Version 1.0

**PFL UGV certification handbook 2023**

A logo of a drone

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**Introduction**  
Thank you for choosing the PFL UGV for your autonomous vehicle research and development needs. The safety of our operators and research staff is our top priority. In preparation for your PFL UGV certification examination, please take the time to read through this Certification Processes Hanbook. The certification processes described in this handbook are identical to those you will be required to demonstrate proficiency in to receive your PFL UGV certification.

**Examination Outline**

The PFL UGV examination is broken into 3 sections which are described below. To successfully pass the PFL UGV examination, all 3 sections must be passed with a satisfactory score.

**Examination Outline**

|  |  |  |
| --- | --- | --- |
| Part of exam | Method of examination | Criteria for pass |
| Road safety examination | Written | Minimum 80% of questions answered correctly |
| Vehicle safety examination | Practical | Examination performed correctly to examiner’s satisfaction |
| Operation safety examination | Practical | Examination performed correctly to examiner’s satisfaction |

**Preconditions for Examination**

|  |  |  |
| --- | --- | --- |
| Precondition | Method of examination | Criteria for meeting precondition |
| Simulator training | Examined by certified examiner | 5 hours driving vehicle equivalent to SUV over varied condition |

**Road Safety Examination Outline**  
The objective of the road safety examination is to assess operator’s proficiency in recognizing safety hazards on the road that may be encountered during UGV operation. Examples of concepts tested are listed below. Operators are expected to have the same proficiency of road safety as a typical student driver.

|  |  |  |
| --- | --- | --- |
| Number of questions/duration | Satisfactory score | Remark |
| 10 | 80% | Combination of true false, hypothetical, and orally delivered questions and response |

Concept examples:

* Awareness of different types of terrain, their challenges, and how to navigate them safely.
* Understanding the principles of weight distribution, balance, and maneuvering techniques when operating on various surfaces (e.g., inclines, declines, uneven terrain).
* Understanding of principles of right of way and operation around people
* Understanding of the limitations of the UGV

Not on the examination:

* Understanding road signals and road dynamics such as overtaking and merging

**Vehicle Safety Examination**

The objective of the vehicle safety examination is to assess operator proficiency in safely conducting operations with the UGV outside of driving such as when in the garage or when executing maintenance tasks. Examples of concepts tested are listed below.

|  |  |  |
| --- | --- | --- |
| Number of questions/duration | Satisfactory score | Remark |
| 10 | 80% | Operator is required to demonstrate or advise examiner on tested concept |

Concepts tested:

* Check brake fluid
* Correctly troubleshoot issues with UGV
* Correctly install wheel chocks
* Correctly identify UGV hazards such as electrical system hazard areas
* Correctly load cargo
* Check instrument cluster for system status and warnings
* Manually push back from pit box
* Calibrate brake pedal
* Test steering, brakes, and throttle

Not tested:

* Specialized operations such as electrical system modification or proficiency in autonomous functionality

**Vehicle Operation Examination**

The objective of the vehicle operation examination is to assess operator proficiency in operating the UGV when driving. Examples of concepts tested are listed below.

|  |  |  |
| --- | --- | --- |
| Number of questions/duration | Satisfactory score | Remark |
| 25 minutes | Satisfactory completion of examination to examiner standards | Operator is required to execute required skill while acting as driver of the UGV |

Concepts tested:

* Preparation of UGV
* Normal operation of UGV
* Operation of UGV around pedestrians or advanced terrain
* Operation of UGV carrying passengers
* Emergency protocols

Not tested:

* Specialized operations such as autonomous functionality

