#268

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: MEASUREMENT & SHOP PRACTICS

Code No.: ELR 114-3

Program: ELECTRICAL/ELECTRONIC

Semester: ONE

Date: _____

Author: NORM BARKER

New: _____ Revision: _____

APPROVED: L.P. Arazietti 86/10/15

Chairperson Date

MEASUREMENT AND SHOP PRACTICE	ELR 114-3
Course Name	Course Number

PHILOSOPHY/GOALS:

To provide a sound understanding of the operating principles, characteristics and limitations of commonly used electrical measuring devices. Approximately fifty percent of class time will be spent in laboratory exercises to develop skills in the use of those instruments, together with familiarization with the appropriate manufacturers' manuals.

The graduate will also be capable of developing and conducting calibration procedures and equipment performance test.

METHOD OF ASSESSMENT (GRADING METHOD):

1. Written tests will be held at the end of one or more blocks of work and at least one week's notice will be given. Test questions may cover work from previous blocks.

2. Short quizzes may be given without notice.

3. Laboratory log books are to be maintained and must be ready for assessment one week after scheduled completion of the laboratory session.

4. Each student will be subject to continuous evaluation in the laboratory, with emphasis on skill in the use of tools, test equipment, work habits, effort, participation and attitude.

5. Students are reminded that all laboratory exercises are mandatory.

6. **COURSE WEIGHTING:**

Theory	60%
Practical	40%

ASSIGNED GRADERS ARE:

"A" - 80 to 100%
"B" - 66 to 70%
"C" - 55 to 65%
"R" - Less than 55%

In the case of final marks less than 55%, consideration will be given to a supplemental examination covering the whole course. The maximum mark that can be obtained on the supplemental is 55%.

REFERENCES:

Manufacturers' Manuals
Electronic Instrumentation and Measurement Techniques (Cooper)
Electronic Instrumentation and Measurement (Bell)

TEXT:

FUNDAMENTALS OF ELECTRIC CIRCUITS (BELL)

BLOCK	TOPIC
1	**COMPONENT IDENTIFICATION AND TESTING**

Resistor colour code
Operating procedures for:
- Simpson VOM Model 260
- Keithley DMM Model 169
- Wheatstone Bridge
- Sencore Z Meter

Symbols, characteristics and testing of:
- Capacitors
- Inductors
- Transformers
- Switches
- Potentiometers
- Fuses

2 **CIRCUIT CONSTRUCTION, TRACING AND TESTING**

Operating procedures, Anatek Power Supply Model 50
"Proto-board" construction and testing of resistor networks
Trace PCB circuits

3 **SOLDERINS TECHNIQUES**

Replace components on PCBs
Demonstration - PCB fabrication
Cable fabrication and repair

4 **METER MOVEMENTS AND APPLICATIONS**

Permanent magnet moving coil instrument
Moving iron instrument
Calculation of shunts and multipliers
Instrument loading effects
Trace Simpson VOM circuit
Errors in measurements
Ohmeter principles

5 **OSCILLOSCOPES & SIGNAL GENERATORS**

Electrostatic cathode ray tube
Operating procedures
- Tektronics Scope Model 2213
- Function generator
- Pulse generator

Simplified Block Diagram Tektronics MOD 2213