

# Competition handbook 2024



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## Changelog

Part	Version	Changes
-	1.0	Initial publication
FR 3.8	1.1	No VAT billed/recoverable
FR 1.5	1.2	Added Event Manager email address
FR 1.6	1.2	Media consent
FR 2.6	1.2	Specification of insurance terms
FR 3.6	1.2	Specification of the deposit terms
FR 4.1 & 4.2	1.2	TPE has to be issued from every team
FR 5.4	1.2	Specification of the data loggers
FR 10	1.2	H <sub>2</sub> Concept Challenge at FSF 2024
FR 3.4 to 3.8	1.3	Changes about the payment deadlines and process.
FR 4.1 & 4.3	1.3	TMRF deadline
FR 10	1.3	H <sub>2</sub> Concept Challenge price details
FR 2.6	1.4	Proof of insurance has to be uploaded
FR 3.6	1.4	No deposit will be charged
FR 3.8	1.4	Changes in camping fees VAT
FR 4.3	1.4	VSV, proof of insurance and drivers licences late uploads
FR 8.7	1.4	Precisions on teams allocated areas
FR 8.11	1.4	No livestreaming at FSF 2024
FR 8.15	1.4	Crafting area
FR 9.1	1.4	Date of online safety briefing by Transpolis

# FR 1 - General information

## FR 1.1 - Formula Student France

Formula Student France (FSF) is part of the Formula Student competition series and is open to entries for open-wheel vehicles from student teams.

## FR 1.2 - Competition format

FSF 2024 will consist of two classes: Electric Vehicle (EV) Class and Concept (3C) Class. Both classes can be identified as separate competitions with separated classifications. The competition will be open to:

- 16 EV Class teams,
- 8 3C Class teams.

There will be no driverless (FSD) class and no Driverless Cup at FSF 2024.

Teams that participate in the Concept Class will be admitted to the Design, Business Plan Presentation and Cost & Manufacturing events. A static presentation of the car, or part of it, can be conducted in order to better explain the project. A separate classification will be reserved for this category. Design, Presentation and Cost events follow the rules as per EV class. In particular the Cost Report must contain an estimation of the cost of the actual car. 3C electric vehicles are not allowed to activate tractive system at the event site. Every 3C team have to publish a document on the FSF website listing all the parts and equipments they wish to bring (see [FR 4 - Documents and deadlines](#)). Any failure in doing so will result in the impossibility to store any equipment onsite.

## FR 1.3 – Competition dates and place

FSF 2024 will be held from Tuesday 27th of August until Sunday 1st of September 2024, at Transpolis in France. Please refer to the time schedule for detailed timing.

Venue address:

620 Route des Fromentaux

01500, Saint-Maurice-de-Rémens

France

The official competition website is: [fs-france.com/](https://fs-france.com/). It is subject to regular revisions as organizational elements of the FSF 2024 are continuously formalized.

The Formula Student France official time is:

From	Till	Time
2023-10-29	2024-03-30	CET
2024-03-31	2024-10-27	CEST

## FR 1.4 – Competition Language

The competition language is English.

## FR 1.5 - Official contacts

Event Management is provided by:

- **Mathieu JACQUET**: +33 6 49 51 06 51 ([mathieu.jacquet@fs-france.com](mailto:mathieu.jacquet@fs-france.com)) as the General Event Manager,
- **Philippe PIATON**: +33 6 76 85 66 07 as the President of ACTO FSFrance (association organizing the event).

The Event Management can be contacted at the following e-mail address: [contact@fs-france.com](mailto:contact@fs-france.com).

Inquiries must be raised via [rules@fs-france.com](mailto:rules@fs-france.com) (regarding FSF rules) or [contact@fs-france.com](mailto:contact@fs-france.com) (regarding the FSF event and anything related). Only information from an [@fs-france.com](mailto:@fs-france.com) mail address is to be considered as an official response from FS France.

## FR 1.6 - Media consent

By participating at FSF 2024, teams hereby consent to the use of their image (including anything related to teams, i.e. team members, teams' car, etc...) in photographs, video recordings, and other media taken during the event for the purposes of promoting and communicating about the event. This may include use in press releases, promotional materials, and other publications associated with the event.

# FR 2 - Formula Student France 2024 Rules

## FR 2.1 - Rule Exemptions and Alterations

The competition will be held in compliance with the **Formula Student Rules 2024**, available at the following link: <https://www.formulastudent.de/fsg/rules/>.

