AORSI Instructor Guide

Course Title: Sustainable Fuel & Energy Practices in Off-Road Operations

Duration: 4 Hours

Audience: Off-road operators, trainers, and supervisors

Course Overview

This course emphasizes fuel efficiency, energy management, and the adoption of sustainable practices in off-road operations, including hybrid and electric vehicle use. Instructors will guide learners through strategies to minimize fuel consumption, integrate alternative energy vehicles, manage energy in the field, and practice ethical waste disposal.

Learning Objectives (Instructor Notes)

- Implement fuel-saving driving and maintenance techniques. (Tip: Use real-world trail examples).

- Understand hybrid and electric off-road vehicle technologies. (Tip: Compare with student-owned vehicles).

- Manage waste and fluids responsibly in remote settings. (Tip: Demonstrate spill kits).

- Promote practices that minimize carbon and environmental footprint. (Tip: Have students share practices).

Module 1: Fuel Efficiency & Driving Techniques (1 hour)

- Discuss habits such as smooth acceleration, tire pressure, and maintenance.

- Activity: Students list three strategies to improve efficiency.

- Discussion: How does tire pressure affect consumption?

- Assessment: Look for answers connecting rolling resistance to wasted fuel.

Module 2: Alternative Energy Vehicles (Hybrid, EV, Hydrogen) (1 hour)

- Compare hybrid vs. EV advantages and hydrogen challenges.

- Activity: Debate: Hybrid vs. EV for off-road fleets.

- Discussion: Challenges of hydrogen in remote areas.

- Assessment: Storage, fueling, and limited infrastructure.

Module 3: Field Energy Management (Generators, Solar, Batteries) (1 hour)

- Explain safe battery management, solar benefits, and generator use.
- Activity: Case study – design an energy setup for remote ops.
- Discussion: Benefits of solar in off-road operations.
- Assessment: Expect independence from fuel, quiet, sustainability.

Module 4: Waste & Fluid Disposal Ethics (1 hour)

- Cover safe oil disposal, contamination prevention, and waste reduction.
- Activity: Hands-on demo with mock containers.
- Discussion: Why is fluid disposal critical in ecosystems?
- Assessment: Look for answers mentioning soil, water, and wildlife.

Final Assessment

Task: Students develop a Fuel Management Plan that includes:

- Fuel efficiency strategies
- Alternative energy vehicle use
- Energy management techniques
- Waste disposal protocols

Quiz Questions:

- What is one simple driving habit that reduces fuel consumption?
- Name a benefit of using electric off-road vehicles.
- How can solar panels support remote off-road operations?
- What is the ethical way to dispose of used oil in the field?
- Which alternative energy vehicle type has the least refueling infrastructure today?

Instructor Preparation Checklist

- Print or distribute student workbooks.
- Bring props: tire gauge, solar panel, spill kit.
- Prepare debate prompts and case studies.
- Review current EV/hybrid examples.

Suggested Timing

- Introduction – 15 min
- Module 1 – 60 min
- Module 2 – 60 min
- Module 3 – 60 min
- Module 4 – 45 min
- Final Assessment – 30 min
- Wrap-up & Questions – 10 min