Safety Considerations

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

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

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.

## **Instructional Qualifications**

Courses in Energy and Mines can be implemented by Alberta Certified Teachers who have interest in providing instruction in classroom, laboratory and/or outdoor environments. A background in science, social studies and/or relevant industry; i.e., resource exploration, recovery or production, is an asset to those who provide instruction in Energy and Mines courses, particularly at the intermediate and advanced levels. Teachers may find it desirable to access sources of instructional support available from industry, professional associations and consultants, and relevant government agencies; e.g., Alberta Energy.

## **Credentiailling Opportunities**

Some courses within the Energy and Mines strand provide opportunities for students to earn either complete or partial credentials recognized by business, industry and/or post-secondary institutions. Courses that link with credentiailling opportunities relevant to the exploration, recovery and/or production sectors are identified in the Course Parameters chart. For more information regarding the credential, requirement/qualification and credentiailling agency, see the corresponding course in Sections D, E and F of the *Guide to Standards and Implementation*.

## Course Parameters

## ENERGY AND MINES

### LEVEL

- 1 – Introductory
- 2 – Intermediate
- 3 – Advanced

### THEME

- A. Social and Cultural Perspectives
- B. Technology and Applications
- C. Management and Conservation

### EQUIPMENT

- ✓ Recommended in order to meet course outcomes
- Optional in providing access to supportive learning environments

LEVEL	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	
THEME	A	B	B	B	C	C	A	B	B	B	B	B	B	C	C	A	B	B	B	B	B	B	B	C	C	
INSTRUCTIONAL QUALIFICATIONS																										
INSTRUCTIONAL FACILITIES		*	*	*	*			*	*	*	*	*	*				*	*	*		*	*		*		
CREDENTIALLING OPPORTUNITIES							*							*	*		*									
EQUIPMENT	1010	1020	1050	1060	1090	1100	2010	2020	2030	2040	2050	2060	2070	2080	2090	2100	3010	3020	3030	3040	3050	3060	3070	3080	3090	3100
	Overview of Alberta Geology	Nonrenewable Resources	Renewable Resources	Consumer Products & Services	Fundamentals of Recycling	Conservation Challenge	Managing Alberta's Resources	Conventional Oil/Gas 1	Oil Sands/Heavy Oil/Coal 1	Metals/Nonmetals 1	Renewable Energy Technology	Refining Hydrocarbons	Refining Rocks & Minerals	Supply & Distribution	Energy Designs/Systems 1	Environmental Safety	Energy & the Environment	Conventional Oil/Gas 2	Oil Sands/Heavy Oil/Coal 2	Metals/Nonmetals 2	Sustainable Energy	Petrochemicals	Industrial Materials	Market Basics & Trends	Energy Designs/Systems 2	Integrated Resource Management
Anemometer			○								○															
Blueprints, home, office															✓										✓	
Computer and software						○									○										○	
Electrical generator			✓								○															
Fuel cell			○								○															
Gas detector		○						○	○	○								○	○	○						
Kit, air testing					○				○								○									
soil testing					○				○								○									
water testing					○				○								○									
Magnifying glass, large			○								○															
Maps, aerial		○						✓	✓	✓																
geological	✓	✓						✓	✓	✓																
meteorological															✓										✓	
topographical	✓							✓	✓	✓																
Meter, pH testing					○											○										

\* Refer to specific 1-credit courses listed in Sections D, E and F of the corresponding *Guide to Standards and Implementation* for additional information.

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THEME	A	B	B	B	C	C	A	B	B	B	B	B	B	B	C	C	A	B	B	B	B	B	B	B	C	C
INSTRUCTIONAL QUALIFICATIONS																										
INSTRUCTIONAL FACILITIES		*	*	*	*			*	*	*	*	*	*	*				*	*	*		*	*		*	
CREDENTIALLING OPPORTUNITIES								*						*			*									
EQUIPMENT	Overview of Alberta Geology	Nonrenewable Resources	Renewable Resources	Consumer Products & Services	Fundamentals of Recycling	Conservation Challenge	Managing Alberta's Resources	Conventional Oil/Gas 1	Oil Sands/Heavy Oil/Coal 1	Metals/Nonmetals 1	Renewable Energy Technology	Refining Hydrocarbons	Refining Rocks & Minerals	Supply & Distribution	Energy Designs/Systems 1	Environmental Safety	Energy & the Environment	Conventional Oil/Gas 2	Oil Sands/Heavy Oil/Coal 2	Metals/Nonmetals 2	Sustainable Energy	Petrochemicals	Industrial Materials	Market Basics & Trends	Energy Designs/Systems 2	Integrated Resource Management
	1010	1020	1050	1060	1090	1100	2010	2020	2030	2040	2050	2060	2070	2080	2090	2100	3010	3020	3030	3040	3050	3060	3070	3080	3090	3100
Mirror, parabolic			○								○															
Model, combustion engine																					○					
Model, energy efficient structure															✓		○								✓	
Personal safety gear (1)								✓	✓	✓	✓	✓	✓					✓	✓	✓		✓	✓			
Sample products, coal		✓		✓																						
mineral		✓		✓																				✓		
petrochemical		✓		✓																						
petroleum		✓									✓							✓	✓			✓				
Sample drill cores	○	○						✓	✓	✓																
Solar cell			○								✓										○					
collector panel			○								✓															
Specimen set, rock and mineral	✓	✓						✓	✓	✓																
Table, drafting															○										○	
Turbine, water			○								✓															
wind			○								✓															

(1) Personal safety gear includes hard hat, safety glasses, ear protectors, gloves, respirator, steel-toed boots, as required.

\* Refer to specific 1-credit courses listed in Sections D, E and F of the corresponding *Guide to Standards and Implementation* for additional information.