The Formula Student France Competition Handbook is to be considered part of the rules. In case of any contradiction between this document and "Formula Student Rules 2024", the FSF rules are to be considered valid.

No autonomous system is required for any part of the competition. Autonomous system components may be removed from the car or left in the car at the team's discretion. If autonomous system components are present, the following applies:

- the ASMS must be switched off at all times
- the ASB must be deactivated/discharged
- Rules 2024/T14.6 apply and will be enforced in scrutineering.

Points allocated to each event is detailed on the following table:

Event	Points
Engineering Design	150
Cost & Manufacturing	100
Business Plan	75
Acceleration	75
Skidpad	75
Autocross	100
Endurance	325
Efficiency	100
<b>TOTAL</b>	<b>1000</b>

3C teams can receive a maximum of 325 points.



## FR 2.2 - Team Manager

Each team must appoint a Team Manager. The Team Manager must attend all briefings (including driver briefings). It is recommended for this person to be the legal representative of the team, if applicable. A Team Manager is responsible for the distribution of official competition information as presented in the Team Manager meetings to their team. Team Managers are required to join a WhatsApp community for general competition announcements. Joining the community will be done on site, during the check-in at the Welcome Centre.

## FR 2.3 - Faculty Advisors

For FSF 2024, Faculty Advisors must be registered as Team Members on the TMRF. Faculty Advisors may stay on the campsite with the team. Faculty Advisors must not participate in any events or perform any tasks related to the competition that can be done by students. Faculty advisors are not allowed in the static and dynamic events as well as in the dynamic areas.

## FR 2.4 - Visitors

Visitors will be accepted at FSF 2024. Please refer to the Visitors section of the official website for further information.

## FR 2.5 - Prototypes numbers

All registered teams will be invited to choose a car number for the competition via their Team account:

- EV Class: 01-99, with an E added in front of the number (i.e. E99)
- 3C Class: 301-399

Teams will have to choose 5 car numbers in order of preference during their registration on the FSF official website. The final allocation of the numbers will be done according to the FSF ranking basis (see [FR 3.2](#)).

## FR 2.6 - Special measures

All teams participating must ensure they have adequate insurance coverage for any damages caused to third parties, either by any team member, their tools, or their prototype. This insurance can take the form of individual insurances for each team member or a comprehensive group insurance covering the entire team. This

requirement is intended to protect against any potential liabilities that may arise during the course of the event.

Every team is required to upload proof of insurance on the official website by the deadline mentioned in FR 4.1.

The Transpolis site has its own safety regulations, detailed in the "Safety briefing" section of this Handbook. The admission of a team to the site implies the reading and approval of these rules by all team members, as well as the entire set of rules (including the handbook).

## FR 2.7 - Prototypes transportation

Each team is responsible for transporting its prototype to the event site. Teams must present themselves with their prototype and equipment at the entrance of the competition site according to the time schedule released previous to the event on the official website.

Team pits must be emptied and cleaned before the competition site closes at the end of the competition.

Team vehicles will be allowed on the competition site for loading and unloading the prototype and equipments at the beginning and at the end of the competition. Outside these times, vehicles may be parked on site in the designated area (see competition site map), or must be removed from the competition site. **Vehicles are not allowed onsite during the event.**

For specific requests, please contact the Event Management at [contact@fs-france.com](mailto:contact@fs-france.com).

## FR 2.8 - Event leaders

Each event (i.e. Design Event, Business Plan Presentation, Scrutineering, etc...) has a Leader at FSF. The final decision rests with them. Any relevant request or question should be brought to them. The Event Leaders are presented on the official website.

## FR 3 - Registration

### FR 3.1 - Team accounts

To be able to participate at FSF 2024, all teams must create an FSF Team account on the competition website before January 24th 2024 23:59. The category must be specified at registration. Please note that only 1 category can be chosen per team. 1 university may have 2 teams. However, 1 team member cannot be part of 2 different teams. Team accounts can be created from January 5th 2024 18:00. Verification of a team account may take up to 48 hours. Please note that 2023 accounts are not valid and will be removed from the database.

**All EV teams must have an FSA (Formula Student Austria) account to pretend to a slot at FSF 2024.** Indeed, the registration quiz for FSF 2024 is the same one as for FSA 2024. See [FR 3.2 - EV Registration](#).

