



# Gryphon Racing

## Vehicle Usage – 2023



### Current Document Version

Gryphon Racing  
School of Engineering  
University of Guelph

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Revised by: Dallas Hart

### Purpose

This document for Gryphon Racing has been created at the request of the University of Guelph administration. It has been prepared with the cooperation of all current (2023-2024) Gryphon Racing Captains, and University of Guelph Faculty.

### Approvals

#### Captains:

- Ayden Bourdeau
- Matthew Aziz
- Matt Verburg

### Reviewers

#### Faculty Advisors:

- Mohammad Al Janaideh
- Barry Verspagen

### Purpose

The purpose of this document is to standardize procedures used when testing and running finished FSAE style cars built by Gryphon Racing.

### Definitions

Vehicle Supervisor – Authorized team member that must be present whenever the designated vehicle is in operation.

ESO – Electrical System Officer (**FSAE 2023 V2: AD.5.2**)

SRM – Student Risk Management

SE&RM - Student Events & Risk Management





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## Safety

Safety is everyone's responsibility and number one priority. All members are expected to behave in a respectful manner to all parties. Anytime a University of Guelph or Gryphon Racing vehicle is in operation, everyone must always ensure their own and the safety at others. Prior to operating any vehicle owned by Gryphon Racing, vehicle operators must receive the correct training and guided through vehicle operation by an **authorized vehicle supervisor** (and **ESO** for EV). Correct training is comprised of this vehicle usage document and the applicable sections within the FSAE rules (**FSAE 2023 V2: VE and D**). Vehicle operation consists of this vehicle usage document and additional rules from the FSAE (E-Stop, Ejection, Case of Emergency/Fire). Flags will be used according to FSAE (**FSAE 2023 V2: D.4**). Flags are preferred to hand signals, but in the case where flags are not being used, hand signals according to boating guidelines are used. A non-exhaustive list of hand signals used are: speed up, slow down, turn, back to shore (return to beginning/finish lap), cut motor. An additional signal is used in case of emergency, which is arms crossed against the chest whose meaning is: get out and eject.

## SE&RM Submission

An SE&RM submission for vehicle usage and testing will be submitted to GryphLife for September to April and another for May to August. This is to conform with the University of Guelph's standard practices regarding club activity. This will include but is not limited to: anticipated frequency of testing & practices, locations preferred for testing, and this Vehicle Usage Procedure document.

## Vehicle Operation

### School Truck

University of Guelph vehicles must **only** be operated by individuals who are legally able to use these vehicles on the road, and who have been approved for vehicle use by the university administration, as per standard university policy. The team captains must be informed of all instances when university owned vehicles are used for team purposes. Use of the school vehicles should be limited to times when a personal vehicle is not available or suitable for the trip required. School vehicles are NEVER to be used for personal purposes.

### Additional resources

- Vehicle usage insurance form: <https://www.uoguelph.ca/finance/departments-services/insurance-office/vehiclesdrivers/who-can-drive>
- SOE truck student registration form: [https://www.pr.uoguelph.ca/system/files/1\\_2\\_25\\_driver\\_profile\\_information\\_form\\_march\\_2018\\_2.pdf](https://www.pr.uoguelph.ca/system/files/1_2_25_driver_profile_information_form_march_2018_2.pdf)

### Currently Registered/Authorized Team Members

- Ayden Bourdeau

### FSAE Vehicle

- Individuals associated with the club must have signed off the document: **Individual Responsibility Signoff** prior to participation with a FSAE Vehicle





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- All competition safety measures (**FSAE 2023 V2: VE.2 and VE.3**) must be followed during testing including but not limited to:
  - o Impact attenuator being installed.
  - o Driver safety equipment equipped.
  - o Two separately manned class B fire extinguishers.
- Operation is only permitted in **appropriate locations** where standard FSAE safety measures can be observed.
  - o **Appropriate locations** include: designated approved university campus locations, event allocated areas (determined by event hosts), and campus parking lots.
- Testing location must satisfy or must be altered to satisfy the following:
  - o Entrances blocked off.
  - o Hazards coned off.
- If campus parking is used for testing, the area used must be completely empty of vehicles other than the FSAE vehicle(s) being used. Options can include:
  - o Coning off the parking area ahead of time
  - o Finding an appropriate empty parking area prior to testing
- Thus, a minimum three people are always required when operating the vehicle.
- All efforts must be made to eliminate potential hazards to the driver, observers, and the public.
- Drivers must have a valid G or G2 class license.
- Non-team members are not allowed to start or drive the vehicle, exceptions may include:
  - o Designated sponsors and faculty
  - o All exceptions must be pre-approved by all Captains and Vehicle Supervisors for the used vehicle type.
- An **authorized vehicle supervisor** (and **ESO** for EV) must be present during vehicle operation.
- The **Vehicle Operation Notification Procedure** must be used prior to operating the vehicle at any time.

