

## **COURSE ENS2030: ECOLOGICAL ECONOMICS**

**Level:** Intermediate

**Prerequisite:** ENS1030: Consumerism

**Description:** Students examine the economic effects of local, provincial, national and international environmental policies and look at issues such as the costs and benefits of alternative environmental policies to deal with air pollution, water quality, toxic substances, solid waste and global warming.

**Outcomes:** The student will:

- 1. explore basic economic systems**
  - 1.1 define market, planned and mixed economic systems
  - 1.2 compare and contrast market, planned and mixed economic systems
- 2. compare and contrast ecological and neoclassical (e.g., supply and demand, Keynesian) economic models, considering:**
  - natural capital
  - human capital
  - manufactured capital
  - sustainability
  - externalities (indirect or external costs or benefits)
  - cost-benefit analysis
  - economic analysis and valuation
- 3. use ecological and neoclassical economic models to evaluate a local, provincial or national environmental policy (e.g., environmental regulations, quotas on pollution, taxes and tariffs on pollution, property rights), considering:**
  - natural capital
  - human capital
  - manufactured capital
  - sustainability
  - cost-benefit analysis
  - ethics
  - externalities (indirect or external costs or benefits)
- 4. investigate and discuss Alberta's current economic influences regarding sustainable development**
  - 4.1 determine the primary economic influences in Alberta
  - 4.2 identify policies that affect Alberta's economic and environmental sustainability
  - 4.3 identify actions that affect Alberta's economic and environmental sustainability
- 5. demonstrate basic competencies**
  - 5.1 demonstrate fundamental skills to:
    - 5.1.1 communicate
    - 5.1.2 manage information
    - 5.1.3 use numbers
    - 5.1.4 think and solve problems

- 5.2 demonstrate personal management skills to:
  - 5.2.1 demonstrate positive attitudes and behaviours
  - 5.2.2 be responsible
  - 5.2.3 be adaptable
  - 5.2.4 learn continuously
  - 5.2.5 work safely
- 5.3 demonstrate teamwork skills to:
  - 5.3.1 work with others
  - 5.3.2 participate in projects and tasks
- 6. identify possible life roles related to the skills and content of this cluster**
  - 6.1 recognize and then analyze the opportunities and barriers in the immediate environment
  - 6.2 identify potential resources to minimize barriers and maximize opportunities

## **COURSE ENS2040: ENVIRONMENTAL HEALTH & SAFETY**

**Level:** Intermediate

**Prerequisite:** ENS1040: Living with the Environment

**Description:** Students identify issues related to environmental health and safety that result from activities within Alberta industries and describe specific environmental monitoring and management practices adapted by Alberta government and industry.

**Outcomes:** The student will:

### **1. identify environmental health and safety issues relevant to one of Alberta's industries**

- 1.1 identify environmental health and safety issues relevant to an industry, including but not limited to:
  - 1.1.1 air and water pollution; e.g., odour, particulates, phosphates
  - 1.1.2 blowouts, spills and runoff, and fires; e.g., herbicide and pesticide runoff from farms, controlled burns
  - 1.1.3 emission of sulphur dioxide, carbon dioxide and nitrogen oxide
  - 1.1.4 noise level
  - 1.1.5 disposal of waste
  - 1.1.6 land disturbance; e.g., mining, seismic testing
  - 1.1.7 degradation of wildlife habitat; e.g., monoculture forest and pine beetle infestation
  - 1.1.8 biodiversity
  - 1.1.9 hydrologic cycle
- 1.2 research current environmental health and safety theories, including but not limited to:
  - 1.2.1 global climate change
  - 1.2.2 emissions of greenhouse gases
  - 1.2.3 the effects of chemical spills on food chains
  - 1.2.4 biodiversity and habitat loss
- 1.3 collect and report data on a specific environmental health and safety issue
- 1.4 explain how environmental health and safety concerns relevant to an Alberta industry are addressed through the process of environmental planning, including but not limited to:
  - 1.4.1 land-use management
  - 1.4.2 environmental impact surveys
  - 1.4.3 by-product (waste) management
  - 1.4.4 spill containment, clean up and recovery
  - 1.4.5 monitoring and maintaining air and water quality
  - 1.4.6 rehabilitation, reclamation and restoration

