

# **AORSI-300-MOD Workbook**

## **Overview**

This course evaluates the benefits and risks of modifying off-road vehicles. Students learn how modifications affect safety, performance, and compliance with standards. The course helps participants make informed decisions about upgrades while balancing cost, reliability, and regulatory requirements.

## **Learning Objectives**

- Assess pros and cons of common aftermarket modifications.
- Understand legal and warranty implications of modifications.
- Apply safety standards to custom builds.
- Identify when modifications compromise vehicle reliability.

# **Module 1: Common Modifications (Suspension, Tires, Engine, Electronics)**

Suspension lifts, oversized tires, engine performance upgrades, and advanced electronics are among the most popular modifications. While these can improve capability, they may also create handling challenges, strain drivetrains, or void warranties. Students should learn how to evaluate whether a modification truly supports their intended off-road use or introduces unnecessary risks.

Course Design Suggestion: Provide side-by-side comparisons of stock vs. modified vehicles. Encourage students to discuss trade-offs in handling, clearance, and safety.

Exercise: List three benefits and three risks of suspension lifts on off-road vehicles.

Reflection Question: How do oversized tires affect both traction and drivetrain stress?

## **Module 2: Safety Standards for Aftermarket Parts**

Aftermarket parts must meet safety standards to ensure they function correctly and safely. Key standards come from organizations like SAE, ANSI, and ISO. Low-quality or non-compliant parts increase the risk of accidents, part failures, or legal liability. Instructors should teach how to read certifications, spot counterfeit products, and verify compliance before installation.

Course Design Suggestion: Bring examples of certified and non-certified parts for hands-on inspection. Ask students to evaluate quality indicators.

Exercise: Identify two risks of using uncertified aftermarket parts and explain how to verify compliance.

Reflection Question: Why is compliance with safety standards essential even when modifications seem minor?

## **Module 3: Legal & Warranty Considerations**

Modifications can affect vehicle warranties, insurance policies, and compliance with local laws. For example, emissions-related modifications may violate EPA regulations, and extreme lifts may breach state vehicle height laws. Students should understand that liability may shift to them if modifications compromise legal compliance or safety.

Course Design Suggestion: Create a scenario-based discussion where students evaluate whether a modification voids a warranty or violates a law. Use case studies of real-world disputes.

Exercise: Research one regulation in your state that affects aftermarket vehicle modifications.

Reflection Question: How do insurance companies typically view modified vehicles, and why?

## **Module 4: Evaluating Performance vs Reliability in Custom Builds**

Every modification involves trade-offs between performance, reliability, and cost. Students should learn how to evaluate whether modifications serve their long-term goals. For example, a turbocharger may add power but reduce engine life if not installed properly. Likewise, extreme lifts may look impressive but create rollover risks.

Course Design Suggestion: Conduct a modification audit where students analyze a custom-built vehicle, noting where performance has been improved at the expense of reliability.

Exercise: Write a short analysis of one modification you would consider for your own vehicle, weighing benefits vs. risks.

Reflection Question: How can operators avoid overbuilding vehicles beyond their actual needs?

## Final Assessment

Task: Conduct a modification safety audit. Students will inspect a modified off-road vehicle (real or simulated) and identify potential safety, legal, and reliability concerns. Provide recommendations for safer or more compliant modifications. Additionally, complete the following written quiz:

1. What are three risks of installing oversized tires on an off-road vehicle?
2. Which organizations provide safety certifications for aftermarket parts?
3. How can modifications impact a manufacturer's warranty?
4. What legal issues may arise from altering emissions systems?
5. How can operators balance performance improvements with long-term reliability?

**Duration:** 6 hours