SAULT COLLEGE

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE: Renewable Energy

CODE NO. : NET 211 **SEMESTER:** 4

PROGRAM: Natural Environment Technician / Technologist (NET)

AUTHOR: Brian Anstess

DATE: Jan. '16 **PREVIOUS OUTLINE :** Jan '15

APPROVED: 'Colin Kirkwood' Jan. '16

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Dean **DATE**

TOTAL CREDITS: 2

PREREQUISITE(S):

HOURS/WEEK: 2

For additional information, please contact Colin Kirkwood, Dean, Environment and Design

(705) 759-2554, Ext.2688

I. COURSE DESCRIPTION:

NET 211, Renewable Energy, provides a background on the utilization of natural resources for Energy. Fundamental energy principles, history, and current trends are the foundation of the course. This will transition into a study of the effects human lifestyles have on energy demand and how this relates to global sustainability. Students will critically evaluate how to best meet the escalating demand for energy in a more efficient and sustainable manner.

An appreciation will be fostered for the need to shift our consumptive habits to utilize more stringent conservation efforts and alternative fuels. This will include a technical introduction and application of energy conservation techniques. Students will learn why energy conservation is the first line of defense in developing a renewable energy strategy and how it drives the present move to green construction.

Various types of renewable energy technologies will be studied discussing, how they work and resources they utilize. Merits of these power sources will be considered along with the drawbacks, to provide an overall view of the future of renewable energies. Students will consider appropriate legislation while assessing site specific criteria for energy development and have the opportunity to utilize relevant software.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course, the student will demonstrate the ability to:

1. Understand the history and use of energy in society and the threats associated with the present trends in energy use and consumption.

Potential Elements of the Performance:

- Describe Canada's role in global energy production and consumption and compare to other global countries
- Show which forms of energy and energy use patterns we are currently consuming that could be more efficiently applied to the various energy use sectors
- List the present energy types and the key consumers and describe how and which are the most efficient and have the greatest opportunity for conservation

2. Explain and demonstrate an understanding of essential energy concepts

   Potential Elements of the Performance:

   - Identify and describe the different energy measurement terminologies and their interrelationship to energy use and data collection and analysis.
   - Identify the different forms of energy and the different ways they are transformed, transferred and used.
   - Identify the three pillars of energy conservation and key factors effecting energy use
   - Relate how these transformations could relate to conservation efforts in industrial, commercial, residential and transportation applications

3. Describe laws and guidelines available to support energy conservation and renewable energy technologies

   Potential Elements of the Performance:

   - Outline the major components of the Green Energy Act
   - Demonstrate knowledge of the FIT and Microfit Programs
   - Discuss additional incentives and opportunities available in the renewable energy field

4. Understand the different ways that energy is produced to meet demand

   Potential Elements of the Performance:

   - Distinguish between alternative, renewable and non-renewable energy technologies
   - Describe the resources involved with these technologies
   - Evaluate pros and cons of various energy technologies
   - Perform a cost benefit analysis of energy technologies
   - Utilize appropriate software to perform an analysis

6. Identify ways to apply the Natural Environment Technician / Technologist skill set to a career in renewable energy

Potential Elements of the Performance

- Conduct flora and fauna field surveys for pre construction and post construction monitoring
- Utilize relevant software for site analysis

III. TOPICS:

1. Defining types of energy
2. The history and present use of Energy and its affect on the Global environment
3. Renewable Energy Technologies and alternatives
4. Legislation
5. Site Evaluation
6. The need for conservation, conservation principals, best bets, energy audits, green building
7. Renewable Energy Alternatives
8. Survival of the Fittest – The new Reality

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Readings will be made available on LMS.

V. EVALUATION PROCESS/GRADING SYSTEM:

Assignments and Labs	60%
Mid Term Test	10%
Participation	10%
Final Test	20%
Total	**100%**

The following semester grades will be assigned to students:

Grade	Definition	*Grade Point Equivalent*
A+	90 – 100%	4.00
A	80 – 89%	
B	70 - 79%	3.00
C	60 - 69%	2.00
D	50 – 59%	1.00
F (Fail)	49% and below	0.00

CR (Credit)	Credit for diploma requirements has been awarded.
S	Satisfactory achievement in field /clinical placement or non-graded subject area.
U	Unsatisfactory achievement in field/clinical placement or non-graded subject area.
X	A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.
NR	Grade not reported to Registrar's office.
W	Student has withdrawn from the course without academic penalty.

VI. SPECIAL NOTES:

Attendance:
Sault College is committed to student success. There is a direct correlation between academic performance and class attendance; therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session.

Since many of the assignments will be made after receiving classroom instruction, those students not in attendance will not be considered eligible to perform the assignment and a 0 grade will be given. Unless the student has contacted the instructor in advance with a legitimate excuse.

VII. COURSE OUTLINE ADDENDUM:

The provisions contained in the addendum located on the portal form part of this course outline.