### **2. describe environmental policies and legislation that influence operations within an Alberta industry**

- 2.1 explain how industry, government and other stakeholders work together to resolve environmental concerns
- 2.2 examine provincial and federal legislation regarding protection of the environment; e.g., *Land Stewardship Act*, *Land-use Framework*, *Canadian Environmental Protection Act*
- 2.3 identify specific legislative requirements that relate to operations within an Alberta industry
- 2.4 describe construction and operating approvals required for a specific industry operation
- 2.5 outline strategies for public involvement in environmental law-making
- 2.6 propose changes to existing legislation or suggest new legislation regarding an environmental health and safety concern; e.g., sulphur dioxide and carbon dioxide emissions, water treatment, toxic waste management

- 3. explain environmental monitoring and management practices conducted by an Alberta industry**
  - 3.1 describe the goals and techniques of environmental monitoring within an Alberta industry
  - 3.2 explain operating practices and guidelines within the industry that relate to specific legislative requirements
  - 3.3 describe major aspects of land management within the industry
  - 3.4 examine containment and recovery techniques
  - 3.5 describe the mandates and responsibilities of non-government organizations (NGOs), industry and government in spill control, remediation, restoration and reclamation; e.g., well sites, brownfields (unused or underused industrial sites)
  - 3.6 explain the planning process; e.g., public consultation, permits and approvals, impact assessment
  - 3.7 examine theories and techniques relevant to by-product management within the industry
  - 3.8 examine current and emerging technologies that address environmental health and safety issues and promote sustainable development within the industry
- 4. demonstrate basic competencies**
  - 4.1 demonstrate fundamental skills to:
    - 4.1.1 communicate
    - 4.1.2 manage information
    - 4.1.3 use numbers
    - 4.1.4 think and solve problems
  - 4.2 demonstrate personal management skills to:
    - 4.2.1 demonstrate positive attitudes and behaviours
    - 4.2.2 be responsible
    - 4.2.3 be adaptable
    - 4.2.4 learn continuously
    - 4.2.5 work safely
  - 4.3 demonstrate teamwork skills to:
    - 4.3.1 work with others
    - 4.3.2 participate in projects and tasks
- 5. identify possible life roles related to the skills and content of this cluster**
  - 5.1 recognize and then analyze the opportunities and barriers in the immediate environment
  - 5.2 identify potential resources to minimize barriers and maximize opportunities

## COURSE ENS2050: ENVIRONMENTAL ETHICS

**Level:** Intermediate

**Prerequisite:** None

**Description:** Students will investigate environmental ethics and identify methods for environmental advocacy.

**Supporting Course:** ENS1020: Fostering Stewardship

**Outcomes:** The student will:

- 1. analyze environmental worldviews in a variety of cultures, communities and societies**
  - 1.1 define *environmental worldviews* in terms of beliefs and values
  - 1.2 investigate ethical principles used to determine environmental behaviour
  - 1.3 identify the differences between instrumental (utilitarian) and intrinsic (inherent) values
  - 1.4 investigate major human-centred environmental worldviews; e.g., no-problem, free-market, spaceship-Earth
- 2. compare and contrast life-centred and earth-centred environmental worldviews**
  - 2.1 analyze life-centred worldviews (stewardship), considering but not limited to:
    - 2.1.1 protection of species and spaces
    - 2.1.2 sustainable development
    - 2.1.3 Earth's ecological services; e.g., population control, nutrient recycling, climate control, pollution control, waste treatment, biodiversity, pest and disease control
  - 2.2 analyze earth-centred worldviews (environmental wisdom), considering but not limited to:
    - 2.2.1 existence of nature for all species
    - 2.2.2 availability and utility of resources
    - 2.2.3 imitation of natural processes (biomimicry)
  - 2.3 analyze other related worldviews; e.g., deep ecology, ecofeminism
- 3. explore whether a life-centred or an earth-centred environmental worldview can build a more environmentally sustainable and just society, and defend the position**
  - 3.1 identify some of the main components of an environmentally literate society; e.g., respect for all life, understanding and knowledge of Earth's ecological services, evaluation of environmental consequences
  - 3.2 identify methods of acquiring and developing environmental wisdom
  - 3.3 investigate how lifestyle changes and choices can affect environmental sustainability and social justice
- 4. demonstrate basic competencies**
  - 4.1 demonstrate fundamental skills to:
    - 4.1.1 communicate
    - 4.1.2 manage information
    - 4.1.3 use numbers
    - 4.1.4 think and solve problems
  - 4.2 demonstrate personal management skills to:
    - 4.2.1 demonstrate positive attitudes and behaviours
    - 4.2.2 be responsible
    - 4.2.3 be adaptable
    - 4.2.4 learn continuously
    - 4.2.5 work safely

