STATE UNIVERSITY OF NEW YORK !
COLLEGE OF TECHNOLOGY !
CANTON, NEW YORK !

MASTER SYLLABUS

COURSE NUMBER – COURSE NAME
AUTO 103 – AUTOMOTIVE AIR CONDITIONING

Created by: Jeffery Stinson

Updated by: Brandon Baldwin

Canino School of Engineering Technology !

Department: Automotive Technology Program !

Semester/Year: Spring 2019 !

A. **TITLE**: Automotive Air Conditioning

B. **COURSE NUMBER:** AUTO 103

C. **CREDIT HOURS: (Hours of Lecture, Laboratory, Recitation, Tutorial, Activity)**

 # Credit Hours: 2
 # Lecture Hours: 1 **per week**
 # Lab Hours: 2 **per week**
Other: **per week**

Course Length: 15 **Weeks**

D. **WRITING INTENSIVE COURSE**: Yes ☐ No ☒

E. **GER CATEGORY: None:** ☒ **Yes:** GER !
***If course satisfies more than one*:** GER !

F. **SEMESTER(S) OFFERED: Fall** ☐ **Spring** ☒ **Fall & Spring** ☐

G. **COURSE DESCRIPTION:**

A study of the component parts of automotive air conditioning systems, their function and operation. Laboratory will consist of hands-on experience in testing, evacuation, and charging of the system. Refrigerant identification, safety, and environmental issues are addressed, along with fundamentals of manual and automatic controls.

H. **PRE-REQUISITES: None** ☐ **Yes** ☒ **If yes, list below:**

AUTO 112 & AUTO 122

CO-REQUISITES: None ☒ **Yes** ☐ **If yes, list below:**

I. STUDENT LEARNING OUTCOMES: (*see key below*)

By the end of this course, the student will be able to:

Course Student Learning Outcome [SLO]	***Program Student Learning Outcome [PSLO]***	***GER*** *[If Applicable]*	***ISLO & SUBSETS***	
Explain Air Conditioning Principals	ALO1	N/A	1-Comm Skills 2-Crit Think 5-Ind, Prof, Disc, Know Skills	CA IA PS W
Classify types of automotive Air Conditioning	ALO2	N/A	2-Crit Think 5-Ind, Prof, Disc, Know Skills ISLO	CA IA PS Subsets
Use service information to diagnosis and repair Automotive Heating and Air Conditioning Systems	ALO1	N/A	2-Crit Think 3-Found Skills 5-Ind, Prof, Disc, Know Skills	CA IA PS IM
Operate Air Conditioning gas recovery and recycle equipment	ALO1	N/A	2-Crit Think 5-Ind, Prof, Disc, Know Skills ISLO	CA IA PS Subsets
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KEY	**Institutional Student Learning Outcomes [ISLO 1 – 5]**
ISLO #	**ISLO & Subsets**
1	**Communication Skills** Oral [O], Written [W]
2	**Critical Thinking** *Critical Analysis [CA] , Inquiry & Analysis [IA] , Problem Solving [PS]*
3	**Foundational Skills** *Information Management [IM], Quantitative Lit,/Reasoning [QTR]*
4	**Social Responsibility** *Ethical Reasoning [ER], Global Learning [GL], Intercultural Knowledge [IK], Teamwork [T]*
5	**Industry, Professional, Discipline Specific Knowledge and Skills**

*Include program objectives if applicable. Please consult with Program Coordinator !

J. APPLIED LEARNING COMPONENT: Yes ☒ No ☐

If YES, select one or more of the following categories:

- ☒ Classroom/Lab
- ☐ Internship
- ☐ Clinical Placement
- ☐ Practicum
- ☐ Service Learning
- ☐ Community Service
- ☐ Civic Engagement
- ☐ Creative Works/Senior Project
- ☐ Research
- ☐ Entrepreneurship (program, class, project)

K. TEXTS:

Heating and Air Conditioning A7, NATEF Standards Job Sheets 4rd edition, Jack Erjavavec / Pickrill, 2015, DELMAR CENGAGE Learning ™. ISBN 9781111647032

L. REFERENCES:

Manufacturer service manuals, AllData, ShopKeyPro.

M. EQUIPMENT: None ☐ **Needed:** Student tool list.

N. GRADING METHOD: A-F

O. SUGGESTED MEASUREMENT CRITERIA/METHODS:

Exams, Quizzes, Homework, Lab Performance.

P. DETAILED COURSE OUTLINE:

1. Introduction
- **a. Tools**
- **b. Safety**

2. Fundamentals of Heating and Refrigeration
- **a. Atomic Properties**
- **b. Pressure and Temperature**
- **c. Refrigerants and Lubricants**
- **d. Refrigerants and the Environment**

3. Heating Systems
- **a. Engine Cooling Systems**
- **b. Heater System Operation**
- **c. Cooling and Heating System Diagnosis**

4. Refrigeration Systems
- **a. Components**
- **b. Orifice Tube Systems**
- **c. TXV systems**
- **d. Refrigeration System Service**
- **e. Refrigeration System Diagnosis**

f. Retrofits

5. Electrical and Electronic Systems

a. Components

b. Compressor Control Circuits

c. Blower Control Circuits

d. Electrical Diagnosis

6. Air Distribution Systems

a. Air Distribution

b. Manual Systems

c. Automatic Temperature Control

d. Air Distribution Diagnosis

Q. <u>LABORATORY OUTLINE</u>: None ☒ Yes ☐

same