Western Technical College

32404366 Automotive Trade Simulation

Course Outcome Summary

Course Information

Description	Lab experiences enhance diagnosis and repair skills amd simulate the automotive service and repair industry.
Career Cluster	Transportation, Distribution and Logistics
Instructional Level	Technical Diploma Courses
Total Credits	3
Total Hours	108

Textbooks

Fundamentals of Automotive Technology. 2nd Edition. Copyright 2018. CDX Automotive. Publisher: Jones & Bartlett Publishers. **ISBN-13**: 978-1-2842-0995-5. Required.

Engine Performance 2. Copyright 2018. Publisher: Pearson. **ISBN-13**: 978-1-323-55276-6. Required.

Learner Supplies

Safety glasses with side eye protection that meet Z87 OSHA guidelines. **Vendor:** To be discussed in class. Required.

Six inch ankle high, quality leather work shoes - $75.00-100.00. **Vendor:** To be discussed in class. Required.

Pocket knife, six inch metal pocket ruler (English/metric measurement), small pocket flashlight, and pocket flat head screwdriver - $20.00. **Vendor:** To be discussed in class. Required.

Success Abilities

1. Cultivate Passion: Enhance Personal Connections
2. Cultivate Passion: Expand a Growth-Mindset
3. Cultivate Passion: Increase Self-Awareness
4. Live Responsibly: Develop Resilience
5. Live Responsibly: Embrace Sustainability

6. Live Responsibly: Foster Accountability
7. Refine Professionalism: Act Ethically
8. Refine Professionalism: Improve Critical Thinking
9. Refine Professionalism: Participate Collaboratively
10. Refine Professionalism: Practice Effective Communication

Program Outcomes

1. Demonstrate professionalism appropriate for the auto service industry.
2. Perform diagnosis, service, and repair of automotive internal combustion engines.
3. Perform diagnosis, service, and repair of automotive automatic transmission/transaxle systems.
4. Perform diagnosis, service, and repair of automotive manual drive train and axle systems.
5. Perform diagnosis, service, and repair of automotive steering and suspension systems.
6. Perform diagnosis, service, and repair of automotive brake systems.
7. Perform diagnosis, service, and repair of automotive electrical and electronic systems.
8. Perform diagnosis, service, and repair of automotive heating and air conditioning systems.
9. Perform diagnosis, service, and repair of automotive engine performance systems.

Course Competencies

1. Demonstrate engine repair in simulated environment.

Assessment Strategies

1.1. Skill Demonstration

Criteria

You will know you are successful when:

1.1. you diagnose an engine concern.
1.2. you remove and reinstall engine in an OBDII or newer vehicle.
1.3. you diagnose and repair cylinder and valve train.
1.4. you diagnose and repair engine block assembly.
1.5. you diagnose and repair lubrication and cooling systems.

Learning Objectives

1.a. Practice engine diagnosis.
1.b. Remove and reinstall engine in an OBDII or newer vehicle; reconnect all attaching components and restore the vehicle to running condition (as available)
1.c. Practice cylinder head and valve train diagnosis and repair.
1.d. Practice engine block assembly diagnosis and repair.
1.e. Practice lubrication and cooling systems diagnosis and repair.

2. Demonstrate automatic tranmission and transaxle repair in simulated environment.

Assessment Strategies

2.1. Skill Demonstration

Criteria

You will know you are successful when:

2.1. you diagnose general transmission and transaxle concerns.
2.2. you perform maintenance and repair on in-vehicle transmissions/ transaxles.
2.3. you repair off-vehicle transmissions/ transaxles.
2.4. you remove and reinstall transmission/ transaxle components of the drive-line.

Learning Objectives

2.a. Practice general transmission and transaxle diagnosis.
2.b. Practice in-vehicle transmission/transaxle maintenance and repair.
2.c. Practice off-vehicle transmission and transaxle repair.
2.d. Remove and reinstall transmission/transaxle and torque converter; inspect engine core plugs, rear crankshaft seal, dowel pins, dowel pin holes, and mating surfaces (as available).

3. Demonstrate manual drivetrain and axles repair in simulated environment.

Assessment Strategies

3.1. Skill Demonstration

Criteria

You will know you are successful when:

3.1. you diagnose drive train concerns.
3.2. you diagnose and repair clutch concerns.
3.3. you diagnose and repair transmission/ transaxle concerns.
3.4. you diagnose and repair drive-line components.
3.5. you diagnose and repair drive axle components.
3.6. you diagnose and repair four-wheel drive/ all-wheel drive components.