- 4.3 demonstrate teamwork skills to:
  - 4.3.1 work with others
  - 4.3.2 participate in projects and tasks
- 5. identify possible life roles related to the skills and content of this cluster**
  - 5.1 recognize and then analyze the opportunities and barriers in the immediate environment
  - 5.2 identify potential resources to minimize barriers and maximize opportunities

## COURSE ENS2120: WATER MANAGEMENT 1

**Level:** Intermediate

**Prerequisite:** ENS1115: Resource Management

**Description:** Students will examine water as a vital resource and the need to manage it. Areas of investigation include the uses of and stresses on this resource as well as ways in which water is managed.

**Outcomes:** The student will:

**1. describe the hydrologic cycle**

- 1.1 define *hydrologic cycle*
- 1.2 describe the roles of evaporation, precipitation, run-off and infiltration in the hydrologic cycle
- 1.3 explain physical, chemical and biological changes in water as it cycles in the natural environment

**2. identify and explain factors that stress water resources, including:**

- **population growth**
- **increased affluence**
- **expansion of business activity**
- **rapid urbanization**
- **climate change**
- **depletion of aquifers**
- **pollution**

**3. identify and explain the major components of a water management plan**

- 3.1 identify and illustrate elements of water management, including:
  - 3.1.1 conservation
  - 3.1.2 preservation
  - 3.1.3 monitoring
  - 3.1.4 treatment
- 3.2 research forms of water ownership and legal aspects of water control, including:
  - 3.2.1 public, private and deeded ownership
  - 3.2.2 government controls on pollution
- 3.3 explain how water management programs and policies are developed through political, social, economic and scientific decisions
- 3.4 identify and describe basic steps involved in developing a water management plan; e.g., state goals and objectives, collect data and conduct research, gather government and nongovernment input, consider alternatives, consequences and potential conflicts, select a course of action, implement the action plan, monitor and evaluate outcomes, make recommendations and revisions

**4. identify industrial, personal and environmental water management legislation and policies in Alberta**

- 4.1 identify government agencies and community groups that are involved with water management in the province; e.g., Alberta Environment
- 4.2 research the policies that guide water management in Alberta; e.g., *Land-use Framework*, pioneer water ownership, First Nation water rights, navigation water rights
- 4.3 identify current water challenges experienced in Alberta; e.g., Athabasca River Basin, Bow River, Milk River

- 5. analyze current issues involving water resource management considering alternatives and consequences**
  - 5.1 describe a variety of issues affecting water resource management; e.g., preservation versus conservation, problems with an “ecosystem management” approach, political boundaries and the water systems and people involved, legislation versus no legislation, public perception of water management, the value of water, environmental impact assessment plans and legislation
  - 5.2 explain how philosophies and goals of different water management practices are sometimes incompatible with each other, and how conflicts and compromises may develop
- 6. demonstrate basic competencies**
  - 6.1 demonstrate fundamental skills to:
    - 6.1.1 communicate
    - 6.1.2 manage information
    - 6.1.3 use numbers
    - 6.1.4 think and solve problems
  - 6.2 demonstrate personal management skills to:
    - 6.2.1 demonstrate positive attitudes and behaviours
    - 6.2.2 be responsible
    - 6.2.3 be adaptable
    - 6.2.4 learn continuously
    - 6.2.5 work safely
  - 6.3 demonstrate teamwork skills to:
    - 6.3.1 work with others
    - 6.3.2 participate in projects and tasks
- 7. identify possible life roles related to the skills and content of this cluster**
  - 7.1 recognize and then analyze the opportunities and barriers in the immediate environment
  - 7.2 identify potential resources to minimize barriers and maximize opportunities

## COURSE ENS2130: RENEWABLE & NONRENEWABLE ENERGY RESOURCES

**Level:** Intermediate

**Prerequisite:** ENS1110: Natural Resources

**Description:** Students examine current and potential renewable and nonrenewable energy production, the contributions of each to sustainable energy development, and the effects of these forms of energy production on the environment.

