# Course Information Form (CIF)

**Course Code:** AFM 253

**Course Title:** Steering and Suspension

**Department:** Applied Sciences and Technologies
**PCS Code:** 1.2 - Occupational/Technical Instruction
**CIP Code:** 47.0604
**Repeatability:** 0

**Effective Date:** Summer 2026

## Credit Hours

**Catalog Notation:** 2-2-3
**Credit Hour Distribution:**

| Lecture: 2 | Lab: 2 | Clinical: 0 | **Total: 3** |
|---|---|---|---|

## General Course Information

### Catalog Description

Wheel alignment equipment, setup, and adjustment; suspension systems components and service; steering gears, power steering; struts, front-wheel drive, four-wheel alignment; wheels, tires, and balancing, and electronic steering and suspension systems. Students who successfully complete this course may receive current certification from Ford Motor Company in Steering and Suspension.

### General Course Objectives

Students will learn automotive alignment and tire balancing theory, and apply this to practical applications.

### Minimum Placement Levels

| English | Reading | Math |
|---|---|---|
| Placement into ENG 098 | Placement into CCS 098 | Placement into MAT 059 |

### Prerequisites

None

### Methods of Evaluation

The students will be given a minimum of 4 quizzes, 25 lab exercises, 5 web courses, 1 lab practical exam, and 1 Ford Certification exam.

### Instructional Materials and Additional Supplies

Automotive Technology, ISBN 9781337794213

## Course Content

### General Learning Outcomes (GLOs)

- Reasoning and Inquiry: Students will demonstrate the ability to solve problems using deductive reasoning and logic, quantitative reasoning, or the scientific method.
- Technology: Students will demonstrate the ability to evaluate, select, and appropriately use current and emerging tools.

### Course Segments and Student Learning Outcomes

| Course Segment | Learning Outcomes | Lecture Hours | Lab Hours | Clinical Hours |
|---|---|---|---|---|
| Basic Suspension Components | 1. Identify by sight:<br>1. Torsion bar suspensions<br>2. Leaf spring suspensions<br>3. MacPherson strut suspensions. | 2 | 1 | 0 |
| Basic Alignment Geometry | 1. Define the following:<br>1. Caster<br>2. Camber<br>3. Toe<br>4. S.A.I.<br>5. Turning radius<br>6. Set-back<br>7. Center point steering<br>8. Rear thrust angle | 6 | 0 | 0 |
| Alignment Instrumentation | 1. Correctly set up and read the following systems:<br>1. Hunter Hawk Eye WA140<br>2. Hunter Hawk Eye Elite WA440<br>3. Hunter R611 | 1 | 1 | 0 |
| Alignment Adjustments | 1. Determine steering knuckle movements and make adjustments to:<br>1. Shimmed A frames<br>2. Sliding A frames<br>3. Eccentric-mounted A frames<br>4. Shimmed rear wheel<br>5. Threaded struts<br>6. MacPherson struts | 5 | 9 | 0 |
| Steering Linkages | 1. Identify by sight; identify steering linkages, nomenclature, and function.<br>2. Adjust steering linkage play.<br>3. Replace as available: a. Idle arms, b. Tie rods, and c. Drag links. | 2 | 2 | 0 |
| Electric Steering Gears | 1. Define purpose, operation, and design.<br>2. Adjust recirculating ball gear box. | 1 | 2 | 0 |
| Rack and Pinion Steering Gears | 1. Identify components, operation, and design.<br>2. Adjust gear lash.<br>3. Overhaul rack and pinion assembly. | 1 | 2 | 0 |
| Integral Power Steering | 1. Identify components, operation, and design.<br>2. Adjust integral recirculating ball box.<br>3. Reseal integral gear box. | 1 | 3 | 0 |
| Linkage Assisted Power Steering | 1. Identify linkage assisted P.S. units in use.<br>2. Identify diagnosis procedures.<br>3. Identify adjustment and service procedures. | 1 | 2 | 0 |

| Course Segment | Learning Outcomes | Lecture Hours | Lab Hours | Clinical Hours |
|---|---|---|---|---|
| Suspension Parts Service | 1. Replace ball joints.<br>2. Change coil spring.<br>3. Adjust suspension height.<br>4. Replace A-frame bushings.<br>5. Adjust and re-pack wheel bearings.<br>6. Replace and inspect shock absorbers.<br>7. Build MacPherson struts. | 2 | 2 | 0 |
| Tires | 1. Identify by sight tire wear patterns:<br>1. Over-inflation<br>2. Under-inflation<br>3. Camber wear<br>4. Toe wear<br>5. Suspension wear<br>6. Cornering wear<br>7. Remove and install tires.<br>8. Balance and Road Force.<br>9. Repair tires.<br>10. Identify tires. | 2 | 3 | 0 |
| Electronic Steering Systems | 1. Demonstrate understanding of electronic steering system operation, diagnosis, and repair. | 3 | 2 | 0 |
| Electronic Suspension Systems | 1. Demonstrate understanding of electronic suspension system operation, diagnosis, and repair. | 3 | 1 | 0 |

**Total Contact Hours**

| Lecture Hours | Lab Hours | Clinical Hours |
|---|---|---|
| 30 | 30 | 0 |