Washtenaw Community College Comprehensive Report

ASV 133 Automotive Fuel Systems
Effective Term: Spring/Summer 2020

Course Cover

Division: Advanced Technologies and Public Service Careers
Department: Transportation Technologies
Discipline: Auto Services (new)
Course Number: 133
Org Number: 14100
Full Course Title: Automotive Fuel Systems
Transcript Title: Automotive Fuel Systems
Is Consultation with other department(s) required: No
Publish in the Following: College Catalog , Time Schedule , Web Page
Reason for Submission: Three Year Review / Assessment Report
Change Information:
Consultation with all departments affected by this course is required.
Course title
Course description
Outcomes/Assessment
Rationale: Update Master Syllabus after assessment.
Proposed Start Semester: Winter 2020
Course Description: In this course, students will be introduced to the theory and operation of fuel delivery and emissions systems and their components. Using specialized diagnostic test equipment, students will develop skills to inspect, diagnose, and perform services on fuel delivery and emission systems. Safe component replacement and repair procedures will also be covered. The title of this course was previously Automotive Fuel.

Course Credit Hours

Variable hours: No
Credits: 4
Lecture Hours: Instructor: 45 **Student:** 45
Lab: Instructor: 60 **Student:** 60
Clinical: Instructor: 0 **Student:** 0

Total Contact Hours: Instructor: 105 **Student:** 105
Repeatable for Credit: NO
Grading Methods: Letter Grades
Audit
Are lectures, labs, or clinicals offered as separate sections?: NO (same sections)

College-Level Reading and Writing

College-level Reading & Writing

College-Level Math

No Level Required

Requisites

Prerequisite
ASV 131 minimum grade "C"

General Education

Request Course Transfer

Proposed For:

Student Learning Outcomes

1. Recognize and demonstrate safe shop practices.
   Assessment 1
   Assessment Tool: Common departmental exam
   Assessment Date: Winter 2021
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All sections
   Number students to be assessed: All students
   How the assessment will be scored: Common departmental exam will be scored using an answer key.
   Standard of success to be used for this assessment: 70% of the students will score an overall average of 70% or higher.
   Who will score and analyze the data: Departmental faculty
   Assessment 2
   Assessment Tool: Lab checklist (acceptable or not acceptable)
   Assessment Date: Winter 2021
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All sections
   Number students to be assessed: All students
   How the assessment will be scored: The lab checklist will be scored using a checklist with each item graded as acceptable or not acceptable.
   Standard of success to be used for this assessment: 70% of the students will score an overall average of 70% or higher.
   Who will score and analyze the data: Departmental faculty

2. Recognize and service basic fuel system components.
   Assessment 1
   Assessment Tool: Common departmental exam
   Assessment Date: Winter 2021
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All sections
   Number students to be assessed: All students
   How the assessment will be scored: Common departmental exam will be scored using an answer key.
   Standard of success to be used for this assessment: 70% of the students will score an overall average of 70% or higher.
   Who will score and analyze the data: Departmental faculty
   Assessment 2
   Assessment Tool: Lab checklist (acceptable or not acceptable)
   Assessment Date: Winter 2021
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All sections
   Number students to be assessed: All students
   How the assessment will be scored: The lab checklist will be scored using a checklist with each item graded as acceptable or not acceptable.

Standard of success to be used for this assessment: 70% of the students will score an overall average of 70% or higher.
Who will score and analyze the data: Departmental faculty

3. Recognize, diagnose and repair basic emission control components.
   Assessment 1
   Assessment Tool: Departmental exam
   Assessment Date: Winter 2021
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All sections
   Number students to be assessed: All students
   How the assessment will be scored: Departmental exam will be scored using an answer key.
   Standard of success to be used for this assessment: 70% of the students will score an overall average of 70% or higher.
   Who will score and analyze the data: Departmental faculty
   Assessment 2
   Assessment Tool: Lab checklist (acceptable or not acceptable)
   Assessment Date: Winter 2021
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All sections
   Number students to be assessed: All students
   How the assessment will be scored: The lab checklist will be scored using a checklist with each item graded as acceptable or not acceptable.
   Standard of success to be used for this assessment: 70% of students will score an overall average of 70% or higher.
   Who will score and analyze the data: Departmental faculty

4. Identify and demonstrate the use of on-board diagnostics system II (OBD II).
   Assessment 1
   Assessment Tool: Departmental exam
   Assessment Date: Winter 2021
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All sections
   Number students to be assessed: All students
   How the assessment will be scored: Departmental exam will be scored using an answer sheet.
   Standard of success to be used for this assessment: 70% of the students will score an overall average of 70% or higher.
   Who will score and analyze the data: Departmental faculty
   Assessment 2
   Assessment Tool: Lab checklist (acceptable or not acceptable)
   Assessment Date: Winter 2021
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All sections
   Number students to be assessed: All students
   How the assessment will be scored: The lab checklist will be scored using a checklist with each item graded as acceptable or not acceptable.
   Standard of success to be used for this assessment: 70% of the students will score an overall average of 70% or higher.
   Who will score and analyze the data: Departmental faculty

Course Objectives

1. Identify and perform basic service on PCM system.
2. Identify and perform basic service on pressure regulators.
3. Properly use scan tools.
4. Identify and perform basic service on fuel pumps.