**Outcomes:** The student will:

- 1. describe current and potential sources of energy**
  - 1.1 identify direct and indirect (e.g., wind, hydroelectricity and biomass) forms of solar energy
  - 1.2 identify renewable and nonrenewable forms of commercial energy
  - 1.3 research the basic theories and/or principles regarding an energy technology
  - 1.4 describe current and emerging applications of an energy technology
- 2. analyze the potential environmental and economic impacts of a variety of current and future renewable and nonrenewable energy sources (e.g., conventional oil, oil sands, hydrogen, direct solar, hydro, nuclear, wind, geothermal, biomass, waste, biofuels), considering but not limited to:**
  - **net energy and/or energy returned on energy invested (EROEI)**
  - **availability of source**
  - **cost to develop, phase in and use**
  - **governmental incentives**
  - **national and global economic and political security**
  - **facilities and equipment essential to energy production**
  - **basic steps, including safety measures, involved in energy production**
  - **effects of extraction, transportation and use on the environment**
- 3. evaluate the potential of energy efficiency in the development of sustainable energy resources**
  - 3.1 analyze the net energy efficiency of a variety of energy sources
  - 3.2 identify ways to improve energy efficiency
- 4. evaluate local, provincial and national government strategies for developing a sustainable energy future**
  - 4.1 research government policies that encourage the use of selected energy resources
  - 4.2 research government policies that encourage energy efficiency
  - 4.3 research industry policies that encourage the use of selected energy resources
  - 4.4 research other policies that encourage energy efficiency
- 5. demonstrate basic competencies**
  - 5.1 demonstrate fundamental skills to:
    - 5.1.1 communicate
    - 5.1.2 manage information
    - 5.1.3 use numbers
    - 5.1.4 think and solve problems
  - 5.2 demonstrate personal management skills to:
    - 5.2.1 demonstrate positive attitudes and behaviours
    - 5.2.2 be responsible
    - 5.2.3 be adaptable
    - 5.2.4 learn continuously
    - 5.2.5 work safely

- 5.3 demonstrate teamwork skills to:
  - 5.3.1 work with others
  - 5.3.2 participate in projects and tasks
- 6. identify possible life roles related to the skills and content of this cluster**
  - 6.1 recognize and then analyze the opportunities and barriers in the immediate environment
  - 6.2 identify potential resources to minimize barriers and maximize opportunities

## **COURSE ENS2140: BY-PRODUCT MANAGEMENT**

**Level:** Intermediate

**Prerequisite:** ENS1115: Resource Management

**Description:** Students examine the by-product (waste) management of natural and manufactured materials and identify its relationship to sustainable development.

**Parameters:** Access to government-, industry- and/or community-sponsored waste management facilities and systems.

Access to a science laboratory.

**Outcomes:** The student will:

### **1. present a rationale for by-product (waste) management**

- 1.1 describe societal trends in the consumption of material goods and the generation of by-product material
- 1.2 examine problems and alternatives associated with the disposal of by-product materials at local and global levels
- 1.3 analyze economic and environmental trade-offs that occur through the by-product management of natural or manufactured materials; e.g., compost, wood, rubber, plastic, paper
- 1.4 identify and explain current legislation that supports by-product management

### **2. describe the four Rs of by-product management: reduce, reuse, recycle and recover**

- 2.1 explain the four Rs as an environmental hierarchy of options for conserving resources and managing by-products
- 2.2 identify potential benefits and costs associated with the four Rs of by-product management; e.g., use of energy and other natural resources, impact on pollution, litter and the environment, cost related to collecting and processing materials, storage of toxic and radioactive materials
- 2.3 illustrate one example of by-product management in Alberta that uses at least one of the four Rs