**All teams must also have an FSG account for uploading files.** For certain documents, the use of online tools provided by FSG (Formula Student Germany) is required. To use these tools, a team has to be registered for the current FSG event. For teams not attending both FSF and FSG, registration for the end of the FSG waiting list is sufficient and no payment to FSG is required.

#### Notes:

- *Either EV and 3C teams need to create FSF, FSA and FSG account. For 3C teams, you can either register on the FSG and FSA websites as a CV or EV team. For organizational and document reviewal purposes, teams are required to be consistent with the type of car they are currently developing.*
- *There are no accounts for individual team members on the FSF website. Therefore, you only need one account per team (and must not create more than 1 account per team).*

### FR 3.2 - EV Registration

The regular EV registration procedure consists of a quiz. For 2024, FSA and FSF associated to hold one single quiz on January, 26th at 19:00. As a result, to participate to FSF 2024 or/and to FSA 2024, a team have to register on <https://fsaustria.at> and attend to the quiz. At the end of the quiz, a team will be given the choice to select which Formula Student to attend to (FSA, FSF or both FSA and FSF). Therefore, the rough EV teams results of the quiz will give the EV ranking basis for both FSA and FSF.

Thus, the FSF ranking basis is the rough ranking basis, crossed with the teams that have selected FSF or both FSA and FSF at the end of the quiz.

**WARNING: A team willing to participate to FSF 2024 must select FSF or both FSF and FSA at the end of the quiz, as well as register on the official FSF website. One requirement without the other will result for the team in being excluded of the registration process.**

The Top-3 French teams will be moved to the top of the FSF ranking basis to ensure French teams are given the opportunity to participate to FSF. The other 13 teams are taken according to the FSF ranking basis. The rest is placed on the waiting list, in the same order as the FSF ranking basis.

The quiz results will be published on the FSF official website. The registered teams will also receive an email.

To confirm its participation at FSF 2024, a team must make its payment before Wednesday, January 2024 31st at 23:59. Payment is accepted only by bank transfer. Bank details will be sent to every successfully registered team by email. Every team has to send a confirmation of the money transfer by email by the payment deadline. Failure to do so will result in the loss of the slot and the team being placed at the end of the waiting list.

A team moving up from the waiting list (due to deregistration of a registered team) will be informed by email. It has to confirm its participation at FSF 2024 within 72h after receiving the email by sending a proof of the money transfer.

Notes:

- *If one of the Top-3 French teams fails to send confirmation of the money transfer by the payment deadline, the next French team according to the ranking basis will be given the slot, if possible. If not, the slot will be given to the next team on the waiting list.*
- *If one of the 13 international teams fails to send confirmation of the money transfer by the payment deadline, the slot will be given to the next team on the waiting list.*
- *More than 3 French teams may participate to FSF 2024 if there are more than 3 French teams in the Top-16 of the FSF ranking basis.*

### FR 3.3 - 3C Registration

The regular 3C registration procedure consists of the same quiz as EV teams. Thus, the same procedure as EV teams applies, with the following differences:

- Attending to FSA will not be possible (as there is no 3C category at FSA 2024).
- Only 8 slots are allocated to 3C teams compared to 16 for EV teams. However, the same Top-3 French teams policy will be applied.
- 3C teams have to register as EV or CV teams on the FSG and FSA websites, depending on the type of car they are designing (i.e. they can't register as 3C teams on these platforms). This choice does not influence the ranking for FSF. As a result, points allocated to category specific questions of the quiz will not be considered. However, it influences the document reviewal: a 3C team registering as a CV team on the FSA and FSG websites won't be able to present an EV design at FSF 2024 (and vice-versa).

*Note: the EV ranking and the 3C ranking are 2 separated rankings at FSF. Therefore, the ranking of an EV team cannot influence the ranking of a 3C team in any manner whatsoever for FSF admission.*

### FR 3.4 - Registration fee

The registration fee for FSF 2024 is:

- **1 900€** for EV teams,
- **900€** for 3C teams.

The registration fee includes access to the competition site for **all team members**, without a maximum. However, the number of accesses given to a team will correspond to the number of team members registered on the TMRF, which is final on 23rd August 13:00. Payment has to be done by bank transfer.

### FR 3.5 - Camping fee

The camping fee amounts to **70€/person** (incl. VAT) and includes 7 nights on the FSF campsite (from Monday evening 26th August to Monday morning 2nd September).

