



8 2 3 2

EXPLORATION OF  
SUSTAINABLE ENERGY (9)

15S/15E/15M

10S/10E/10M

A Sustainable Energy Course



# 8232: EXPLORATION OF SUSTAINABLE ENERGY (9) 15S/15E/15M AND 10S/10E/10M

## Course Description

This optional course can be taught as either a half credit or a full credit. It provides a broad introduction to the field of sustainable energy. Students will explore historical, current, and emerging alternative energy uses in Manitoba. They will also focus on safety practices and procedures.

---

**Goal 1:** Describe and apply appropriate **health and safety practices** as they relate to the sustainable energy industry.

**GLO 1.1:** Demonstrate adherence to **safety practices and procedures for facilities, processes, tools, and equipment** used in the sustainable energy industry.

- SLO 9.1.1.1: Demonstrate adherence to safety practices and procedures for facilities, processes, tools, and equipment used in the sustainable energy industry.
  - SLO 9.1.1.2: Identify health and safety requirements.
  - SLO 9.1.1.3: Identify personal protective equipment (PPE) and procedures.
  - SLO 9.1.1.4: Identify electrical safety practices and procedures.
  - SLO 9.1.1.5: Identify fire safety practices and procedures.
  - SLO 9.1.1.6: Identify ergonomic considerations related to the sustainable energy industry.
  - SLO 9.1.1.7: Identify hazard recognition and control practices.
  - SLO 9.1.1.8: Describe the hazards of confined space entry.
  - SLO 9.1.1.9: Identify safety requirements as they apply to the Workplace Hazardous Materials Information System (WHMIS).
  - SLO 9.1.1.10: Describe the identification and control of specified hazards.
  - SLO 9.1.1.11: Identify safe work practices related to the sustainable energy industry.
  - SLO 9.1.1.12: Identify safety guidelines related to the sustainable energy industry.
  - SLO 9.1.1.13: Identify safe material-handling procedures.
  - SLO 9.1.1.14: Read, interpret, and communicate safety information (e.g., material safety data sheets [MSDS]) related to sustainable energy.
-

---

**Goal 2:** Demonstrate the safe and appropriate **operation, handling, cleaning, maintenance, and storage** of **equipment, tools, materials, products, and consumable items**.

**GLO 2.1:** Demonstrate the safe and appropriate **operation and handling** of equipment, tools, materials, products, and consumable items.

SLO 9.2.1.1: Demonstrate the safe and appropriate operation and handling of hand tools (e.g., hammer, saw, screwdriver, wrench, pliers, metal cutters, utility knife).

SLO 9.2.1.2: Demonstrate the safe and appropriate operation and handling of power tools (e.g., drill, skill saw, table saw).

---

**GLO 2.2:** Demonstrate the safe and appropriate **cleaning, maintenance, and storage** of equipment, tools, materials, products, and consumable items.

SLO 9.2.2.1: Demonstrate the safe and appropriate cleaning, maintenance, and storage of hand tools (e.g., hammer, saw, screwdriver, wrench, pliers, metal cutters, utility knife).

SLO 9.2.2.2: Demonstrate the safe and appropriate cleaning, maintenance, and storage of power tools (e.g., drill, skill saw, table saw).

---

**Goal 3:** Demonstrate an understanding of **demand-side management (DSM)** as it applies to sustainable energy.

**GLO 3.1:** Demonstrate an understanding of **DSM** as it applies to sustainable energy.

No applicable SLOs.

---

**Goal 4:** Demonstrate the knowledge and skills required to **promote and plan sustainable energy systems**.

**GLO 4.1:** Demonstrate the knowledge and skills required to **promote** sustainable energy systems.

No applicable SLOs.

---

**GLO 4.2:** Demonstrate the knowledge and skills required to **plan** sustainable energy systems.

No applicable SLOs.

---

---

**Goal 5:** Demonstrate the knowledge and skills required to **install or convert sustainable energy systems**.

**GLO 5.1:** Demonstrate the knowledge and skills required to **perform the installation or conversion** of sustainable energy systems.

No applicable SLOs.