### **3. identify opportunities related to managing by-products**

- 3.1 describe products or services that may be developed from the management of organic and inorganic by-products; e.g., glass, scrap metal, plant material, paper, recycling depots, transportation, manufacturing, haz-mat crews
- 3.2 explore systems that have the potential to reduce energy consumption and/or by-product generation; e.g., cogeneration, methane capture, use of waste heat
- 3.3 identify and locate by-product management facilities and systems currently used in Alberta; e.g., landfills, recycling depots, Swan Hills Treatment Centre, compost, community sorting centres, landfill gas recovery
- 3.4 explain techniques used to control quality within the by-product management industry; e.g., inspection and sorting of raw materials, product quality and uniformity
- 3.5 identify a strategy for personal involvement in the by-product management of an organic or inorganic material; e.g., glass, metal, cellulose, petrochemical

**4. demonstrate basic competencies**

4.1 demonstrate fundamental skills to:

- 4.1.1 communicate
- 4.1.2 manage information
- 4.1.3 use numbers
- 4.1.4 think and solve problems

4.2 demonstrate personal management skills to:

- 4.2.1 demonstrate positive attitudes and behaviours
- 4.2.2 be responsible
- 4.2.3 be adaptable
- 4.2.4 learn continuously
- 4.2.5 work safely

4.3 demonstrate teamwork skills to:

- 4.3.1 work with others
- 4.3.2 participate in projects and tasks

**5. identify possible life roles related to the skills and content of this cluster**

- 5.1 recognize and then analyze the opportunities and barriers in the immediate environment
- 5.2 identify potential resources to minimize barriers and maximize opportunities

## **COURSE ENS2210: SUSTAINABLE BUILDING DESIGN & CONSTRUCTION**

**Level:** Intermediate

**Prerequisite:** ENS1020: Fostering Stewardship

**Description:** Students investigate sustainable building trends to reduce energy consumption, resource consumption and waste production. Areas of investigation include building techniques, material usage and life cycle management.

**Supporting Courses:** DES3095: Architectural Design  
DES3115: Industrial Design  
DES3125: Interior Design  
DES3135: Landscape Design

**Outcomes:** The student will:

- 1. describe the impact of built environments on the natural environment, considering:**
  - use of energy, water, air, land, forest and mineral resources
  - occupant health and productivity
  - waste, pollution and environmental degradation
  - effects on biodiversity
- 2. identify and describe the elements of a built environment's life cycle, including but not limited to:**
  - location, siting and design
  - construction
  - operation and maintenance
  - renovation
  - deconstruction and/or demolition
- 3. investigate and analyze trends in sustainable building design and construction**
  - 3.1 identify and describe building trends that consider occupant health; e.g., exposure to natural light, floor plans, air quality and flow, acoustics, materials
  - 3.2 explain the effects of volatile organic compounds (VOCs) and the off-gases they produce; e.g., finishing paints, carpets, plastics
  - 3.3 describe ergonomic interior design; e.g., counter heights, illumination location, step heights
  - 3.4 analyze efficient building practices that consider energy and water usage; e.g., solar collection, climate specific vegetation, natural air currents, rain water collection
  - 3.5 identify and describe new technologies in building design; e.g., centralized water usage systems, helical wind turbines, photovoltaic materials
  - 3.6 investigate, explain and analyze sustainable building and design certifications (e.g., LEED, the Green Globes system, high performance building), considering:
    - 3.6.1 efficient use of energy, water, land and other resources
    - 3.6.2 protecting occupant health and increasing productivity
    - 3.6.3 reducing waste, pollution and environmental degradation
    - 3.6.4 effects on biodiversity