After the TMRF deadline, an invoice will be issued and sent to every team registered, with the amount to be paid corresponding to the number of team members registered for the campsite on the TMRF. Payment of this invoice has to be done by bank transfer and before 14th August 13:00. Bank details will be sent with the invoice.

It is possible to book additional team members at the campsite after the TMRF deadline: the TMRF then needs to be updated before 23rd August 13:00. For the additional team members, the fee increases up to **140€/person** (incl. VAT) and can only be paid by 1 check per team at the check-in, during teams' arrivals.

After 23rd August 13:00, it won't be possible to book additional team members at the campsite.

### **FR 3.6 - Deposit**

No deposit will be charged at FSF 2024.

However, any damage will be billed to the team.

### **FR 3.7 - Refund policy**

In case FSF 2024 is cancelled by the organizers before the TMRF deadline, the registration fee and the camping fee is 100% refundable.

In case FSF 2024 is cancelled by the organizers after the TMRF deadline, the registration fee and the camping fee is 75% refundable.

In case a team withdraws from FSF 2024 at any date for any reason, the registration fee can be fully refunded if and only if another team from the waiting list registers to fill the vacant slot. In case no other team registers to FSF 2024, the registration fee is not refundable. Once paid, the camping fee is not refundable..

*Note: deregistration due to late submission is considered as a team withdrawal.*

### **FR 3.8 - VAT**

Registration fees for FSF'2024 are collected by the Association law 1901 ACTO FS France, registered under number W691108609 at the Rhône Prefecture. In France, an association does not collect VAT (Value Added Taxes).

Camping fees for FSF'2024 are collected by the University Claude Bernard Lyon 1. In France, public institutions do not collect VAT for education services.

As FSF is considered as an education service, camping fees and registration fees for FSF'2024 are therefore excluding VAT. No VAT is therefore recoverable, as well as no taxes will be required to be paid in addition to the fees aforementioned.

## FR 3.9 - Reserved slots

At FSF 2024, an additional slot is reserved for:

- Green Team Twente.

The reserved slot is an additional slot and doesn't account for one of the 16 EV and 8 3C slots. Green Team Twente will compete out of class: the points allocated are indicative and the team won't be ranked among the EV class or the 3C class. However, Green Team Twente is considered as an EV team as of the rest of the rules (document submission dates, etc...).

## FR 4 - Deadlines and documents

### FR 4.1 - Deadlines

All required documents and information must be uploaded prior to the following deadlines by all registered teams. **There won't be any deadline reminder, teams are responsible for making sure deadlines are met.** Documents may be uploaded starting with the announcement of the registration results (including for teams on the waiting list).

Date	Deadline	Submission	Document template	Document format	Class
Impact attenuator DATA (IAD)	2024-03-15 13:00	FSG account	FSG template	pdf	EV
Structural Equivalency 3D Model (SE3D)	2024-03-15 13:00	FSG account	FSG template	iges	EV
Structural Equivalency Spreadsheet (SES)	2024-03-15 13:00	FSG account	FSG template	xlsx	EV
Electrical System Form (ESF)	2024-03-29 13:00	FSG account	-	pdf	EV
Business Plan Pitch Video (BPPV)	2024-05-31 13:00	FSF account	-	mp4/wmv/avi	All
Design Spec Sheet (DSS)	2024-05-31 13:00	FSF account	FSF template	xlsx	All
Engineering Design Report (EDR)	2024-05-31 13:00	FSF account	-	pdf	All
Team Parts & Equipments (TPE)	2024-06-16 13:00	FSF account	FSF template	pdf	All
Electrical System Officer Qualification (ESOQ)	2024-06-21 13:00	FSF account	-	pdf	EV
Team Member Registration Form (TMRF)	2024-07-10 13:00	FSF account	FSF template	xlsx	All
Cost Report Documents (CRD)	2024-07-16 13:00	FSF account	FSG template	zip	All
Business Plan Report (BPR)	2024-07-16 13:00	FSF account	-	pdf/zip	All
Vehicle Status Video (VSV)	2024-07-31 13:00	FSF account	-	mp4/wmv/avi	EV
Proof of insurance	2024-08-14 13:00	FSF account	-	pdf/zip	All
Drivers licences	2024-08-14 13:00	FSF account	-	pdf/zip	EV



A team moving up from the waiting list has 7 days from the registration confirmation to upload the late documents without getting penalties.

All documents uploaded on the FSF account must comply with a maximum size of 50MB. For the uploads at the FSG account, the limits of FSG apply.

