

AUTO 012A: AUTOMOTIVE SUSPENSION & STEERING SYSTEMS

Originator

doanderson

Justification / Rationale

Edition text

Effective Term

Fall 2020

Credit Status

Credit - Degree Applicable

Subject

AUTO - Automotive Technology

Course Number

012A

Full Course Title

Automotive Suspension & Steering Systems

Short Title

AUTO SUSP & STEERING

Discipline**Disciplines List**

Automotive Technology

Modality

Face-to-Face

Catalog Description

This course provides theory and hands-on experience in automotive steering and suspension systems including: theory of operation, service, diagnosis and repair. The course includes the following topics: front and rear suspension types, steering systems, four-wheel alignment, shocks, struts, tires and wheels. A \$20.00 test fee for the appropriate Automotive Service Excellent (ASE) Student Exam is required. A uniform is required for this course.

Schedule Description

This class provides lecture/discussion and hands-on experience understanding, servicing, troubleshooting, diagnosing and repairing automotive steering and suspension systems. A \$20.00 test fee for the appropriate Automotive Service Excellent (ASE) Student Exam is required. A uniform is required for this course.

Prerequisite: AUTO 010 or concurrent enrollment

Advisory: RDG 061, ENG 061

Lecture Units

3

Lecture Semester Hours

54

Lab Units

1

Lab Semester Hours

54

In-class Hours

108

Out-of-class Hours

108

Total Course Units

4

Total Semester Hours

216

Prerequisite Course(s)

AUTO 010 or concurrent enrollment

Advisory: RDG 061, ENG 061

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

Book

Author

Johanson

Title

Auto Steering Suspension

Edition

4th

Publisher

Goodheart-Willcox

Year

2015

College Level

Yes

Flesch-Kincaid Level

13

ISBN #

9781619607156

Resource Type

Book

Author

Johanson

Title

Auto Steering Suspension Workbook

Edition

4th

Publisher

Goodheart-Willcox

Year

2015

College Level

Yes

Flesch-Kincaid Level

13

ISBN #

9781619607194

Resource Type

Book

Author

Chris Johanson

Title

Modern Automotive Technology NATEF Standards Job Sheets for Performance-Based Learning

Edition

9th

Publisher

G-W

Year

2017

College Level

Yes

Flesch-Kincaid Level

13

ISBN #

9781631263781

Resource Type

Web/Other

Year

2021

Description

The current book used for this course is available in a digital version that may also be used
2 Year Individual Access Key Code – 978-1-64564-558-0

Class Size Maximum

24

Entrance Skills

Describe shop safety practices and proper procedures regarding handling hazardous material.

Requisite Course Objectives

AUTO 010-Describe shop safety practices and proper procedures regarding handling hazardous material.

Entrance Skills

Identify basic automotive tools and equipment.

Requisite Course Objectives

AUTO 010-Identify basic automotive tools and equipment.

Entrance Skills

Locate applicable vehicle service specifications and procedures using the latest online service information.

Requisite Course Objectives

AUTO 010-Locate applicable vehicle service specifications and procedures using the latest online service information.

Entrance Skills

Properly complete a repair order including all pertinent information and compliant, cause and correction.

Requisite Course Objectives

AUTO 010-Properly complete a repair order including all pertinent information and compliant, cause and correction.

Entrance Skills

Properly position and lift a vehicle using a floor jack and jack stands and a vehicle hoist.

Requisite Course Objectives

AUTO 010-Properly position and lift a vehicle using a floor jack and jack stands and a vehicle hoist.

Entrance Skills

Test drive a vehicle to verify the concern and the repair.

Requisite Course Objectives

AUTO 010-Test drive a vehicle to verify the concern and the repair.

Entrance Skills

Work together in a team setting.

Requisite Course Objectives

AUTO 010-Display team work.

Entrance Skills

Understand multiple word meanings, uses synonyms

Requisite Course Objectives

RDG 061-Understand multiple word meanings, uses synonyms

Entrance Skills

Write organized summaries reactions that capture main idea and supporting details

Requisite Course Objectives

ENG 061-Use theses to organize paragraphs into coherent analyses.

RDG 061-Write organized summaries reactions that capture main idea and supporting details.

Entrance Skills

Read a variety of texts fluently

Requisite Course Objectives

ENG 061-Demonstrate the ability to read and respond in writing beyond the literal interpretation of the text.

RDG 061-Read a variety of texts fluently.

Entrance Skills

Use various reading strategies to prepare, read and comprehend expository text

Requisite Course Objectives

RDG 061-Use SQ3R /or SOAR along with outlining, note-taking, mapping summarizing and other strategies to prepare, read, comprehend expository text.

Course Content

1. Safety & environmental concerns
2. Hand tools, special service tools & shop equipment
3. Theory of operation & design
4. Automotive repair industry terms and conventions
5. Tires and wheels
6. Shocks and struts
7. Front and rear suspension
8. Steering columns and linkage
9. Power steering pumps
10. Four-wheel steering systems
11. Four-wheel alignment
12. Frames and frame damage
13. Supplemental restraint systems
14. Chrysler web-based training modules

Lab Content

1. Safety and environmental protection
2. Diagnosis, service, repair and maintenance of tires and wheels
3. Diagnosis, service, repair and maintenance of shocks and struts
4. Diagnosis, service, repair and maintenance of front and rear suspension concerns
5. Diagnosis, service, repair and maintenance of steering columns and linkage concerns
6. Diagnosis, service, repair and maintenance of power steering pumps concerns
7. Perform four-wheel alignment
8. Identify frame damage
9. Required tasks to meet National Automotive Technician Education Foundations (NATEF) 2017 Master