- 4. investigate and illustrate alternatives and consequences associated with current issues involving sustainable building design and construction**
  - 4.1 analyze a variety of issues and problems affecting building design and construction; e.g., legislation versus no legislation, public perception of sustainable building design and construction, the value of sustainability, environmental impact assessment plans and legislation
  - 4.2 explain how philosophies and goals of different sustainable building design and construction practices are sometimes incompatible with each other, and how conflicts and trade-offs may occur
- 5. create, present and defend a sustainable building design, considering:**
  - **the building's life cycle**
  - **occupant health**
  - **recycling, reducing and reusing waste**
  - **ergonomic interior design**
  - **efficient energy and water usage**
  - **new technologies in building design**
  - **conservation and preservation of biodiversity**
  - **reclamation of brownfield land (unused and underused commercial and industrial land)**
  - **community revitalization**
- 6. demonstrate basic competencies**
  - 6.1 demonstrate fundamental skills to:
    - 6.1.1 communicate
    - 6.1.2 manage information
    - 6.1.3 use numbers
    - 6.1.4 think and solve problems
  - 6.2 demonstrate personal management skills to:
    - 6.2.1 demonstrate positive attitudes and behaviours
    - 6.2.2 be responsible
    - 6.2.3 be adaptable
    - 6.2.4 learn continuously
    - 6.2.5 work safely
  - 6.3 demonstrate teamwork skills to:
    - 6.3.1 work with others
    - 6.3.2 participate in projects and tasks
- 7. identify possible life roles related to the skills and content of this cluster**
  - 7.1 recognize and then analyze the opportunities and barriers in the immediate environment
  - 7.2 identify potential resources to minimize barriers and maximize opportunities

## **COURSE ENS2220: ENERGY CONSERVATION PRINCIPLES**

**Level:** Intermediate

**Prerequisite:** None

**Description:** Students investigate the basic principles of energy conservation and efficiency and relate them to energy designs and systems used in residential, commercial or transportation sectors.

**Outcomes:** The student will:

### **1. explain basic principles of energy conservation and efficiency**

- 1.1 identify basic forms of energy (radiant, chemical, thermal, mechanical, electrical, nuclear) and describe the applications of each form
- 1.2 illustrate or represent how the sun is the source of various forms of energy
- 1.3 distinguish between energy and power
- 1.4 distinguish between kinetic and potential energy
- 1.5 provide a rationale for energy conservation and efficiency based on economic and environmental factors
- 1.6 cite examples of energy technologies used to convert one form of energy into another useful form; e.g., turbines, generators, motors, electric bulbs
- 1.7 demonstrate an understanding and explain the applications of the first law of thermodynamics and the second law of thermodynamics
- 1.8 define energy efficiency and explain its application in determining how well a technology converts energy from one form to another

### **2. demonstrate applications of energy technologies in the residential, commercial or transportation sectors**

- 2.1 identify energy sources and illustrate the flow of energy for an existing residential or commercial structure or transportation system
- 2.2 demonstrate an understanding of the functions of technology in converting energy into useful forms within one structure or system, including component parts and principles of operation
- 2.3 illustrate and/or describe applications of energy conservation and efficiency evident in one structure or system design; e.g., mechanical efficiency, volumetric efficiency, thermal efficiency
- 2.4 explain design principles incorporated to transfer energy throughout one structure or system
- 2.5 research methods used to measure energy and power within one structure or system; e.g., British thermal unit and calorie, joules, kilowatt hours, watts, horsepower, torque
- 2.6 perform simple efficiency calculations and compare energy input and output for components within one structure or system; e.g., windows, lighting, wall structure, insulation, mechanical devices
- 2.7 evaluate energy use within one structure or system based on total system efficiency, cost of operation and environmental and social effects, considering such things as land use, atmospheric emissions, health, convenience and aesthetics

### **3. demonstrate basic competencies**

- 3.1 demonstrate fundamental skills to:
  - 3.1.1 communicate
  - 3.1.2 manage information
  - 3.1.3 use numbers
  - 3.1.4 think and solve problems

- 3.2 demonstrate personal management skills to:
  - 3.2.1 demonstrate positive attitudes and behaviours
  - 3.2.2 be responsible
  - 3.2.3 be adaptable
  - 3.2.4 learn continuously
  - 3.2.5 work safely
- 3.3 demonstrate teamwork skills to:
  - 3.3.1 work with others
  - 3.3.2 participate in projects and tasks
- 4. identify possible life roles related to the skills and content of this cluster**
  - 4.1 recognize and then analyze the opportunities and barriers in the immediate environment
  - 4.2 identify potential resources to minimize barriers and maximize opportunities

## **COURSE ENS2910: ENS PROJECT B**

**Level:** Intermediate

**Prerequisite:** None

**Description:** Students develop project design and management skills to extend and enhance competencies and skills in other CTS courses through contexts that are personally relevant.