## **FR 4.2 – TPE**

For 3C teams, the document must list the equipments and parts they wish to bring to FSF 2024 in order to show them during the C&M and Design events. Especially, we expect the document to quantify the volume needed to store these parts and equipments. Please note that "by default, a 3C team won't be getting any pit space". Also, a discussion may occur between the Event Management and teams between the TPE deadline and the TMRF deadline if the space claimed by 3C teams is superior than the space that can be allocated. The quality and content of the document won't be taken into account for the scoring of the team.

For all the teams, the document must list the flammable products/parts/... brought to the event site. Especially, the TPE must list:

- Number of tires,
- Mass of lithium (in kg),
- Volume of flammable products (in L or kg).

## **FR 4.3 - Late submission**

FS Rules A 5.3.3 and A 5.4 are void. 10 penalty points are applied for each started 24 hours period after the submission deadline.

Penalties applied due to late submission of EDR, DSS, CRD, BPR and BPPV will be deducted from the team's final score of the respective static event. The minimum achievable final score in each static event is 0. If a team reaches 0 point in one of the static events due to late submission before the event, it will be deregistered from Formula Student France 2024.

The maximum possible sum of all penalty points applied due to late submission of the SES, SE3D, IAD, ESF and ESOQ is the total achievable points in all dynamic events. Penalty points applied for the late submission of these documents are deducted from the team's overall score, up to the team's achieved final points for all dynamic events. If a team fails to upload one of the previous documents within 14 days after the deadline, it will be deregistered.

Late upload for the VSV has no consequence. The deadline only indicates when a team should at the very least have its car already working. A team won't be deregistered if the VSV has not been uploaded before the event, it might even run for the dynamic events if the car passes scrutineering. In all cases, teams are requested to report for the static events, even if their car does not pass technical inspection or is not completed in time for FSF 2024.

There are no penalties for late submission of the TPE and TMRF. However, late submission of the TPE results in no space dedicated to the team. Consequences for late submission of the TMRF are described in [FR 3 - Registration](#). In particular, no TMRF submission before 23<sup>rd</sup> August 13:00 results in the team being deregistered.

There are no penalties for late submission of the proof of insurance and driver licences. However, any team that has not:

- published their proof of insurance by the deadline will be deregistered;
- published their pilots' driver licences by the deadline won't be able to attend the dynamic events.

## FR 5 - Technical Requirements and Inspections

### FR 5.1 - Technical inspection sticker

A 150x100mm (HxW) spot shall be reserved on the upward-facing bodywork at the front of the car for the FSF technical inspection sticker.

### FR 5.2 - Technical inspection order

The Technical Inspection Order (TIO), or scrutineering queue, is based on the order of submission of vehicles status videos. For teams that have not published their video before the deadline, they will be placed at the end of the queue and will be ranked according to their quiz results.

The TIO will be the basis for the assigning of the timeslots for Accumulator Inspection and Electrical Inspection. Mechanical inspection slots will also be assigned based on the TIO but not only, depending on the availability of teams. A team may begin the mechanical inspection before the electrical inspection is validated.

### FR 5.3 - Technical inspection procedure

The technical inspection procedure will take place in the designated areas indicated on the map. First technical inspection attempts get pre-defined slots for each team. All subsequent inspection attempts follow a queuing system with no time slots. The inspection order is:

- Accumulator Inspection
- Electrical Inspection
- Mechanical Inspection (including pre-inspection)
- Weighting
- Tilt test
- Rain
- Egress
- Brake test

The FSF technical inspection will roughly follow the FSG inspection sheets. The final FSF 2024 checklist will be published on the official website prior to the event. **We highly recommend the teams to practice these inspection sheets before coming to FSF.**

## **FR 5.4 - Data logger**

Data Logger will be supplied by FSEast. Specifications will be available on the FSF website, as well as on the FSEast website. These specifications may differ from the ones listed in FS Rules EV 4.6 and supersede them in case of conflict.

## **FR 5.5 - Fire extinguishers (addition to Rules 2024/T13.4)**

In addition to the two dry-powder extinguishers prescribed by the rules, teams may bring any number and type of fire extinguishers to the event site and use them in case of emergencies. This includes most notably CO<sub>2</sub>-type extinguishers and those specially designed for battery fires. We encourage fire safety schooling.

