

**Course Outline for NAUT LABB**

**AUTOMOTIVE LAB ADVANCED**

**Effective: Fall 2020**

**I. CATALOG DESCRIPTION:**  
 NAUT LABB — Noncredit

Automotive Lab Advanced is an open laboratory class for advanced automotive students. This class is for students desiring to expand their hands-on experience using their own vehicle. Instructor will provide technical and supervisory support to guide students in completion of their self initiated projects. Students are expected to help others in class and be able to work without guidance. Service information via computer service manuals will be available for students to use for vehicle information and research. Class is recommended for second year students only.

**Prerequisite**

AUTO LABA - Automotive Lab  
 with a minimum grade of C  
 or

NAUT LABA - Automotive Lab  
 with a minimum grade of C

AUTO INTR - Automotive Service and Introduction  
 with a minimum grade of C  
 or

NAUT INTR - Automotive Service and Introduction  
 with a minimum grade of C

**Grading Methods:**

Letter or P/NP

**Discipline:**

- Automotive Technology

**Noncredit Category**

J - Workforce Preparation

	<b>MIN</b>
<b>Total Noncredit Hours:</b>	<b>108.00</b>

**II. PREREQUISITE AND/OR ADVISORY SKILLS:**

**Before entering the course a student should be able to:**

**A. AUTOLABA**

1. Apply and Maintain a Safe work environment
  - a. Practice proper vehicle lifting techniques
  - b. Practice correct tool usage
  - c. Analyze and categorize hazardous waste disposal
2. Demonstrate a good example of professionalism in the work place
  - a. Use proper judgement when working with peers
  - b. Evaluate and apply instructions while working under a shop foreman (Instructor/head student)
  - c. Judge when to ask for help or guidance
3. Revise hands-on experience to further their career in the automotive field
4. Construct and adapt critical thinking skills to diagnose and repair vehicles
  - a. Measure and create time and labor estimates using Alldata and Shopkey.

**B. NAUTLABA**

1. Apply and Maintain a Safe work environment
  - a. Practice proper vehicle lifting techniques
  - b. Practice correct tool usage
  - c. Analyze and categorize hazardous waste disposal
2. Demonstrate a good example of professionalism in the work place
  - a. Use proper judgement when working with peers
  - b. Evaluate and apply instructions while working under a shop foreman (Instructor/head student)
  - c. Judge when to ask for help or guidance
3. Revise hands-on experience to further their career in the automotive field
4. Construct and adapt critical thinking skills to diagnose and repair vehicles

- a. Measure and create time and labor estimates using Alldata and Shopkey.

#### C. AUTOINTR

1. Utilize and apply hazardous waste handling;
2. Identify and describe uses of automotive related tools;
3. Apply Ohm's law, read basic schematics, test automotive electrical systems;
4. Identify emissions components, understand 5 gas theory;
5. Restraints system identification, know safety concerns of each system and inspection of restraint systems;

#### D. NAUTINTR

1. Utilize and apply hazardous waste handling;
2. Identify and describe uses of automotive related tools;
3. Apply Ohm's law, read basic schematics, test automotive electrical systems;
4. Identify emissions components, understand 5 gas theory;
5. Restraints system identification, know safety concerns of each system and inspection of restraint systems;

### III. MEASURABLE OBJECTIVES:

**Upon completion of this course, the student should be able to:**

- A. Apply and maintain a safe work environment
  1. Practice proper vehicle lifting techniques
  2. Practice correct tool usage
  3. Analyze and categorize hazardous waste disposal
- B. Demonstrate a good example of professionalism in the work place
  1. Use proper judgement when working with peers
  2. Evaluate and apply instructions while working under a shop foreman (Instructor/lead student)
  3. Judge when to ask for help or guidance
- C. Revise hands-on experience to further their career in the automotive field
- D. Construct and adapt critical thinking skills to diagnose and repair vehicles
- E. Measure and create time and labor estimates using Alldata and Shopkey.

### IV. CONTENT:

- A. Shop safety and Handling of hazardous waste materials
  1. Occupational Safety Health Administration (OSHA) Shop standards applied
  2. Industry safety standards applied
  3. Hazardous material handling; waste oil, as well as other chemicals related to the automobile
- B. Professional environment
  1. Safety glasses (Clear lenses) worn in all Laboratory areas
  2. No loose clothing (Coveralls strongly recommended)
  3. Long hair secured
  4. No open toe shoes (safety shoes recommended)
  5. Work areas maintained; clean free of debris and spills
  6. Working with and next to other students in a shop environment
- C. Hands-on experience
  1. Using hand tools and diagnostic equipment to repair vehicles for example
    - a. Proper repair of intake manifold leak
    - b. Replacement of air conditioning compressor
    - c. Brake pad/shoe service
    - d. Diagnosis of Service Engine Soon Light using scanner
    - e. Evaluation of computer data stream using scanner
- D. Critical Thinking
  1. Reading diagnostic equipment and interpreting data
  2. Reading shop manual information and applying technical reading to repairing vehicles
- E. Providing guidance to other students
- F. Ability to work without help from others
- G. Using Alldata to find and apply time and labor guides for estimates

### V. METHODS OF INSTRUCTION:

- A. **Observation** -
- B. **Lab** - Safety Presentation and Laboratory assignment, Collaborative lab projects and exercises, Individual lab projects and exercises, Individual Learning Contract

### VI. TYPICAL ASSIGNMENTS:

- A. Collaborative Learning
  1. Safety Test
  2. Perform Safety Test
  3. Overview of Safety test with correct answers and explanation of answers.
  4. Laboratory tour and assignment, showing exits, evacuation plan, fire extinguishers, MSDS location, and location of shop equipment.
- B. Individual Learning Contract
  1. What does the student wish to accomplish?
  2. Are the units taken sufficient to complete the project(s)?

### VII. EVALUATION:

#### **Methods/Frequency**

- A. Exams/Tests  
Safety at beginning of semester Comprehensive Final
- B. Group Projects  
Weekly
- C. Class Participation  
daily
- D. Lab Activities  
daily

### VIII. TYPICAL TEXTS:

1. Giles, Tim. *Automotive Service: Inspection and Maintenance*. 6 ed., Cengage, 2020.
2. Duffy, James. *Modern Automotive Technology*. 9 ed., Goodheart-Wilcox, 2017.
3. *Auto Heating and Air Conditioning*. 4 ed., Goodheart-Wilcox, 2015.

IX. OTHER MATERIALS REQUIRED OF STUDENTS:  
A. Safety Glasses