

MODULE 1 – LESSON 1

Logs and Records

LESSON PLAN

GENERAL INFORMATION

LEARNING ACQUISITIONS

At the end of the lesson, students will be able to:

- Understand and explain the basics of UAV record-keeping to support maintenance and operational integrity.
- Understand and explain the critical role of accurate documentation in enhancing UAV safety, performance, and compliance.
- Follow practical steps for creating and maintaining a detailed UAV logbook for effective record management

TIME

0.5 lesson hours

METHODS AND TECHNIQUES

Video-Based Learning

Hands-on / Experiential Learning

RESOURCES, TOOLS, AND EQUIPMENT

Presentation

Computer or tablet

Video Tutorials

Homework Worksheets - Resource 2

IMPLEMENTATION OF THE LESSON

INTRODUCTION

GAINING ATTENTION AND MOTIVATION

Write a brief introduction section. Lesson 1 introduces one of the most fundamental practices in UAV operations: **record-keeping and documentation**. Accurate records are the backbone of safe and compliant UAV operations, ensuring that maintenance, inspections, and flight histories are properly tracked.

The lesson will begin by engaging students with how missing or inaccurate records can lead to technical failures or even regulatory penalties. Real-world examples from the trainer are encouraged, as well as inviting the learners themselves to share ideas. By showing how proper documentation prevents accidents and improves long-term performance, the trainer sets the stage for why this topic matters to every UAV technician and operator.

DEVELOPMENT

IMPLEMENTATION OF THE LESSON CORE

- Students watch the **Introduction to Module 1** Video.
- Students watch the **Importance of record-keeping for safety and regulatory compliance** video.
- Students study the introductory material. (Resources 1 & 3)
- Students study the pre-flight checklist template (Resource 2)
- Students complete the practice template (Resource 2)
- Complete the **Lesson 1 Quiz** (Resource 4).

CONCLUSION

SUMMARISING

At the end of the lesson, the trainer will recap the key points: why record-keeping is vital for safety, compliance, and performance; how pre-flight and post-flight checklists help prevent mistakes; and how to maintain a technical logbook to track UAV condition over time.

The trainer will highlight that record-keeping is not just paperwork, but an essential habit that supports every aspect of UAV operation. Students will be reminded that consistent, detailed records are the first step in becoming responsible UAV technicians.

ASSIGNMENT

For homework, students will practice using the **pre-flight checklist, post-flight checklist, and technical logbook** provided. They will complete these worksheets as if preparing for and logging a real UAV mission. This practical exercise will help them build the habit of documenting every step of their work.

As an additional assignment, students can research one **real-world UAV incident or accident** where poor record-keeping or missed inspections contributed to the outcome. They will prepare a short, written summary (one page) explaining what went wrong, and how proper documentation could have helped prevent it. This reinforces the lesson by connecting theory to real practice.

EVALUATION OR TESTING

Trainer evaluates the completed the **Lesson 1: Quiz (Resource 4)**.

END

The trainer will close the lesson by stressing that accurate records are the foundation of maintenance and inspection routines. Without them, it is impossible to track UAV condition or prove compliance with regulations.

Finally, the trainer will introduce the next lesson, explaining that Lesson 2 will build directly on this foundation by focusing on **inspections and maintenance procedures**. While Lesson 1 taught how to record what happens, Lesson 2 will cover how to properly inspect the UAV itself—airframe, propellers, motors, and chassis—before recording those findings in the logbook.

MODULE 1 – LESSON 2

Inspections

LESSON PLAN

GENERAL INFORMATION

LEARNING ACQUISITIONS

At the end of the lesson, students will be able to:

- Understand and explain how to identify and assess potential airframe issues, including cracks, loose components, and signs of wear, to ensure structural integrity
- Understand and explain how to evaluate propellers for damage, balance, and secure mounting, ensuring optimal performance and safety.
- Understand and explain how to verify motor functionality and power delivery, ensuring the UAV operates with consistent and reliable power.
- Understand and explain how to check and clean chassis from dirt and dust, using correct procedures.