## **FR 5.6 - Accumulator areas**

Teams' accumulators are required to be stored in the charging area at all times until the accumulator and the electrical inspection are validated. Accumulators may only move from the charging area to the accu/elec inspection and vice-versa until then.

Once the accu/elec inspections are validated by FSF officials, the accumulator may be mounted on the car at all times and stored wherever teams want (i.e. charging area or pits).

Regardless of the accu/elec inspections being validated, working on accumulators is only allowed in the charging area.

## FR 6 - Static events

### FR 6.1 - Engineering Design Event

#### FR 6.1.1 - Event procedure

The Design event will take place in hard infrastructures, meaning solid walls can be used to hang any material. The space allocated will be of around 5x8m. 1 table and 1 screen (with HDMI cable) will be provided for the event. A screen presentation (ppt, pdf or similar) is expected to be shown to the judges addressing all the design review criterion.

Time slots will be allocated to each team prior to the event and published on the official website. Presenters are required to arrive on time, otherwise they may be penalized. Slots are 60 minutes long, including 10 minutes before the presentation to set up and 5 minutes after the event to uninstall, i.e. up to 45 minutes presentation (can be less depending on the team presentation) with a minimum of 10 min for questions.

#### FR 6.1.2 - Design event scoring

Category	CV & EV Points	Comments and/or expectations
Overall Vehicle Concept	20	Describe and justify why, how and what vehicle concept has been chosen to meet the team objectives at FS France 2024. Describe and justify the vehicle architecture and/or technologies and components choices related to the "make or buy" strategy in relation with the project skills, knowledges, costs, planning, quality,...
Vehicle Performance	20	Describe and justify the vehicle overall performance as a complete system to meet its objectives and specifications (possibly thanks to multi-physics models)
Mechanical / Structural / Aero Engineering	20	Describe and justify the vehicle mechanical design (structural as well as aerodynamics) under all its load cases and throughout all its life
Tractive System / Powertrain / Vehicle Dynamics	20	Describe and justify the vehicle propulsive system according to its expected performance and the design choices or design activities performed to achieve goals

LV-Electrics / Electronics / Hardware	20	Describe and justify the vehicle Low Voltage electrical system (hardware and software) related to its expected functions, performances and how the design, production, testing and validation were performed
Crew Interface	10	Describe and justify the vehicle crew interface (not limited to the pilot) in relation with the vehicles requirements (rules, control, human capacities, competition needs, etc). Any crew interfaces should be considered (assembly, maintenance, racing, etc)
Test and learn	10	Describe and justify how the vehicle tests (past and present ones) and/or partial tests were exploited in order to improve the vehicle design, manufacturing, assembly, racing, etc
Carbon Footprint	10	Describe and justify the vehicle carbon footprint focused on CO2 related to scope 1, 2 and 3 (scope 3 must be at least considered for FSF 2024)
Engineering Design Report	10	Describe and justify the vehicle in the Engineering Design Report - see report specifications in FS Rules
Engineering Project Management	10	Describe and justify the vehicle project methods related to organization, decisions, fundings, priority management, resource management
<b>Total</b>	<b>150</b>	-

### FR 6.1.3 - Guidelines

The following guidelines either mandatory or advisory shall be followed for the design event:

	Category	Guidelines
<b>Mandatory guidelines</b>	Design report	The Design report must be submitted to the FS organization on the specified date; penalty will be applied otherwise
	Design review	The presentation will be performed in English
	Design review	A screen presentation (ppt, pdf or similar) is expected to be shown to the judges addressing all the design review criterion
	Hardware	In case a car (whatever the category) is intended to race during the competition, the car must be presented during the Design Review
<b>Advisory guidelines</b>	Hardware	Any hardware not directly related to the car but in relation with any of the Design Event criteria that may support the presentation might be presented to the design judges
	Hardware	It is recommended that any hardware used to support the design review (car, parts, whatever) shall be safely prepared for use and/or inspection
	Design review	It is recommended that the design review follows the "why/how/what" presentation philosophy for each design items. It is recommended that the design review addresses the specification, design and verification principles
	Design review	It is recommended that a maximum of 3 presenters speaks for the presentation, any other technical support might be provided during the question/answer final discussion
	Design review	It is recommended that presenters feature a common dress code to be easily identified by the judges
	Design review	It is recommended to identify on top of the presenters a focal point for each of the design event criteria

### FR 6.2 - Cost & Manufacturing Event

The system for DBOM (see S2.5) and CBOM (see S2.6) will be the same as announced in the FSG 2024 handbook.

