

**SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY**  
**SAULT STE. MARIE, ON**

**COURSE OUTLINE**

BUILDING SCIENCE

COURSE TITLE:

CODE NO. PHY126 SEMESTER: 11

PROGRAM: ARCHITECTURAL TECHNOLOGY

AUTHOR: M. URSELL

DATE: JAN 1995 PREVIOUS OUTLINE DATED: JAN 1993

APPROVED:

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*m* <sup>^</sup>

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**PHY126**

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**COURSE NAME**

**CODE NO.**

**TOTAL CREDITS 4**

**PREREQUISITE(S):\_PHY105,**

### **I.PHILOSOPHY/GOALS**

**To understand, design& layout basic Electrical Installations**

**To understand, design & layout Illumination Systems**

**To understand, design & layout Acoustic Installations**

### **II. STUDENT PERFORMANCE OBJECTIVES (OUTCOMES):**

**Upon successful completion of this course the student will:**

- 1) Be able to design & layout a Domestic Electrical Installation**
- 2) Be able to design & layout an Illumination System for an office building**
- 3) Be able to relate to others the principles of Building Acoustic Design**
- 4) Be able to design for optimum Building Acoustics**

### **III. TOPICS TO BE COVERED:**

**Approximate Time  
Frames (Optional)**

- 1) Review of the basic principles of Physics**
- 2) Electrical design & layout**
- 3) Lighting principles, design & layout**
- 4) Acoustic principles, design & detail**

#### **IV. LEARNING ACTIVITIES/REQUIRED RESOURCES**

##### **1) Basic physics review**

###### **Learning Activities:**

**Review of the basic principles of physics as they apply to the fundamentals of electricity.**

###### **Resources:**

**Ontario electrical safety Code  
Chapter 18  
Handouts & overheads**

##### **2)Electerical Installations**

###### **Learning Activities**

**Demonstration & discussion on:**

- Electrical terminology**
- Basic types of circuits**
- Electrical Code Regulations**
- Generator theory**
- True wiring diagrams**
- One line circuit diagrams**
- Systems of A.C. vol<sup>e</sup>**
- Electrical component symblms**
- Layout Procedures**
- Electrical takeoff**

###### **Resources:**

**Ontario Electrical Safety Code  
Chapter 19  
Handouts & overheads**

### 3) Illumination

#### Learning Activities

- lighting terminology
- Limits of measurement
- Design problems
- Zonal Cavity design methods
- Types of systems
- Creating the proper lighting environment
- Lighting layout
- Light and colour
- Supplementary & general lighting techniques
- Inverse square law & point by point design

#### Resources

Ontario Hydro lighting reference Manuals  
Chapter 20  
Handouts & overheads

### 4) Acoustics

#### Learning Activities

- Terminol<sup><^</sup>
- The physics of sound
- Units of measure
- Design for optimum Acoustics
- Reverberation control
- Treatment of reflected sound
- Impact sound control
- Measurement techniques
- Control of sound transmission between spaces
- Materials & applications

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

A Final grade **will** be derived as follows:

Attendance	10%
Assignments	30%
Tests	30%
Projects	<u>30%</u>
Total	100%

The grading system used will be as follows:

A+	90% - 100%
A	80% - 89%
B	70% - 79%
C	55% - 69%
R	Repeat

- 1) Assignments will be collected on dates specified and will not only be graded for correct solutions, but will also be checked for neatness and layout of work. **Late Assignments will not be accepted.**
- 2) Minimum acceptable grade for this course is 55%.
- 3) If at the end of the semester the overall mark is below 55%, then it will be up to the Instructor whether or not a rewrite test will be granted. The criteria employed for arriving at that decision is class attendance, class participation and overall grade, which should be at least 45%.
- 4) In the case a rewrite is granted, it will be permitted only once, it will cover the entire course outline and will limit the maximum obtainable grade for the course to 60%.

**VI. PRIOR LEARNING ASSESSMENT:**

Students who wish to apply for advanced credit in the course should consult the instructor. Credit for prior learning *may* be given upon completion of the requirements of the Prior Learning Assessment Process (FLA) as defined in the Course Analysis Form provided with this course.

**Vn. STUDENT RESOURCES**

Mechanical & Electrical Systems for Construction By: Riley Shuttleworth  
McGraw-Hill Boole Company

In addition to the recommended course text, there are numerous books available in the library related to construction estimating.

**Vm. SPECIAL NOTES**

Students with special needs (*eg.* physical limitations, visual impairments, hearing impairments, learning disabilities) are encouraged to discuss required accommodations confidentially with the instructor.

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

**EL COURSE ANALYSIS SHEET (SEE ATTACHED)**

**ASSESSMENT PROCESS**

**ASSESSMENT TOOLS**

**SUPPORTS**

**REQUIREMENTS FOR SUCCESSFUL COMPLETION OF CHALLENGE PROCESS** **A**  
challenge process for this course can be made available to learners within a reasonable period of time following  
a learner's request

**SIGNATURES:**

**PROFESSOR** \_\_\_\_\_ **PROGRAM COORDINATOR OR DEAN** \_\_\_\_\_

\_\_\_\_\_  
**DSTE** \_\_\_\_\_ **DATE**

**COURSE ANALYSIS FORM**

**COURSE TITLE AND NO.**

**LEARNING OUTCOMES**

**BROAD AREAS OF CONTENT**

**INDICATORS OF SUCCESS**