

AUTO 341B: CNG CONVERSION & INSTALLATION B

New Course Proposal

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Originator

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Justification / Rationale

CNG (Compressed Natural Gas) is an advanced topic in Alternate Fuels. Training is aimed at, and appropriate for, auto technicians already working in the field. Many have already completed certificates and degrees. Offering a non-credit option is appropriate for this audience.

Effective Term

Fall 2020

Credit Status

Noncredit

Subject

AUTO - Automotive Technology

Course Number

341B

Full Course Title

CNG Conversion & Installation B

Short Title

CNG CONV & INSTALL B

Discipline

Disciplines List

Automotive Technology

Modality

Face-to-Face

Catalog Description

This course is designed to introduce students to compressed natural gas (CNG) conversion/ installation basic service and repair. The following topics are covered in this course: review of gaseous fuel safety, review of CNG conversion/installation and service and repair of CNG conversions/installations.

Schedule Description

This course is designed to introduce students to repair and service of CNG conversions/installations. Prerequisite: AUTO 340

Non-credit Hours

81

Lecture Units

0

Lab Units

0

Lab Semester Hours

0

In-class Hours

45

Out-of-class Hours

36

Total Course Units

0

Total Semester Hours

81

Override Description

Noncredit courses do not have lecture and lab. The out of class hours were adjusted to provide the same total as the equivalent credit course.

Prerequisite Course(s)

AUTO 340

Required Text and Other Instructional Materials**Resource Type**

Web/Other

Description

Handouts provided by the instructor

Resource Type

Web/Other

Description

NFPA 52 Vehicular Fuel Systems Code, 2019 Edition

Class Size Maximum

21

Entrance Skills

Students should be able to: Describe component overview and operation. Comply with shop and vehicle safety practices relevant to compressed natural gas (CNG) vehicles. List shop and vehicle safety practices relevant to compressed natural gas (CNG) vehicles. Describe CNG components and describe their operation.

Requisite Course Objectives

AUTO 340-Upon successful completion of this course, students will be able to: List shop and vehicle safety practices relevant to compressed natural gas (CNG) vehicles.

AUTO 340-Upon successful completion of this course, students will be able to: describe CNG components and describe their operation.

Course Content

1. Service and repair of vehicles that have had CNG installations/conversions.
2. Verify proper installation/conversion with special attention to safety and legal regulations.
3. Use of repair and service tools and equipment specific to CNG vehicles.

Course Objectives

	Objectives
Objective 1	Inspect the vehicle for pre-existing conditions that may adversely affect the performance of the vehicle.
Objective 2	Repair and service tubing, piping, hose, and valves using appropriate chafing protection, mounting hardware, and protective shields, according to industry safety standards.

Objective 3	Repair and service fuel injection/carburetion or other fuel control components according to manufacturer's instructions.
Objective 4	Repair and service electrical/electronic components using OEM or manufacturer's wire connections and wiring diagrams, applying all safety precautions.
Objective 5	Repair and service each installed component to ensure it is connected and positioned in a safe and effective manner.
Objective 6	Fabricate brackets, shields, and braces according to accepted industry standards.

Student Learning Outcomes

Upon satisfactory completion of this course, students will be able to:

Outcome 1	Inspect the vehicle for pre-existing conditions that may adversely affect the performance of the vehicle and document.
Outcome 2	Repair and service fuel supply container with mounting hardware, valving, shielding, fuel level indicator, and remote fill assembly as needed, using manufacturer's specifications and required local, state and federal regulations.
Outcome 3	Repair and service fuel system and emission components according to industry safety standards.

Methods of Instruction

Method	Please provide a description or examples of how each instructional method will be used in this course.
Demonstration, Repetition/Practice	Each student will demonstrate their ability to correctly perform a given task not limited to laboratory assignments, research projects, interactive role-play and group activities.
Technology-based instruction	Diagnostic equipment-based activities.
Lecture	Each class is half lecture covering multiple aspects of course content.
Discussion	Student will participate in classroom discussions.
Observation	Student will be observed in activities in lab, group activities, information research collaborative assignments, and other activities assigned.
Collaborative/Team	Student will work in a team setting while performing NATEF tasks, researching information and group-based activities.

Methods of Evaluation

Method	Please provide a description or examples of how each evaluation method will be used in this course.	Type of Assignment
Written homework	Readings from materials provided. Homework multiple-choice questions, fill in the blank and essay questions to be graded each week.	In Class Only
Student participation/contribution	Lab activities and student may participate in role play activities.	In Class Only
Mid-term and final evaluations	Used to evaluate student's knowledge and understanding of the information presented. Examples of these are not limited to: quizzes, exams, presentations, research or projects.	In Class Only
Laboratory projects	Student will participate in lab-based activities to complete their NATEF standards job sheets.	In Class Only
Reading reports	Turned in by report, written presentation; however, the student is required to research information pertaining to the assignment.	In Class Only
College level or pre-collegiate essays	A research report submitted or completed, not limited to a written, presentation, however the student is required to research information pertaining to the assignment.	In Class Only
Other	Out-of-class hours will be accounted for electronically through the learning management system.	Out of Class Only

Assignments

Other In-class Assignments

1. Lecture from handouts and NFPA 52 classroom manuals.
2. Worksheets and quizzes.
3. Introduction to SP2 safety tests.
4. Written summaries and analysis of assigned websites.
5. Must complete a course project consisting an essay describing, analyzing and summarizing a selected topic, including out of class research and fieldwork.
6. Diagnostic scenarios discussed and group troubleshooting.
7. Service and repair discussion of vehicles converted to or installed with CNG systems including state and federal regulations and safety.

Other Out-of-class Assignments

1. Research using online service information and OEM information.
2. Homework from provided materials: multiple-choice questions, fill in the blank and essay questions to be graded each week.
3. Completion of two SP2 safety tests.
4. Assigned readings and written summaries from selected instructor handouts.
5. Written summaries and analysis of assigned websites.
6. Must complete a course project consisting an essay describing, analyzing and summarizing a selected topic, including out of class research and fieldwork.
7. Vehicle diagnosis, troubleshooting and repair of personal, shop and other vehicles to be evaluated by the instructor during lab time.
8. Hands-on lab worksheets matching each course objective.
9. Must develop teamwork skills through lab activities and assigned special projects.

Grade Methods

Pass/No Pass Only

MIS Course Data**CIP Code**

47.0614 - Alternative Fuel Vehicle Technology/Technician.

TOP Code

094840 - Alternative Fuels and Advanced Transportation Technology

SAM Code

C - Clearly Occupational

Basic Skills Status

Not Basic Skills

Prior College Level

Not applicable

Cooperative Work Experience

Not a Coop Course

Course Classification Status

Other Non-credit Enhanced Funding

Approved Special Class

Not special class

Noncredit Category

Short-Term Vocational

Funding Agency Category

Not Applicable

Program Status

Program Applicable

Transfer Status

Not transferable

Allow Audit

No

Repeatability

Yes

Repeatability Limit

NC

Repeat Type

Noncredit

Justification

Noncredit courses are repeatable until students are comfortable they have achieved the skills and knowledge required to meet the objectives and outcomes of the course.

Materials Fee

No

Additional Fees?

No

Approvals**Curriculum Committee Approval Date**

10/17/2019

Academic Senate Approval Date

10/24/2019

Board of Trustees Approval Date

11/13/2019

Chancellor's Office Approval Date

01/10/2020

Course Control Number

CCC000611541