Course Objectives

Objectives	
Objective 1	Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction.
Objective 2	General: Suspension and Steering Systems: including Research applicable vehicle and service information, including fluid type, vehicle service history, service precautions, technical service bulletins. Also Identify and interpret suspension and steering system concerns; determine needed action.
Objective 3	Steering Systems Diagnosis and Repair:
Objective 4	Suspension Systems Diagnosis and Repair
Objective 5	Related Suspension and Steering Service
Objective 6	Wheel Alignment Diagnosis, Adjustment, and Repair
Objective 7	Wheels and Tires Diagnosis and Repair
Objective 8	Tools and Equipment
Objective 9	Preparing Vehicle for Service
Objective 10	Preparing Vehicle for Customer:

Student Learning Outcomes

Upon satisfactory completion of this course, students will be able to:	
Outcome 1	Diagnose and repair intermediate to advanced level 4-wheel alignment concerns and intermediate to advanced level steering & suspension system malfunctions.
Outcome 2	Demonstrate proficiency in referencing service information and documenting repairs, shop safety practice, and team work
Outcome 3	Inspect and perform maintenance on steering & suspension systems in a team setting
Outcome 4	Pass Automotive Service Excellence (ASE) Steering & Suspension student testing certification.

Methods of Instruction

Method	Please provide a description or examples of how each instructional method will be used in this course.
Demonstration, Repetition/Practice	Students will perform assigned lab activities to meet NATEF requirements
Technology-based instruction	Diagnostic equipment based activities
Lecture	Each class is half lecture covering multiple aspects of course content
Laboratory	Student will participate in lab based activities to complete their NATEF standards job sheets
Discussion	Classroom and lab activities require critical thinking and diagnosis
Collaborative/Team	Student will work in a team setting while performing NATEF tasks, researching information and group based activities
Observation	Lab activities and student may participate in role play 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
College level or pre-collegiate essays	Students may be required to complete a research assignment	Out of Class Only
Reading reports	Review of homework. Lab activity evaluations. Written and hands-on exams	Out of Class Only
Student participation/contribution	Student will participate in classroom activities, research activities, role-play, interactive testing	In and Out of Class
Tests/Quizzes/Examinations	Used to evaluate students' knowledge and understanding of the information presented. Examples of these are not limited to quizzes, exams, presentations, research, or projects.	In and Out of Class
Group activity participation/observation	Lab activities and student may participate in role play activities	In and Out of Class
Presentations/student demonstration observations	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.	In Class Only
Laboratory projects	Student will participate in lab based activities to complete their NATEF standards job sheets	In Class Only
Written homework	Readings from required text: 1-3 chapters per week from both classroom and shop manuals. Homework from required text: multiple-choice questions, fill in the blank and essay questions to be graded each week	Out of Class Only

Assignments
Other In-class Assignments

1. Review homework from required text: multiple-choice questions, fill in the blank and essay questions to be graded each week.
2. Begin SP2 safety tests.
3. Notes on lecture.

4. Participation in discussion related to topic of lecture.
5. Students must keep a notebook of all course materials including homework, class notes, handouts, class project and team activities. The notebook must be organized by chapter, in-class notes, handouts and extra-credit assignments. The note book will be evaluated after the half-way point and graded at the end of the course.
6. Review and discuss vehicle diagnosis, troubleshooting and repair of personal, shop and other vehicles to be evaluated by the instructor during lab time.
7. Must develop teamwork skills through classroom interaction and discussion.

Other Out-of-class Assignments

1. Readings from required text: 1-3 chapters per week from both classroom and shop manuals. Each chapter 2 hours per week.
2. Homework from required text: multiple-choice questions, fill in the blank and essay questions to be graded each week. Each chapter 2 hours per week.
3. Completion of 2 SP2 safety tests. Average 4 hours
 - a. Mechanical Safety
 - b. Pollution prevention
4. Assigned readings and written summaries from selected instructor handouts. 1 hour
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. 8 hours.
7. Students must keep a notebook of all course materials including homework, class notes, handouts, class project and team activities. The notebook must be organized by chapter, in-class notes, handouts and extra-credit assignments. The note book will be evaluated after the half-way point and graded at the end of the course.
8. Vehicle diagnosis, troubleshooting and repair of personal, shop and other vehicles to be evaluated by the instructor during lab time.
9. Hands-on lab worksheets matching each course objective. These will be graded by the instructor throughout the semester during lab time.
10. Must develop teamwork skills through lab activities and assigned special projects.
11. Chrysler web-based training modules, each taking roughly 3 hours
12. Exam prep. 12 hours

Grade Methods

Letter Grade Only

MIS Course Data**CIP Code**

47.0604 - Automobile/Automotive Mechanics Technology/Technician.

TOP Code

094800 - Automotive 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

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

Not transferable

General Education Status

Not applicable

Support Course Status

Course is not a support course

Allow Audit

No

Repeatability

No

Materials Fee

No

Additional Fees?

Yes

Additional Fee Amount

\$20.00

Additional Fees Description

Automotive Service Excellent (ASE) Student Exam

Approvals**Curriculum Committee Approval Date**

3/03/2020

Academic Senate Approval Date

3/12/2020

Board of Trustees Approval Date

5/15/2020

Course Control Number

CCC000455019

Programs referencing this courseAutomotive Air Conditioning Certificate of Achievement (<http://catalog.collegeofthedesert.eduundefined?key=104/>)Automotive Braking Systems Certificate of Achievement (<http://catalog.collegeofthedesert.eduundefined?key=109/>)Automotive General Service Certificate of Achievement (<http://catalog.collegeofthedesert.eduundefined?key=110/>)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/>)Automotive Technology AS Degree (<http://catalog.collegeofthedesert.eduundefined?key=57/>)