TIME

2.5 lesson hours

METHODS AND TECHNIQUES

Demonstration Method – Video Demonstrations

Video-Based Learning

Experiential Learning

RESOURCES, TOOLS, AND EQUIPMENT

Presentation

Computer or tablet

Video Tutorials

Homework Worksheets – Resource 7

Basic toolkit (PPE, Flashlight, Screwdriver, Cloth/Brush, Cleaning Agents)

UAV & UAV Parts

IMPLEMENTATION OF THE LESSON

INTRODUCTION

GAINING ATTENTION AND MOTIVATION

Lesson 2 focuses on **inspection and maintenance procedures**, the practical steps every UAV operator must master to ensure safe and reliable operations. Inspections are the frontline defence against accidents and performance issues.

The trainer will open by highlighting the risks of skipping inspections, using examples where minor cracks, worn propellers, or dirty components caused costly failures. Again practical/experiential examples are encouraged and so is asking for learner input from personal experience or as a thought-experiment. This real-world context captures attention and motivates students to appreciate inspections as a professional responsibility, not just a formality.

DEVELOPMENT

IMPLEMENTATION OF THE LESSON CORE

- Students watch the Airframe Inspection: Detecting Cracks and Wear training video.
- Students watch the Propellers: Checking for Damage, Balance, and Security training video.
- Students watch the Motors: Functions and Power Testing training video.
- Students watch the Chassis: Cleaning and Checking training video.
- Students study the visual inspection guidance material (Resource 5).
- Students study the inspection toolkit material (Resource 6).
- Students complete the inspection toolkit checklist (Resource 7).
- Students complete the Lesson 2 Quiz (Resource 8)

SUMMARISING

At the end of Lesson 2, the trainer will review the step-by-step inspection process: checking the **airframe, propellers, motors, and chassis**. Students will be reminded of how attention to detail and proper documentation ensure the UAV is ready for safe flight.

The trainer will emphasise that small problems, like a loose screw or unbalanced propeller, can have big consequences if overlooked. Inspections combined with record-keeping are what keep UAVs dependable and operators compliant.

ASSIGNMENT

As an assignment, students should fill the worksheet provided in Resource 7 – a short **inspection toolkit guide**: a list of tools they would assemble for UAV inspections, categorised by which UAV segment is being inspected. As an addition, learners may note why each tool is important, and how they would use them. This develops both technical awareness and professional readiness.

If the space and resources allow, the trainer might also engage the students in **Inspection Role-Play** wherein in small groups, learners will rotate roles as inspector, recorder, and observer of either an actual UAV or pictures of UAVs. Each role has different responsibilities (finding faults, documenting, ensuring thoroughness). This helps reinforce teamwork and communication.

EVALUATION OR TESTING

- Trainer evaluates the completed toolkit checklists (Resource 7)
- Trainer evaluates the completes Lesson 2: Quiz (Resource 8)

END

The trainer will close by stressing that **inspections turn theory into practice**. Record-keeping ensures compliance, but inspections ensure safety in the field.

To prepare for Lesson 3, the trainer will explain that while inspections confirm the physical condition of the UAV, **calibrations and system checks** confirm the accuracy of its sensors, software, and batteries. Lesson 3 will show students how to fine-tune systems, so the UAV performs with precision in real-world missions.

MODULE 1 – LESSON 3

Calibrations

LESSON PLAN

GENERAL INFORMATION

LEARNING ACQUISITIONS

At the end of the lesson, students will be able to:

- Understand and explain the importance of calibration for accurate flight data and safe operation.
- Indicate the step-by-step process for calibrating UAV sensors and flight controllers.
- Explain how to check for and safely perform firmware updates on UAV components.
- Identify potential risks and best practices for updating firmware to avoid system malfunctions.
- Explain how to assess UAV battery health and proper charging techniques.
- Identify warning signs of battery degradation and when to replace batteries.
- Understand and explain how to conduct comprehensive checks of the GCS and flight app, ensuring proper communication, control, and readiness.

