

# **Grays Harbor College**

## **AUTOMOTIVE TECHNOLOGY**

### **AUTO 102 Basic Automotive Electricity**

**Denis Samson, Instructor**

**2.5 credits/38.5 hours**

**Course syllabus**

**I. COURSE DESCRIPTION:**

*Prerequisite: Instructor permission.*

An introduction to the fundamental laws of electricity and the principles of magnetism and induction. The course will include a study of Ohms Law as well as electrical circuit schematic reading, wire repair and use of electrical test equipment. Also included will be a study of automotive batteries, starting systems, and charging systems. 16.5 lecture hours and 22 lab hours

**II. COURSE OBJECTIVES**

To meet the course standards and demonstrate the ability to meet the outcomes expectations of this course (Competency in the discipline (4 CD), Literacy (2 L), Critical Thinking (3 CT), Social and Personal responsibility (4 SP), and Information Used (4 IU)] student will:

Demonstrate employability by following safe work practices, being on time, maintaining proper attendance, and properly following written and oral instruction (SP)

Demonstrate safety and proper work habit (CD, SP)

Meet NATEF competency criteria in the following areas:

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- 1) Demonstrate the use of Ohms Law by solving for unknown values in basic series and parallel circuits. (L, CT)
- 2) Identify automotive electrical components and the symbol for each component. (CD,L, CT)
- 3) Demonstrate the use of digital multimeter by performing circuit measurements on starting and charging circuits. (CD, IU)
- 4) Demonstrate schematic reading by showing correlation between schematic and actual circuit component. (CD, L, CT, IU)
- 5) Perform service to starting and charging system components. (CD, SP, IU)
- 6) Perform wiring repair. (CD, IU)
- 7) Perform lighting system diagnose and repair. (CD, L, CT, IU)
- 8) Perform bench tests on each component part. (CD, SP)
- 9) Identify the special tools necessary to properly diagnose and repair components/system malfunction(s). (CD, L)
- 10) Disassemble, clean, inspect, and measure all components following established service manual procedures. (CD, L, SP)

### **III. INSTRUCTIONAL TECHNIQUE**

The method of instruction will be lecture, discussion, classroom exercises, demonstrations, and lab work.

### **IV. DISABILITES**

If you have a documented disability that may interfere with your ability to fully participate in this class, you may be eligible for accommodations. Contact your instructor or the Disability Support Services located on campus in the Student services, room 119. Information regarding any disability will be kept confidential.

### **V. WORK HABITS**

Industry has expressed attendance, punctuality, and general work habits as critically important for success on the job. The standards of this course include industry expectations. If you want to do well, the following will have to occur: show up every evening, be on time, clean, fed, and awake. Keep safety first. Treat equipment with respect. Be conscientious and considerate of others.

### **VI. ATTENDANCE POLICY**

Attendance is graded. You are expected to be present every evening for the entire quarter. There are no excused absences and lost points cannot be made up. If a problem arises that will cause you to miss enough classes to fail the course, see the Admissions Office to request an official withdrawal.

### **VII. METHOD OF EVALUATION**

Students will earn two grades in this course, a work habits point sheet grade, and a shop/competency/participation grade. The **Lower** of the grades earned is the highest possible grade for the quarter

#### **Work Habits Points Sheets Grade:**

Attendance, Punctuality,  
Written test after every chapter, need 80% to pass or deduct 5 points  
Weekly Quiz

**Point Schedule:.....See WORK HABITS POINT SHEET**

#### **Shop / Competency / Participation Grade:**

Competency completed and signed by you and me.  
Competency are add up to make the lab grade  
Each competency needs a work order

### **VIII. CLEAN UP PROCEDURE.**

Clean up starts when signaled. You may clean up early if you desire, but you will be docked points for leaving early

IX. NAME: \_\_\_\_\_

**GHC Automotive Technology Evening Session  
 WORK HABITS POINT SHEET**

Circle present week:        1   2   3   4   5   6   7   8   9   10   11   12

5 points are possible per day. Deduct 3 points for arriving late, leaving early. Deduct 3 points for not turning in completed homework at the time it is collected or if there is more than 3 mistakes or late homework not supplied the next day. 5 points will be deducted (for you) if you are sent home, **inaccurately** record your points for the day, or take an unauthorized break. **An absence is equal to 0 points.** Points cannot be made up.

Day	Points earned	Explanation if less than 5 points	Home work	Time and Date	Cell Phone
1=W					
2=W					
3=W					
4=W					
5=W					
6=W					

Total points earned as of last 6 weeks:        \_\_\_\_\_0\_\_\_\_\_

After six week start a new page,

Total points earned to date:        = \_\_\_\_\_        Total points possible        \_\_\_\_\_

Total points earned today divided by total points possible = \_\_\_\_\_%

Current work habits letter grade: \_\_\_\_\_

	A	B	C	D
<b>Work Habits Point Grade</b>	<b>94%</b>	<b>90%</b>	<b>85%</b>	<b>80%</b>
Competency Point Grade	90%	80%	70%	70%

\_\_\_\_\_  
 Student Signature

\_\_\_\_\_  
 Instructor Signature

(The **lower** of the two grades earned is the highest possible grade for the quarter. Additional requirement apply - see syllabus.)

**X. COURSE OUTLINE:**

1. INTRODUCTION/SAFETY
  - a. Purpose and Scope of Course
  - b. Safety Strategies
2. COMPONENTS OF A CIRCUIT
  - a. Conductors
  - b. Power Source
  - c. Loads
3. FUNDAMENTAL LAWS OF ELECTRICITY
  - a. Ohms Law
  - b. Fundamentals of Magnetism
4. BASIC CIRCUITS
  - a. Series
  - b. Parallel
  - c. Series-Parallel
5. USE OF DIGITAL MULTIMETER
  - a. Care of Meter
  - b. Number Line
  - c. Units/Range Selections
6. ELECTRICAL SYMBOLS
  - a. Identification
  - b. Components
7. SCHEMATICS
  - a. Location
  - b. Identification
  - c. Circuit Correlation
8. MEASUREMENT TECHNIQUES
  - a. Ohms
  - b. Volts
  - c. Amps
  - d. Watts
9. AUTOMOTIVE BATTERIES
  - a. Safety
  - b. Construction
  - c. Testing

**10. STARTING CIRCUITS**

- a. Operation
- b. Circuit Details
- c. Diagnosis
- d. Repair

**11. CHARGING CIRCUITS**

- a. Operation
- b. Circuit Details
- c. Diagnosis
- d. Repair

**XI. INSTRUCTIONAL MATERIALS, SUPPLIES, AND EQUIPMENT:**

The student will provide:

1. Textbooks
2. Pencils, pens, and colored markers as needed
3. Safety glasses
4. Coveralls suggested
5. Disposable gloves...nitrile not latex (optional)

**XII. TEXTBOOKS: REQUIRED**

1. Automotive Technology.  
A System approach 4<sup>th</sup> Edition  
ISBN number= 1-4018-4831-1

The college will provide:

1. A small tool box and some special tools
2. Cars to practice on after lecture
3. Hand outs

I have received and read the syllabus for AUTO 102. I  
acknowledge this by my signature below.

1	_____	_____	_____
	Print Name	Signature	Date
2	_____	_____	_____
	Print Name	Signature	Date
3	_____	_____	_____
	Print Name	Signature	Date
4	_____	_____	_____
	Print Name	Signature	Date
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9	_____	_____	_____
	Print Name	Signature	Date
10	_____	_____	_____
	Print Name	Signature	Date
11	_____	_____	_____
	Print Name	Signature	Date
12	_____	_____	_____