### Vehicle Operation Notification Procedure

Position / Department	Contact	When to contact	How to contact
Gryphon Racing Advisors	Barry Verspagen Mohammad Al Janaideh	Prior to vehicle testing/operation <b>outside of the shop</b>	Email in Advance of Testing
Campus Safety Office	Duty Supervisor 519-824-4120 x 52245  Dave Pringle dpringle@uoguelph.ca 519-824-4120 x 56694	Prior to vehicle testing/operation <b>on campus outside of the shop</b>	Vehicle Supervisor asks to speak with the Duty Supervisor, they explain who they are, what they are doing and when.
Campus Parking Services	questions@parking.uoguelph.ca with 24-48 hours of notice  Shannon Talbot	Prior to vehicle testing/operation <b>in campus parking</b>	This is to identify which parking lot(s) will be the safest to use (consider



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	stalbot@parking.uoguelph.ca 519-824-4120 x 53173		events and other traffic that may be happening on campus.
SE&RM	<p>Edit the GryphLife SE&amp;RM Standing Document This will prompt an approval on SE&amp;RM's end that they can quickly review.</p> <p>Update with 48 hours of notice. In the rare case where Student Experience is unable to approve the change, the testing/practice may proceed if Campus Safety Office and Campus Parking Services have been notified and indicated approved use of parking lot(s).</p>	Prior to vehicle testing <b>on campus outside of the shop</b>	<p>Once you have connected with CSO and Campus Parking Services you then:</p> <p>Edit the event details for the SE&amp;RM event and add the date that the practice/testing will take place.</p> <p>Add a comment indicating that you have notified CSO, identified a lot(s) with Campus Parking, and note the lot(s) that you will be able to use.</p>

## FSAE Combustion Vehicle

### Authorized Vehicle Supervisors:

- Ayden Bourdeau
- Matthew Aziz
- Dallas Hart

### Vehicle Specific Requirements

- Fueling must be performed with the driver out of the vehicle.
- Additional fuel is to be stored in the IC fire cabinet
- Muffler must be correctly affixed and provide appropriate sound dampening capabilities

### Prestart Checklist

#### Engine:

- Verify clean oil, perform oil change if necessary.
- Verify oil filter clean and installed.
- Verify oil lines hooked up correctly.
- Verify coolant reservoir full and top-up if required.
- Verify starter polarity is correct.
- Verify crankshaft and driveline chain will be unobstructed while spinning
- Verify all required sensors installed.
  - o Crank sensor
  - o Cam sensor





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- Oil pressure sensor
- Oil temperature sensor
- Engine temperature sensor
- Coolant temperature sensor

### Fuel:

- Verify fuel feed and return path direction.
- Verify fuel pump wiring and mounting.
- Verify fuel tank mounting.
- Bleed fuel system
- Check hose clamps tightness on fuel lines
- Verify fuel pressure regulator (FPR) is connected to throttle body
- If required, lube injector O-rings.

### Air:

- Verify plenum tightened and plenum gasket integrity.
- Ensure throttle body and plenum is free of debris.
- Verify all required sensors installed and clean.
  - MAP
  - IAC
- Clean air filter if necessary.
- Calibrate throttle cable if necessary.

### Electrical:

- Tighten battery terminals.
- Check status of ignition coils and wires.
- Replace spark plugs if necessary.
- Check coil pack sensors and ensure correct firing order.

### Cooling:

- Verify connections:
  - Oil tank lines
  - Radiator hoses
  - Overflow line
  - Bleed system
    - Jack rear of car up to bring radiator to highest point, leave cap off upon starting, squeeze upper and lower rad hose, top up as necessary.

### Mechanical:

- Verify steering system slack and control capabilities are within FSAE rule specifications.
- Verify brake system clamping pressure.
- Verify clutch and shifting functional.
- Verify ground clearance (minimum required for this section)
- Verify suspension is free moving on all four wheels.
- Verify rolling of vehicle without power.
- Torque lug nuts to 70 lbf
- Verify tire pressure is appropriate for tire (typically 10-15psi)



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FSAE Electric Vehicle (WIP)

**Authorized Vehicle Supervisors:**

- Ayden Bourdeau

**Authorized Electrical Safety Officers:**

- Ayden Bourdeau

**Vehicle Specific Requirements**

- Charging will only be permitted with the driver out of the vehicle.

NOTE: a FSAE electric vehicle may not be operated until this section is complete.