5. Identify and perform basic service on fuel filters.
6. Check fuel for contaminants and quality, and determine necessary action.
7. Inspect and test fuel pumps and pump control systems for pressure, regulation, and volume and perform necessary action.
8. Replace fuel filters.
9. Inspect throttle body, air induction system, intake manifold and gaskets for vacuum leaks and/or unmetered air.
10. Inspect and test fuel injectors.
11. Verify idle control operation.
12. Diagnose oil leaks, emissions, and driveability concerns caused by the positive crankcase ventilation (PCV) system, and determine necessary action.
13. Diagnose emissions and driveability concerns caused by the exhaust gas recirculation (EGR) system, and determine necessary action.
14. Inspect, test, service and replace components of the EGR system, including EGR tubing, exhaust passages, vacuum/pressure controls, filters and hoses, and perform necessary action.
15. Inspect and test catalytic converter efficiency.
16. Inspect and test components and hoses of the evaporative emissions control system and perform necessary action.
17. Interpret diagnostic trouble codes (DTCs) and scan tool data related to the emissions control systems, and determine necessary action.

New Resources for Course

Course Textbooks/Resources

Textbooks

Gills, Tim. *Automotive Service*, 4 ed. Delmar Publishing, 2011, ISBN: 97811111-2861.

Manuals

Periodicals

Software

Equipment/Facilities

Level III classroom

Computer workstations/lab

Reviewer	Action	Date
Faculty Preparer:		
Jeremiah Pfahlert	*Faculty Preparer*	*Oct 24, 2019*
Department Chair/Area Director:		
Justin Morningstar	*Recommend Approval*	*Oct 24, 2019*
Dean:		
Brandon Tucker	*Recommend Approval*	*Oct 24, 2019*
Curriculum Committee Chair:		
Lisa Veasey	*Recommend Approval*	*Oct 24, 2019*
Assessment Committee Chair:		
Shawn Deron	*Recommend Approval*	*Oct 24, 2019*
Vice President for Instruction:		
Kimberly Hurns	*Approve*	*Oct 24, 2019*

Washtenaw Community College Comprehensive Report

ASV 133 Automotive Fuel
Effective Term: Fall 2015

Course Cover

Division: Advanced Technologies and Public Service Careers
Department: Automotive Services
Discipline: Auto Services
Course Number: 133
Org Number: 14100
Full Course Title: Automotive Fuel
Transcript Title: Automotive Fuel
Is Consultation with other department(s) required: No
Publish in the Following: College Catalog , Time Schedule , Web Page
Reason for Submission: Course Change
Change Information:
Consultation with all departments affected by this course is required.
Course discipline code & number
Course title
Course description
Pre-requisite, co-requisite, or enrollment restrictions
Outcomes/Assessment
Objectives/Evaluation
Rationale: Align with NATEF and ASE standards to better align the articulation with high schools.
Proposed Start Semester: Fall 2015
Course Description: In this course, students will learn the theory and operation of automotive fuel and emissions systems. Students will have the opportunity to inspect, diagnose, and perform services on fuel system components and emissions. This course was previously ASV 144 and contains material previously taught in ASV 153 and ASV 154.

Course Credit Hours

Variable hours: No
Credits: 4
Lecture Hours: Instructor: 45 **Student:** 45
Lab: Instructor: 60 **Student:** 60
Clinical: Instructor: 0 **Student:** 0

Total Contact Hours: Instructor: 105 **Student:** 105
Repeatable for Credit: NO
Grading Methods: Letter Grades
Audit
Are lectures, labs, or clinicals offered as separate sections?: NO (same sections)

College-Level Reading and Writing

College-level Reading & Writing

College-Level Math

Requisites

Prerequisite minimum grade "C"
ASV130

General Education
Request Course Transfer
Proposed For:

Student Learning Outcomes

1. Recognize and demonstrate safe shop practices.
   Assessment 1
   Assessment Tool: Departmental exam and NATEF performance tasks
   Assessment Date: Fall 2015
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All sections
   Number students to be assessed: All students
   How the assessment will be scored: Common departmental exam will be scored using an answer sheet. NATEF checklist will be scored using the departmentally-developed rubric.
   Standard of success to be used for this assessment: 70% of the students will score an overall average of 70% or higher.
   Who will score and analyze the data: Departmental faculty