TIME

2.5 lesson hours

METHODS AND TECHNIQUES

Demonstration Method – Video Demonstrations

Video-Based Learning

Experiential Learning

RESOURCES, TOOLS, AND EQUIPMENT

Presentation

Computer or tablet

Video Tutorials

Homework Worksheets – Resources 10, 12 & 13

Calibration toolkit (UAV Manual, Calibration software – if necessary)

UAV & UAV Parts

IMPLEMENTATION OF THE LESSON

INTRODUCTION

GAINING ATTENTION AND MOTIVATION

Lesson 3 addresses **calibrations, system readiness, and battery health**, which are critical areas for ensuring UAV performance and safety. Even a perfectly inspected airframe can fail if sensors are misaligned, firmware is outdated, or batteries are degraded, and this should be emphasised.

The trainer will gain attention by sharing examples of UAVs drifting off course or failing mid-flight because of poor calibration or weak batteries. This immediately shows why calibrations and battery care are just as important as inspections. The trainer then might request input from the learners to think of relevant examples from their personal/professional experience or as a thought-experiment to encourage engagement.

DEVELOPMENT

IMPLEMENTATION OF THE LESSON CORE

- Students watch the Calibrating Sensors and Flight Controllers for Optimal Performance training video.
- Students watch the Keeping Your UAV System Up-to-Date training video.
- Students watch the Performing system functionality checks (GCS & Flight App) training video.
- Students study the calibration toolkit checklist. (Resource 9)
- Students complete the blank calibration toolkit checklist. (Resource 10).
- Students watch the Battery Health: Assessment, Charging, and Lifespan Management training video.
- Students study the battery safety infographic. (Resource 11)
- Students complete battery safety procedure checklists (Resources 12 & 13)
- Students complete the Lesson 3: Quiz (Resource 14).

SUMMARISING

Summarising Lesson 3, the trainer will emphasise how calibration, system updates, and battery care form the final pieces of a complete UAV maintenance routine. While inspections focus on the physical condition of the aircraft, calibration ensures that the UAV's sensors and controllers interpret the world correctly, enabling stable flight and accurate data. Firmware updates keep the system current and reliable, while thorough Ground Control System checks confirm that communication between the pilot and UAV is smooth and responsive. Finally, careful battery management safeguards flight time and prevents unexpected failures.

The trainer will ensure the students understand how together, these practices ensure that a UAV is not only airworthy but also precise, efficient, and ready to meet professional standards.

ASSIGNMENT

As an, students will complete the worksheet provided in Resource 10 – **the calibration toolkit checklist** and record their process and findings. Additionally, they will complete the worksheets provided in Resources 12 and 13 – the **battery charging and battery safety checklists**, documenting best practices for charging and safety checks. This reinforces the importance of long-term monitoring, not just single inspections.

If time and resources allow, the trainer might additionally ask students prepare a short “system health summary” of a UAV, where they will list calibration status, firmware version, GCS check results, and battery health as if preparing a UAV for a mission hand-off. Alternatively, the trainer might also engage learners in practical research, by asking them to find or look at two different UAV models, compare their calibration and battery management requirements, and reflect on how these differences affect maintenance routines.

EVALUATION OR TESTING

- Trainer evaluates completed toolkit checklist (Resource 10)
- Trainer evaluates battery safety procedure checklist (Resource 12 & 13)
- Trainer evaluates Learner performance on Lesson 3: Quiz (Resource 14)

END

The trainer will close by emphasising that Lesson 3 completes the foundation of UAV maintenance. Students now know how to document, inspect, and calibrate UAV systems for safe and compliant operations.

To link forward, the trainer will explain that the next module will move beyond foundations into advanced systems, troubleshooting, and practical applications. Students will apply their knowledge in real-world scenarios, building the confidence and problem-solving skills needed to become professional UAV technicians.