AUTO 021A: AUTOMOTIVE DIAGNOSIS & TROUBLESHOOTING

Originator
dredman

Co-Contributor(s)

Name(s)
Anderson, Dorothy

Justification / Rationale
The Automotive Faculty are reviewing and/or updating this course to assure compliance with local, State, and Federal regulations; support consistency within the curriculum; practice relevance regarding automotive industry and community; and to make improvements that will strengthen the learning environment this course creates thus benefiting the learners.

Effective Term
Fall 2022

Credit Status
Credit - Degree Applicable

Subject
AUTO - Automotive Technology

Course Number
021A

Full Course Title
Automotive Diagnosis & Troubleshooting

Short Title
AUTO DIAG & TROUBLE

Discipline

Disciplines List
Automotive Technology

Modality
Face-to-Face
100% Online

Catalog Description
This course provides an overview of Root Cause Analysis and its application as relevant to automotive diagnosis and troubleshooting. The focus is on electrical and drivability diagnosis, but includes guidelines for any vehicle system diagnosis and troubleshooting. The coursework will include scenario based diagnosis and cold circuit analysis. This course will help anyone interested in developing an effective, logical approach to automotive diagnosis and troubleshooting.

Schedule Description
This course provides an overview of Root Cause Analysis and its application as relevant to automotive diagnosis and troubleshooting. Prerequisite: AUTO 011B

Lecture Units
2

Lecture Semester Hours
36

Lab Units
0

In-class Hours
36

Out-of-class Hours
72

Total Course Units
2

Total Semester Hours
108

Prerequisite Course(s)
AUTO 011B

Required Text and Other Instructional Materials

Resource Type
Book

Open Educational Resource
No

Author
C. Conn, R. McLean

Title
Bulletproof Problem Solving: The One Skill That Changes Everything

City
Hoboken, New Jersey

Publisher
Wiley

Year
2019

College Level
Yes

Flesch-Kincaid Level
11.4

ISBN #
9781119553021

Resource Type
Book

Formatting Style
APA

Author
M. Ellison

Title
Automobiles Have Computers?

Edition
1

City
Dubuque, IA

Publisher
Kendall Hunt

Year
2022

College Level
Yes

Flesch-Kincaid Level
13

ISBN #
978-1-7924-9479-6

Class Size Maximum
30

Entrance Skills
Basic electrical theory.

Requisite Course Objectives
AUTO 011B-Identify and interpret electrical/electronic system concern; determine necessary action.
AUTO 011B-Demonstrate the proper use of a digital multimeter (DMM) during diagnosis of electrical circuit problems.
AUTO 011B-Check electrical circuits with a test light; determine necessary action.

Entrance Skills
Wiring and circuit diagrams.

Requisite Course Objectives
AUTO 011B-Use wiring diagrams during diagnosis of electrical circuit problems.

Entrance Skills
Electrical concerns.

Requisite Course Objectives
AUTO 011B-Identify and interpret electrical/electronic system concern; determine necessary action.

Course Content
1. Why study diagnosis & troubleshooting
2. Problem solving tools
3. Importance of subject knowledge
4. 5-Step troubleshooting process
5. Physical inspection
6. Fuses, batteries and TSBs
7. Electrical troubleshooting scenarios
8. Drivability troubleshooting scenarios
9. General vehicle system diagnosis & troubleshooting
10. Troubleshooting helps

Course Objectives

	Objectives
Objective 1	Describe common mistakes techs make with each step of the 5-Step Troubleshooting Process.
Objective 2	Summarize interviews, related to diagnosis & troubleshooting, of 3 top technicians.
Objective 3	List the five steps of troubleshooting automotive malfunctions.

Student Learning Outcomes

	Upon satisfactory completion of this course, students will be able to:
Outcome 1	Describe the system operation and component function of 3 major automotive systems.
Outcome 2	Given a real-life advanced level diagnostic scenario, list the tests to run and actions to take based on test results.

Methods of Instruction

Method	Please provide a description or examples of how each instructional method will be used in this course.
Lecture	Participation in weekly lecture.
Discussion	Lecture and homework assignments.
Supplemental/External Activity	Internet research.
Role Playing	Realistic diagnostic scenarios.
Participation	Lecture/discussion.

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	Analyze weekly assignments based on text in order to complete homework. One chapter per week.	In and Out of Class
Student participation/contribution	Create synthesized notes based on lecture.	In Class Only
Mid-term and final evaluations	Demonstrate proficiency in course material by successfully completing mid-term and final evaluations.	In and Out of Class
Tests/Quizzes/Examinations	Demonstrate proficiency in course material by successfully completing regular quizzes.	In and Out of Class
Computational/problem-solving evaluations	List key troubleshooting steps and describe how to apply them in given scenarios.	In and Out of Class
Reading reports	Diagnostic scenarios. One to three reports a week.	In and Out of Class

Assignments

Other In-class Assignments

1. Lecture
2. Discussion participation
3. Scenario based diagnosis (instructor led)
4. Service information reference activities.