**Parameters:** Intermediate project courses must connect with a minimum of two CTS courses, one of which must be at the intermediate level and be in the same occupational area as the project course. The other CTS course(s) can be at any level from any occupational area.

Project courses cannot be connected to other project courses or practicum courses.

**All projects and/or performances, whether teacher- or student-led, must include a course outline or student proposal.**

### **Outcomes:**

The teacher/student will:

- 1. identify the connection between this project course and two or more CTS courses**
  - 1.1 identify the outcome(s) from each identified CTS course that support the project and/or performance deliverables
  - 1.2 explain how these outcomes are being connected to the project and/or performance deliverables
- 2. propose the project and/or performance**
  - 2.1 identify the project and/or performance by:
    - 2.1.1 preparing a plan
    - 2.1.2 clarifying the purposes
    - 2.1.3 defining the deliverables
    - 2.1.4 specifying time lines
    - 2.1.5 explaining terminology, tools and processes
    - 2.1.6 defining resources; e.g., materials, costs, staffing
  - 2.2 identify and comply with all related health and safety standards
  - 2.3 define assessment standards (indicators for success)
  - 2.4 present the proposal and obtain necessary approvals

The student will:

- 3. meet goals as defined within the plan**
  - 3.1 complete the project and/or performance as outlined
  - 3.2 monitor the project and/or performance and make necessary adjustments
  - 3.3 present the project and/or performance, indicating the:
    - 3.3.1 outcomes attained
    - 3.3.2 relationship of outcomes to goals originally set

- 3.4 evaluate the project and/or performance, indicating the:
  - 3.4.1 processes and strategies used
  - 3.4.2 recommendations on how the project and/or performance could have been improved
- 4. demonstrate basic competencies**
  - 4.1 demonstrate fundamental skills to:
    - 4.1.1 communicate
    - 4.1.2 manage information
    - 4.1.3 use numbers
    - 4.1.4 think and solve problems
  - 4.2 demonstrate personal management skills to:
    - 4.2.1 demonstrate positive attitudes and behaviours
    - 4.2.2 be responsible
    - 4.2.3 be adaptable
    - 4.2.4 learn continuously
    - 4.2.5 work safely
  - 4.3 demonstrate teamwork skills to:
    - 4.3.1 work with others
    - 4.3.2 participate in projects and tasks
- 5. identify possible life roles related to the skills and content of this cluster**
  - 5.1 recognize and then analyze the opportunities and barriers in the immediate environment
  - 5.2 identify potential resources to minimize barriers and maximize opportunities

## **COURSE ENS2920: ENS PROJECT C**

**Level:** Intermediate

**Prerequisite:** None

**Description:** Students develop project design and management skills to extend and enhance competencies and skills in other CTS courses through contexts that are personally relevant.

**Parameters:** Intermediate project courses must connect with a minimum of two CTS courses, one of which must be at the intermediate level and be in the same occupational area as the project course. The other CTS course(s) can be at any level from any occupational area.

Project courses cannot be connected to other project courses or practicum courses.

**All projects and/or performances, whether teacher- or student-led, must include a course outline or student proposal.**

### **Outcomes:**

The teacher/student will:

- 1. identify the connection between this project course and two or more CTS courses**
  - 1.1 identify the outcome(s) from each identified CTS course that support the project and/or performance deliverables
  - 1.2 explain how these outcomes are being connected to the project and/or performance deliverables
- 2. propose the project and/or performance**
  - 2.1 identify the project and/or performance by:
    - 2.1.1 preparing a plan
    - 2.1.2 clarifying the purposes
    - 2.1.3 defining the deliverables
    - 2.1.4 specifying time lines
    - 2.1.5 explaining terminology, tools and processes
    - 2.1.6 defining resources; e.g., materials, costs, staffing
  - 2.2 identify and comply with all related health and safety standards
  - 2.3 define assessment standards (indicators for success)
  - 2.4 present the proposal and obtain necessary approvals

The student will:

