SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ON

COURSE OUTLINE

COURSE TITLE: BUILDING ENERGY MANAGEMENT

CODE NO.: ARC 316 **SEMESTER:** VI

PROGRAM: ARCHITECTURAL TECHNOLOGY

INSTRUCTOR: H. PIETRZAKOWSKI

DATE: JAN 1995 **PREVIOUS OUTLINE DATED:** JAN 1994

AUTHOR: ELIO PRINCIPE

INSTRUCTOR: HENRY PIETRZAKOWSKI

APPROVED: _____ _____

DEAN DATE

BUILDING ENERGY MANAGEMENT — **ARC 316**
COURSE NAME — COURSE CODE

TOTAL CREDIT HOURS: 3

PREREQUISITE(S): None

I. PHILOSOPHY/GOALS:

The intent of this course is to provide the student with an introduction to and an understanding of the concepts and the importance of Energy Building Management as it would apply to existing buildings as well as to new construction. The student will gain an understanding of the need for an Energy Management Program and the Standards and Guidelines imposed on the design of new Energy Efficient Construction.

II. STUDENT PERFORMANCE OBJECTIVES (OUTCOMES):

Upon successful completion of this course the student will:

1) Apply planning and material selection principles to construction projects, on an Energy Management level.

2) Identify the various basic thermal processes.

3) Describe various mechanical equipment .

4) Conduct an energy audit for a given project.

5) Implement the latest Energy Efficient Standards and Guidelines for a given project.

III. TOPICS TO BE COVERED:

1) The Basic Thermal Processes

2) Mechanical Equipment and Energy Codes

3) Energy Building Management

4) New Buildings: Energy Efficiency

5) Existing Buildings: An Energy Management Program

BUILDING ENERGY MANAGEMENT — **ARC 316**
COURSE NAME — COURSE CODE

IV. LEARNING ACTIVITIES/REQUIRED RESOURCES

==========

1. The Basic Thermal Processes

Learning Activities: In class instruction and practical illustrations on:
- Physics of Heat Transfer
- Loss & Gain Calculations
- Temperature Gradients
- Human Comfort Ranges and Zones

Resources: Practical demonstrations
Handouts and overheads

==========

2. Mechanical Equipment and Energy Codes

Learning Activities: In class instruction, practical exercises and assignments on:
- Plant Types
- System Distribution Types
- Plant and Duct Sizing
- Energy Codes

Resources: Practical demonstrations
Handouts and overheads

==========

3. Energy Building Management

Learning Activities: In class instruction, practical exercises and assignments on:
- Terms, Concepts and definitions
- Case Study: Existing Dwelling Unit
- Energy Audit: Existing Dwelling Unit

Resources: Practical demonstrations & Case Studies
Handouts and overheads

==========

4. New Buildings: Energy Efficiency

Learning Activities: In class instruction, practical exercises and assignments on:
- Energy Conservation in Housing
- Energy Awareness in the Design of the Home
- Controlled Air Infiltration

- Provisions for Air Change & Moisture Control
- Space Heating & Cooling Systems
- Lighting and Appliances

Resources: Case Studies
Handouts and overheads

==========

5. Existing Buildings: An Energy Management Program

Learning Activities: In class instruction, practical exercises and assignments on:
- An Energy Management Program
- The Energy Managers
- Study Scope and Methodology
- A.S.H.R.A.E/I.E.S. 90.1
- Building Code

Resources: Case Studies
Handouts and overheads

==========

V. EVALUATION METHODS: (INCLUDES ASSIGNMENTS, ATTENDANCE REQUIREMENTS, ETC.)

A final grade will be derived as follows:

Attendance	10%
Assignments	30%
Project	30%
Tests	30%
Total	100%

The grading system used will be as follows:

A+	90% - 100%	(Consistently outstanding achievement)
A	80% - 89%	(Outstanding achievement)
B	70% - 79%	(Consistently above average achievment)
C	55% - 69%	(Satisfactory or acceptable)
X or R	0% - 54%	(Incomplete or Repeat)

1) Minimum acceptable grade for this course is 55%.

2) Assignments will be collected on dates specified and will be penalized if handed in late - one letter grade. All assignments must be handed in prior to course completion, and assignments handed in after the assignments have been returned to students will result in a maximum grade of C

3) A missed class (unless a reason deemed satisfactory by the instructor is given prior to the class) will result in the loss of 1/2 of a percentage point.

4) If at the end of the semester the overall mark is below 55%, whether you receive an X (incomplete) or an R (repeat) grade is entirely at the instructor's discretion. The decision will be based upon your final average. For example, a 32% WOULD result in an R grade, while 45% MIGHT result in an X grade - your attendance during the semester, your attitude while in the classroom, your perceived level of effort during the semester all will have a direct bearing on your situation.

If you find yourself with an X grade at the end of the semester, in order to up-grade your mark to a passing grade, you will be required to write a make-up examination covering the entire course content. A 55% on this examination is required to upgrade your X grade to a C grade. It is your responsibility to finalize all requirements with your instructor!

VI. STUDENT RESOURCES

Mechanical and Electrical Equipment for Buildings
Guiness, Stein and Renolds

VII. SPECIAL NOTES

Students with special needs (eg. physical limitations, visual impairments, hearing impairments, learning disabilities) are required to discuss required accommodations confidentially with the instructor, in order to facilitate outside field work

Your instructor reserves the right to modify the course as he deems necessary to meet the needs of students.