Other Out-of-class Assignments

a. Selected chapter in the required text
b. Homework from required text
c. Scenario based diagnostic assignments
d. Selected Internet readings
e. Postings on discussion board
f. Internet research

Grade Methods

Letter Grade Only

Distance Education Checklist

Instructional Materials and Resources

If you use any other technologies in addition to the college LMS, what other technologies will you use and how are you ensuring student data security?

Outside the LMS correspondence will only be through College email and Zoom.

If used, explain how specific materials and resources outside the LMS will be used to enhance student learning.

Interaction between instructor and learner will help to enhance learning and understanding of subject material.

Effective Student/Faculty Contact

Which of the following methods of regular, timely, and effective student/faculty contact will be used in this course?

Within Course Management System:

Chat room/instant messaging
Discussion forums with substantive instructor participation
Online quizzes and examinations
Regular virtual office hours
Timely feedback and return of student work as specified in the syllabus
Weekly announcements

External to Course Management System:

Direct e-mail
Synchronous audio/video

Briefly discuss how the selected strategies above will be used to maintain Regular Effective Contact in the course.

Regular effective contact will be practiced through online lecture, discussion board postings, email communications, regular announcements, prompt grading and feedback of assignments, and virtual office hours. This contact between the facilitator and learner on a regular basis will enhance learner confidence and understanding and promote critical thinking and analyzation of subject matter.

If interacting with students outside the LMS, explain how additional interactions with students outside the LMS will enhance student learning.

Interaction between instructor and learner will help to enhance learning and understanding of subject material.

Other Information

Provide any other relevant information that will help the Curriculum Committee assess the viability of offering this course in an online or hybrid modality.

With the uncertainty of the teaching environment, enabling the lecture portion of this course to be delivered in an online setting, while keeping the hands-on portion face-to-face, will ensure learners can access needed training to ensure knowledge and experience is achieved to gain employment in the automotive field.

Comparable Transfer Course Information

University System

UC

Campus

UC Riverside

MIS Course Data

CIP Code

47.0604 - Automobile/Automotive Mechanics Technology/Technician.

TOP Code

094800 - Automotive Technology

SAM Code
B - Advanced Occupational

Basic Skills Status
Not Basic Skills

Prior College Level
Not applicable

Cooperative Work Experience
Not a Coop Course

Course Classification Status
Credit Course

Approved Special Class
Not special class

Noncredit Category
Not Applicable, Credit Course

Funding Agency Category
Not Applicable

Program Status
Program Applicable

Transfer Status
Transferable to CSU only

General Education Status
Y = Not applicable

Support Course Status
N = Course is not a support course

Allow Audit
Yes

Repeatability
No

Materials Fee
No

Additional Fees?
No

Approvals

Curriculum Committee Approval Date
3/17/2022

Academic Senate Approval Date
3/24/2022

Board of Trustees Approval Date
4/22/2022

Chancellor's Office Approval Date
5/05/2022

Course Control Number

CCC000582265

Programs referencing this course

Automotive Air Conditioning Certificate of Achievement (http://catalog.collegeofthedesert.eduundefined/?key=104)
Automotive Electrical Certificate of Achievement (http://catalog.collegeofthedesert.eduundefined/?key=105)
Automotive Emissions Certificate of Achievement (http://catalog.collegeofthedesert.eduundefined/?key=106)
Automotive Engine Management Certificate of Achievement (http://catalog.collegeofthedesert.eduundefined/?key=107)
Automotive Braking Systems Certificate of Achievement (http://catalog.collegeofthedesert.eduundefined/?key=109)
Automotive Light and Medium Duty Diesel Certificate of Achievement (http://catalog.collegeofthedesert.eduundefined/?key=111)
Automotive Steering, Suspension, Alignment Certificate of Achievement (http://catalog.collegeofthedesert.eduundefined/?key=112)
Automotive Introductions Certificate of Achievement (http://catalog.collegeofthedesert.eduundefined/?key=201)
Advanced Transportation Technologies AS Degree (http://catalog.collegeofthedesert.eduundefined/?key=44)
Advanced Transportation Technologies AS Degree (http://catalog.collegeofthedesert.eduundefined/?key=45)
Automotive Technology AS Degree (http://catalog.collegeofthedesert.eduundefined/?key=57)