Learning Objectives

3.a. Practice general drive train diagnosis.
3.b. Practice clutch diagnosis and repair.
3.c. Practice transmission/transaxle diagnosis and repair.
3.d. Practice drive shaft and half shaft, universal and constant-velocity (cv) joint diagnosis and repair.
3.e. Practice drive axle diagnosis and repair.
3.f. Practice four-wheel drive/all-wheel drive component diagnosis and repair.

4. Demonstrate suspension and steering repair in simulated environment.

Assessment Strategies

4.1. Skill Demonstration

Criteria

You will know you are successful when:

4.1. you diagnose and repair steering systems.
4.2. you diagnose and repair suspension systems.
4.3. you service suspension and steering systems.
4.4. you diagnose, adjust and repair wheel alignment.
4.5. you diagnose and repair wheels and tires.

Learning Objectives

4.a. Practice steering systems diagnosis and repair.
4.b. Practice suspension systems diagnosis and repair.
4.c. Practice related suspension and steering service.
4.d. Practice wheel alignment diagnosis, adjustment, and repair.
4.e. Practice wheels and tires diagnosis and repair.

5. Demonstrate brake repair in simulated environment.

Assessment Strategies

5.1. Skill Demonstration

Criteria

You will know you are successful when:

5.1. you diagnose general brake systems.
5.2. you diagnose and repair hydraulic systems.
5.3. you diagnose and repair drum brakes.
5.4. you diagnose and repair disc brakes.
5.5. you diagnose and repair power-assist units.
5.6. you diagnose and repair wheel bearing, parking brakes and related electrical components.

5.7. you diagnose and repair electronic brake, traction and stability control systems.

Learning Objectives

5.a. Practice general brake systems diagnosis.
5.b. Practice hydraulic system diagnosis and repair.
5.c. Practice drum brake diagnosis and repair.
5.d. Practice disc brake diagnosis and repair.
5.e. Practice power-assist units diagnosis and repair.
5.f. Practice wheel bearing, parking brake, and electrical diagnosis and repair.
5.g. Practice electronic brake, traction and stability control systems diagnosis and repair.

6. Demonstrate electrical/ electronic systems repair in simulated environment.

Assessment Strategies

6.1. Skill Demonstration

Criteria

You will know you are successful when:

6.1. you diagnose general electrical systems.
6.2. you diagnose and service battery.
6.3. you diagnose and repair starting systems.
6.4. you diagnose and repair charging systems.
6.5. you diagnose and repair lighting systems.
6.6. you diagnose and repair gauge, warning devices, and driver information systems.
6.7. you diagnose and repair horn and wiper/ washer systems.
6.8. you diagnose and repair accessories.

Learning Objectives

6.a. Practice general electrical system diagnosis.
6.b. Practice battery diagnosis and service.
6.c. Practice starting system diagnosis and repair.
6.d. Practice charging system diagnosis and repair.
6.e. Practice lighting systems diagnosis and repair.
6.f. Practice gauge, warning devices, and driver information system diagnosis and repair.
6.g. Practice horn and wiper/washer diagnosis and repair.
6.h. Practice accessories diagnosis and repair.

7. Demonstrate heating and air conditioning repair in simulated environment.

Assessment Strategies

7.1. Skill Demonstration

Criteria

You will know you are successful when:

7.1. you diagnose and repair a/c systems.
7.2. you diagnose and repair refrigeration system components.
7.3. you diagnose and repair heating, ventilation, and engine cooling systems.
7.4. you diagnose and repair operating systems and related controls.
7.5. you recover, recycle and handle refrigerant.

Learning Objectives

7.a. Practice general a/c system diagnosis and repair.
7.b. Practice refrigeration system component diagnosis and repair.
7.c. Practice heating, ventilation, and engine cooling systems diagnosis and repair.
7.d. Practice operating systems and related controls diagnosis and repair.
7.e. Practice refrigerant recovery, recycling, and handling.

8. Demonstrate engine performance repair in simulated environment.

Assessment Strategies

8.1. Skill Demonstration

Criteria

You will know you are successful when:

8.1. you diagnose general engine concerns.
8.2. you diagnose and repair computerized controls.
8.3. you diagnose and repair ignition systems.
8.4. you diagnose and repair fuel, air induction, and exhaust systems.
8.5. you diagnose and repair emissions control systems.

Learning Objectives

8.a. Practice general engine diagnosis.
8.b. Practice computerized controls diagnosis and repair.
8.c. Practice ignition system diagnosis and repair.
8.d. Practice fuel, air induction, and exhaust systems diagnosis and repair.
8.e. Practice emissions control system diagnosis and repair.