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SET 160T.01: Basic Electricity

Jim Lizotte

University of Montana - Missoula, jim.lizotte@mso.umt.edu

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**THE UNIVERSITY OF MONTANA-MISSOULA
COLLEGE OF TECHNOLOGY
INDUSTRIAL TECHNOLOGY DEPARTMENT
COURSE SYLLABUS**

COURSE NUMBER AND TITLE: SET 160T BASIC ELECTRICITY

DATE REVISED: 2004

SEMESTER CREDIT: 3

CONTACT HOURS PER SEMESTER: 75 (7 ½ week class)

Lecture hours per week: 6

Lab hours per week: 4

PREREQUISITES: None

INSTRUCTOR: Jim Lizotte

E-MAIL: jim.lizotte@mso.umt.edu

PHONE: 406-243-7642

OFFICE LOCATION: T & T II, West Campus

OFFICE HOURS: Mondays, 8am to 11 am

RELATIONSHIP TO PROGRAM:

It is extremely important for the Recreational Power Equipment technician to have a fundamental understanding of electricity. This course provides the foundation needed for the technician to troubleshoot and repair recreational equipment with electrical problems.

COURSE DESCRIPTION: The theory of AC/DC electricity including Ohms Law, magnetism, series circuits, parallel circuits, the use of meters, and electrical test equipment. Also included are units on electrical symbols, soldering, storage batteries, cranking motors, and electrical safety.

REQUIRED TEXT: **Common Service Manual** by Honda
Motorcycles by Johns and Edmundson & Scharff
Goodhart Willcox Pub.

STUDENT PERFORMANCE ASSESMENT METHODS AND GRADING PROCEDURES:

The following criteria will be used for grading **BASIC ELECTRICITY SET 160T**

1. Written Tests 40%
2. Written Final Test 20%
3. Competency Tests 35%
4. Complete, neat and organized notebook of all handout materials and notes 5%

GRADING SCALE:

A= 93-100

B= 86-92

C= 75-85

D= 65-74

F= Below 65

NOTE: If you will not be able to attend class, you **MUST** call Lizotte at 243-7642. You are responsible for all make-up. Tests will be announced in advance. There will be no make-up tests except for very extenuating circumstances.

NOTE: Shared meters will be provided for use in this class only. You will need your own digital multi-meter for all other classes requiring their use.

SAFETY: College of Technology safety rules will be followed at all times. Each student will receive a copy. A list is also posted on the classroom bulletin board. Failure to follow the rules can result in removal from class.

Safety glasses will be worn at **ALL** times when working in the lab; and in the classroom when working with storage batteries, chemicals, and soldering.

Suggestions for success in the RPE program:

1. Attitude is everything
2. Regular attendance is critical; tardiness is unacceptable
3. Take good notes
4. Pay attention
5. Study all assigned material on a regular basis and for tests

HOW VARIOUS ASSESSMENT METHODS WILL BE USED TO IMPROVE THE COURSE:

1. Student course evaluations
2. Peer feedback
3. Advisory committee feedback

COURSE OUTLINE:

- I. Magnetism
 - A. Classes of magnets
 - B. Magnet-related terms
 - C. Use of magnetism
- II. Basic Electricity
 - A. Methods of producing electricity
 - a. Magnetism
 - b. Heat
 - c. Chemical
 - d. Static
 - e. Light

- f. Pressure (piezo)
 - B. Meters
 - a. Analog
 - b. Digital
 - c. Care and use
 - C. Electrical components, symbols, and terms
 - D. Fundamentals of electricity
 - a. Series & parallel circuits
 - b. Ohms Law
 - c. AC/DC current
- III Wires/Cables
 - A. Sizing
 - B. Soldering
 - C. Terminals
- III. Storage Batteries
 - A. Types and construction
 - B. Ratings
 - C. Charging
 - D. Testing and service procedures
 - E. Safety
- IV. Starting Motors
 - A. Principles of operation
 - B. Types
 - a. DC permanent magnet
 - b. DC electro-magnet
 - C. Starter repair
 - D. Starter testing
 - a. Armature testing with growler
 - b. Load testing
 - c. Voltage drop
- VI. Spark Plugs
 - A. Types
 - B. Heat range
 - C. Sizes
 - D. Servicing