

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY
SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE: MEASUREMENTS AND SHOP PRACTICES

CODE NO: ELR-114 SEMESTER: ONE

PROGRAM: ELECTRICAL/ELECTRONIC TECHNICIAN

AUTHOR: EDWARD SOWKA

DATE: 09/94 PREVIOUS OUTLINE DATED: 09/93

APPROVED: W. Filipowich
CO-ORDINATOR

Aug 29, 1994
DATE

J. Blomquist
DEAN

94-08-29
DATE

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MEASUREMENTS AND SHOP PRACTICES
COURSE NAME

ELR-114
CODE NO.

TOTAL CREDITS: 3

PREREQUISITE(S): NONE

I. PHILOSOPHY/GOALS:

THIS COURSE WILL PROVIDE THE STUDENT WITH A SOUND UNDERSTANDING OF OPERATING PRINCIPLES, CHARACTERISTICS, AND LIMITATIONS OF COMMON ELECTRONIC TEST EQUIPMENT. IT ALSO INTRODUCES THE STUDENT ELECTRONICS SHOP PRACTICES INCLUDING SAFETY PRACTICES AND THE PROPER USE OF TOOLS. APPROXIMATELY 60% OF CLASS TIME WILL BE SPENT ON LABORATORY EXERCISES TO DEVELOP HANDS-ON SKILLS.

II. STUDENT PERFORMANCE OBJECTIVES:

Upon successful completion of this course, the student will be able to;

- 1) Accurately identify common electronic components, determine their electrical characteristics, recall and draw their schematic symbols.
- 2) Demonstrate the correct operation of the following test test equipment: Digital Voltmeter
Analog VOM
Wheatstone Bridge
Power Supply
- 3) Understand and practice shop safety including W.H.M.I.S.
- 4) Correctly identify and use common tools used in electronic repair including hand tools and soldering/desoldering equipment,
- 5) Demonstrate the correct use of these tools to make wire connections, wire harnesses and to remove/insert components on printed circuit boards.

III. TOPICS TO BE COVERED:

Approximate Times
(Optional)

- 1) Electronic Component Identification
- 2) Electronic Test and Measuring Equipment
- 3) Shop safety and W.H.M.I.S.
- 4) Soldering/Desoldering Techniques

IV. LEARNING ACTIVITIES/REQUIRED RESOURCES:

Topic/Unit - ELECTRONIC COMPONENT IDENTIFICATION

Learning Activities:

- Listen to instructor presentations on component identification and electrical characteristics
- Watch video on component identification
- Perform associated laboratory activity
- Perform inventory of electronic parts package

Resources:

Electronic Components Package
Instructor Handouts
Video "Electronic Component Identification"

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Topic/Unit - BASIC ELECTRONIC TEST/MEASURING EQUIPMENT

Learning Activities:

- Listen to instructor presentations on specific pieces of electronic test equipment
- Read required sections of manufacturers equipment manuals
- Perform associated laboratory activities

Resources:

Electronic components package
Protoboard
Instructor handouts
Appropriate test equipment

IV. LEARNING ACTIVITIES/REQUIRED RESOURCES cont'd:

Topic/Unit - MEASUREMENT LOADING EFFECT

Learning Activities:

- Listen to instructor presentations on the "loading" effect of test equipment
- Perform appropriate calculations to compensate for loading effect
- Perform associated laboratory activities

Resources:

Electronic components package
Protoboard
Instructor Handouts
Manufacturers equipment manuals

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Topic/Unit - SHOP SAFETY AND W.H.M.I.S.

Learning Activities:

- Listen to instructor presentations on shop safety and W.H.M.I.S.
- Perform associated laboratory activity

Resources:

Instructor Handouts
Manufacturers MSD's

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Topic/Unit - SOLDERING/DESOLDERING TECHNIQUES

Learning Activities:

- Listen to instructor presentations on soldering/desoldering techniques
- Watch video on soldering/desoldering techniques
- Perform associated laboratory activities

Resources:

Instructor handouts
Specified hand tools, solder and solder wick

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V. METHOD(S) OF EVALUATION:

The grading system is as follows:

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

The final grade will be derived as follows:

- 60% will comprise practical work associated with the lab such as lab exercises and practical tests
- 30% will comprise theory (tests, quizzes, assignments)
- 10% will comprise a subjective evaluation based on attendance, work habits, participation, professional work ethic and attitude.

VI. RESOURCE MATERIALS:

- 1 - Protoboard
- 1 - Electronic Components Package
- 1 - Wire Stripper
- 1 - Needlenose Pliers
- 1 - Diagonal Cutter

NOTE: The instructor will provide details for the above materials on the first scheduled class.

Additional resources will be provided by the instructor as required.

VII. SPECIAL NOTES:

Students with special needs are encouraged to discuss required accommodations, confidentially with the instructor. (ie. physical limitations, visual/hearing impairments etc.)

Your instructor reserves the right to modify the course as deemed necessary, to meet the needs of the students.

Attendance is compulsory, unless discussed with the instructor in advance.