- 3. meet goals as defined within the plan**
  - 3.1 complete the project and/or performance as outlined
  - 3.2 monitor the project and/or performance and make necessary adjustments
  - 3.3 present the project and/or performance, indicating the:
    - 3.3.1 outcomes attained
    - 3.3.2 relationship of outcomes to goals originally set

- 3.4 evaluate the project and/or performance, indicating the:
  - 3.4.1 processes and strategies used
  - 3.4.2 recommendations on how the project and/or performance could have been improved
- 4. demonstrate basic competencies**
  - 4.1 demonstrate fundamental skills to:
    - 4.1.1 communicate
    - 4.1.2 manage information
    - 4.1.3 use numbers
    - 4.1.4 think and solve problems
  - 4.2 demonstrate personal management skills to:
    - 4.2.1 demonstrate positive attitudes and behaviours
    - 4.2.2 be responsible
    - 4.2.3 be adaptable
    - 4.2.4 learn continuously
    - 4.2.5 work safely
  - 4.3 demonstrate teamwork skills to:
    - 4.3.1 work with others
    - 4.3.2 participate in projects and tasks
- 5. identify possible life roles related to the skills and content of this cluster**
  - 5.1 recognize and then analyze the opportunities and barriers in the immediate environment
  - 5.2 identify potential resources to minimize barriers and maximize opportunities

## **COURSE ENS2950: ENS INTERMEDIATE PRACTICUM**

**Level:** Intermediate

**Prerequisite:** None

**Description:** Students apply prior learning and demonstrate the attitudes, skills and knowledge required by an external organization to achieve a credential/credentials or an articulation.

**Parameters:** This practicum course, which may be delivered on- or off-campus, should be accessed only by students continuing to work toward attaining a recognized credential/credentials or an articulation offered by an external organization. This course must be connected to at least one CTS course from the same occupational area and cannot be used in conjunction with any advanced (3XXX) level course. A practicum course cannot be delivered as a stand-alone course, cannot be combined with a CTS project course and cannot be used in conjunction with the Registered Apprenticeship Program or the Green Certificate Program.

**Outcomes:** The student will:

- 1. perform assigned tasks and responsibilities, as required by the organization granting the credential(s) or articulation**
  - 1.1 identify regulations and regulatory bodies related to the credential(s) or articulation
  - 1.2 describe personal roles and responsibilities, including:
    - 1.2.1 key responsibilities
    - 1.2.2 support functions/responsibilities/expectations
    - 1.2.3 code of ethics and/or conduct
  - 1.3 describe personal work responsibilities and categorize them as:
    - 1.3.1 routine tasks; e.g., daily, weekly, monthly, yearly
    - 1.3.2 non-routine tasks; e.g., emergencies
    - 1.3.3 tasks requiring personal judgement
    - 1.3.4 tasks requiring approval of a supervisor
  - 1.4 demonstrate basic employability skills and perform assigned tasks and responsibilities related to the credential(s) or articulation
- 2. analyze personal performance in relation to established standards**
  - 2.1 evaluate application of the attitudes, skills and knowledge developed in related CTS courses
  - 2.2 evaluate standards of performance in terms of:
    - 2.2.1 quality of work
    - 2.2.2 quantity of work
  - 2.3 evaluate adherence to workplace legislation related to health and safety
  - 2.4 evaluate the performance requirements of an individual who is trained, experienced and employed in a related occupation in terms of:
    - 2.4.1 training and certification
    - 2.4.2 interpersonal skills
    - 2.4.3 technical skills
    - 2.4.4 ethics

**3. demonstrate basic competencies**

3.1 demonstrate fundamental skills to:

- 3.1.1 communicate
- 3.1.2 manage information
- 3.1.3 use numbers
- 3.1.4 think and solve problems

3.2 demonstrate personal management skills to:

- 3.2.1 demonstrate positive attitudes and behaviours
- 3.2.2 be responsible
- 3.2.3 be adaptable
- 3.2.4 learn continuously
- 3.2.5 work safely

3.3 demonstrate teamwork skills to:

- 3.3.1 work with others
- 3.3.2 participate in projects and tasks

**4. identify possible life roles related to the skills and content of this cluster**

- 4.1 recognize and then analyze the opportunities and barriers in the immediate environment
- 4.2 identify potential resources to minimize barriers and maximize opportunities