---

**Goal 6:** Demonstrate the knowledge and skills required to **maintain sustainable energy systems**.

**GLO 6.1:** Demonstrate the knowledge and skills required to **perform preventive maintenance** of sustainable energy systems.

No applicable SLOs.

---

**GLO 6.2:** Demonstrate the knowledge and skills required to **diagnose malfunctions** in sustainable energy systems.

No applicable SLOs.

---

**GLO 6.3:** Demonstrate the knowledge and skills required to **repair** sustainable energy systems.

No applicable SLOs.

---

**Goal 7:** Describe and apply transferable **cross-curricular knowledge and skills** as they relate to sustainable energy.

**GLO 7.1:** Demonstrate **information and communication technology** skills required in the sustainable energy industry.

SLO 9.7.1.1: Demonstrate the use of information and communication technology to research topics in sustainable energy.

---

**GLO 7.2:** **Read, interpret, and communicate information** related to the sustainable energy industry.

No applicable SLOs.

---

**GLO 7.3:** Demonstrate knowledge of **mathematical** concepts and skills related to the sustainable energy industry.

SLO 9.7.3.1: Solve problems involving fractions.

SLO 9.7.3.2: Solve problems involving decimals.

SLO 9.7.3.3: Solve problems involving percentages and ratios.

SLO 9.7.3.4: Solve problems involving measurements.

SLO 9.7.3.5: Solve problems involving geometric formulas.

---

**GLO 7.4:** Demonstrate knowledge of **science** as it relates to the sustainable energy industry.

No applicable SLOs.

---

**GLO 7.5:** Demonstrate knowledge of **physical education/health education** as it relates to the sustainable energy industry.

No applicable SLOs.

---

**Goal 8:** Demonstrate an understanding of the **ethical and legal standards** that pertain to the sustainable energy industry.

**GLO 8.1:** Demonstrate an awareness of the **ethical and legal expectations** of the sustainable energy industry.

No applicable SLOs.

---

**Goal 9:** Practise **employability skills** required in the sustainable energy industry.

**GLO 9.1:** Demonstrate **employability skills**.

SLO 9.9.1.1: Demonstrate problem-solving skills.

SLO 9.9.1.2: Demonstrate critical thinking skills.

SLO 9.9.1.3: Demonstrate regular attendance and punctuality.

SLO 9.9.1.4: Demonstrate accountability by taking responsibility for own actions.

SLO 9.9.1.5: Demonstrate adaptability, initiative, and effort.

SLO 9.9.1.6: Demonstrate the ability to accept feedback and to follow direction.

SLO 9.9.1.7: Demonstrate teamwork skills.

SLO 9.9.1.8: Demonstrate the ability to stay on task and to make effective use of time in class and shop environments.

SLO 9.9.1.9: Demonstrate the ability to communicate respectfully and effectively with co-workers and customers.

---

---

**Goal 10:** Demonstrate an awareness of **sustainability** as it pertains to the sustainable energy industry.

**GLO 10.1:** Describe the impact of **sustainability** on the **health and well-being** of sustainable energy industry workers, their customers, and those who are affected by their products and services.

No applicable SLOs.

---

**GLO 10.2:** Describe the sustainable energy industry's **sustainability practices and their impact on the environment**.

No applicable SLOs.

---

**GLO 10.3:** Describe the **relationship between the economy and sustainability practices** within the sustainable energy industry.

No applicable SLOs.

---

**Goal 11:** Demonstrate an understanding of **career options** in sustainable energy.

**GLO 11.1:** Describe **apprenticeship, post-secondary education, and employment opportunities** related to sustainable energy.

No applicable SLOs.

---

**Goal 12:** Demonstrate an understanding of the **evolution** of sustainable energy, including its **technological progression** and **emerging trends**.

**GLO 12.1:** Demonstrate an understanding of the **evolution** of sustainable energy, including its **technological progression** and **emerging trends**.

SLO 9.12.1.1: Discuss how the cost of sustainable energy technologies per unit decreases and performance increases over time.

SLO 9.12.1.2: Discuss how sustainable energy systems will become economically more attractive as fossil fuels become scarcer.

---

