Automotive & Diesel LMS – Full Course Catalog with Instructional Content

This document provides a complete lower-division and upper-division course catalog for the Automotive & Diesel LMS, including syllabus structure, module layout, individual lesson design, practice assessments, and exams. Content is designed for post-secondary CTE delivery and accreditation review.

1. Course Catalog Overview

The LMS supports stackable credentials, AAS pathways, and advanced specialization. Courses are divided into Lower Division (100–200) and Upper Division (300–400).

Lower Division Programs

- Automotive Technology Core
- Diesel Fundamentals
- EV & Hybrid Foundations
- Virtual Lab Foundations

Upper Division Programs

- Advanced Diagnostics & Electronics
- Diesel Emissions & Heavy Equipment
- EV High-Voltage & Battery Systems
- Fleet Operations & Capstone

2. Standard Course Syllabus Template

Course Title: _____
Course Number: _____
Credits: _____
Prerequisites: _____

Course Description:
This course provides students with theoretical knowledge and applied skills aligned with industry standards.

Course Learning Outcomes:
1. Demonstrate safe and professional shop practices.
2. Diagnose and service automotive/diesel systems.
3. Interpret technical data and service information.

Assessment Methods:
- Quizzes and practice tests
- Virtual lab performance
- Midterm and final exams
- Projects or capstone deliverables

Grading Breakdown:
• Labs: 40%
• Quizzes/Practice Tests: 20%
• Exams: 30%
• Participation: 10%

3. Standard Module Structure

Each course is divided into weekly or bi-weekly modules.

Module Components:
• Module Overview & Objectives
• Required Readings / Media
• Individual Lessons (microlearning)
• Virtual Lab Activity
• Knowledge Check Quiz
• Applied Assignment

4. Individual Lesson Template

Lesson Title: _____
Lesson Objectives:
• Identify system components
• Explain system operation
• Apply diagnostic logic

Lesson Content:
• Instructor narrative (text/video)
• AI-generated diagrams and visuals (Stable Diffusion)
• Interactive explanations

Practice Activity:
• Short scenario-based questions
• Data interpretation exercise

5. Practice Test Template

Practice tests prepare students for exams and industry certifications.

Question Types:
• Multiple choice
• Scenario-based diagnostics
• Image-based identification

Example Question:
Which condition would most likely cause a lean fuel trim condition?
A. Restricted injector
B. Faulty oxygen sensor
C. High fuel pressure
D. Stuck-open thermostat

6. Exam Structure (Midterm & Final)

Exams are proctored or LMS-secured and assess cumulative knowledge.

Exam Components:
• Multiple-choice theory questions
• Diagnostic case studies
• Virtual lab performance tasks
• Short written responses

7. Sample Fully Developed Course

AUT-120 — Brake Systems (ASE A5)

Credits: 4
Course Description:
This course covers hydraulic and electronic brake systems including ABS, traction control, and stability systems.

Modules:
Module 1: Brake Safety & Tools
Module 2: Hydraulic System Operation
Module 3: Disc & Drum Service
Module 4: ABS Diagnostics
Module 5: Stability Control Systems

Final Assessment:
• Comprehensive written exam
• Virtual ABS diagnostic scenario

8. LMS & AI Integration

• Ollama generates lesson drafts, explanations, and quiz items
• Stable Diffusion generates instructional diagrams and thumbnails
• Blender/Unity provide virtual lab environments
• Instructor approval required before release