2. Recognize and service basic fuel system components.
   Assessment 1
   Assessment Tool: Departmental exam and NATEF performance tasks
   Assessment Date: Fall 2015
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All sections
   Number students to be assessed: All students
   How the assessment will be scored: Common departmental exam will be scored using an answer sheet. NATEF checklist will be scored using the departmentally-developed rubric.
   Standard of success to be used for this assessment: 70% of the students will score an overall average of 70% or higher.
   Who will score and analyze the data: Departmental faculty

3. Recognize, diagnose and repair basic emission control components.
   Assessment 1
   Assessment Tool: Departmental exam and NATEF performance tasks
   Assessment Date: Fall 2015
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All sections
   Number students to be assessed: All students
   How the assessment will be scored: Common departmental exam will be scored using an answer sheet. NATEF checklist will be scored using the departmentally-developed rubric.
   Standard of success to be used for this assessment: 70% of the students will score an overall average of 70% or higher.
   Who will score and analyze the data: Departmental faculty

4. Identify and use on-board diagnostics system II.
   Assessment 1
   Assessment Tool: Departmental exam and NATEF performance tasks
   Assessment Date: Fall 2015
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All sections
   Number students to be assessed: All students

How the assessment will be scored: Common departmental exam will be scored using an answer sheet. NATEF checklist will be scored using the departmentally-developed rubric.
Standard of success to be used for this assessment: 70% of the students will score an overall average of 70% or higher.
Who will score and analyze the data: Departmental faculty

Course Objectives

1. Identify and perform basic service on PCM system.
   Matched Outcomes
   1. Recognize and demonstrate safe shop practices.
2. Identify and perform basic service on pressure regulators.
   Matched Outcomes
   1. Recognize and demonstrate safe shop practices.
   2. Recognize and service basic fuel system components.
3. Properly use scan tools.
   Matched Outcomes
4. Identify and perform basic service on fuel pumps.
   Matched Outcomes
   1. Recognize and demonstrate safe shop practices.
   2. Recognize and service basic fuel system components.
5. Identify and perform basic service on fuel filters.
   Matched Outcomes
   1. Recognize and demonstrate safe shop practices.
   2. Recognize and service basic fuel system components.
6. Check fuel for contaminants and quality and determine necessary action.
   Matched Outcomes
   1. Recognize and demonstrate safe shop practices.
   2. Recognize and service basic fuel system components.
7. Inspect and test fuel pumps and pump control systems for pressure, regulation, and volume and perform necessary action.
   Matched Outcomes
   1. Recognize and demonstrate safe shop practices.
   2. Recognize and service basic fuel system components.
8. Replace fuel filters.
   Matched Outcomes
   1. Recognize and demonstrate safe shop practices.
   2. Recognize and service basic fuel system components.
9. Inspect throttle body, air induction system, intake manifold and gaskets for vacuum leaks and/or unmetered air.
   Matched Outcomes
   2. Recognize and service basic fuel system components.
10. Inspect and test fuel injectors.
    Matched Outcomes
    1. Recognize and demonstrate safe shop practices.
    2. Recognize and service basic fuel system components.
11. Verify idle control operation.
    Matched Outcomes
12. Diagnose oil leaks, emissions, and driveability concerns caused by the positive crankcase ventilation (PCV) system and determine necessary action.
    Matched Outcomes
13. Diagnose emissions and driveability concerns caused by the exhaust gas recirculation (EGR) system and determine necessary action.
    Matched Outcomes
14. Inspect, test, service and replace components of the EGR system, including EGR tubing, exhaust passages, vacuum/pressure controls, filters and hoses and perform necessary action.
    Matched Outcomes

15. Inspect and test catalytic converter efficiency.
    Matched Outcomes
16. Inspect and test components and hoses of the evaporative emissions control system and perform necessary action.
    Matched Outcomes
17. Interpret diagnostic trouble codes (DTCs) and scan tool data related to the emissions control systems and determine necessary action.
    Matched Outcomes

New Resources for Course

Course Textbooks/Resources

Textbooks

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Manuals

Periodicals

Software

Equipment/Facilities

Level III classroom

Computer workstations/lab

Reviewer	Action	Date
Faculty Preparer:		
Michael Duff	*Faculty Preparer*	*Feb 03, 2015*
Department Chair/Area Director:		
Allen Day	*Recommend Approval*	*Feb 10, 2015*
Dean:		
Brandon Tucker	*Recommend Approval*	*Feb 23, 2015*
Vice President for Instruction:		
Bill Abernethy	*Approve*	*Mar 16, 2015*