The C&M event will take place in hard infrastructures, meaning solid walls can be used to hang any material. The space allocated will be of around 5x8m. 1 table will be provided for the event.

Time slots will be allocated to each team prior to the event and published on the official website. Presenters are required to arrive on time, otherwise they may be penalized. Slots are 60 minutes long, including 10 minutes before the presentation to set up and 5 minutes after the event to uninstall (i.e. 45 minutes presentation).

Here are some reminders to prepare for the C&M event at FSF:

- The event is not just a list of parts, but an extension of the design event. The aim is to show that processes have been mastered, and that manufacturing processes have been taken into account in the design from a cost/quality/delivery point of view.
- We expect a critical look at the choices made and the mastering of alternatives (for example according to the production volumes), especially if choices have been made by default due to the availability of machines or processes at the university or by sponsors.
- It's a test of rigor and understanding of the choices made, so there's no need to have a state-of-the-art car to win.
- C&M judges expect the CRD to bring everything they need to better understand teams decisions and cost models.

The real case topic will be published on the official website prior to the event. It will be published at the latest 31st July 2024 23:59.

## **FR 6.3 - Business Plan Presentation**

### **FR 6.3.1 - Applicable Rules (*Change of Rules2024/S1*)**

Teams must comply with FSG Rules 2024 in addition to the rules specified in FR 6.3. Rules in FR 6.3 will take precedence over FSG rulebook in case of discrepancy between the two sources.

### **FR 6.3.2 - Business Plan Procedure**

The Business Plan Pitch Video and the Business Plan Report must be submitted beforehand according to the specifications in [FR 4](#).



Through your Business Plan Pitch Video, teams need to convince the judges of your idea, in order to progress to the second part (Business Plan Presentation). Teams that fail to do so, will not be eligible for points from or participation in the second part.

Teams unable to present themselves in front of the judges at the beginning of their assigned Business Plan Presentation time period will receive zero points. Teams are responsible for the performance of their equipment and connectivity.

There will not be BPP finals at FSF 2024.

### **FR 6.3.3 - Business Plan Pitch Video (BPPV)**

The BPPV must not exceed a length of 60s but may be shorter and must be in a common video format (e.g. avi, mpg, mp4, wmv,...). Links towards streaming platforms (e.g. Youtube, ...) will not be permitted.

The BPPV should be an exciting preamble of the Business Plan Presentation, depicting your business idea, giving a broad assessment of its profitability and what is offered to the investors. Regardless of the format itself, the video should have a cohesive storyline and be well-paced.

Two weeks after the submission deadline, teams will be informed if they have qualified for the Business Plan Presentation.

### **FR 6.3.4 - Business Plan Report (BPR)**

Teams qualified for the Business Plan Presentation will need to submit a Business Plan Report (see [FR 4](#) for the submission deadline).

The Business Plan Report consists in a written report (.pdf format) depicting your fledgling company's business plan and containing whatever information you deem necessary for the investors to assess the viability, growth potential, and financial prospects of your venture (forecasted revenue, costs, financial simulation, market trends,...). The pdf document may eventually be completed with other documents (xlsx, jpeg, another pdf, or other common format) that the team feels necessary to bring to the judges attention. In this case, the uploading format must be .zip.

### **FR 6.3.5 - Business Plan Presentation (BPP)**

Time slots will be allocated to each team prior to the event and published on the official website. Presenters are required to arrive on time, otherwise they may be penalized. Slots are 30 minutes long, including 5 minutes before the presentation to

set up and 5 minutes after the event to uninstall (i.e. 10 minutes presentation + 10 minutes questions and answers).

The BPP event will take place in hard infrastructures. The presentation equipment provided will be either a large-screen TV or a data projector. The available connection will be HDMI. Teams are responsible for the performance of their equipment and connectivity.

All team members involved in the BPP must be introduced to the judges at the beginning of the presentation. Only team members who have been introduced may answer the judges' questions even if they were not actually presenting

All teams can request feedback on demand. The feedback will either be in the form of a written review, onsite or remote meeting.

### FR 6.3.6 - Business Plan Scoring

Category	Points
Pitch Video	10
Content	15
Finances	15
Business Plan Report	10
Demonstration and Structure	15
Delivery	10
Questions	10
General Impression	15
<b>Total</b>	<b>100</b>

The scoring is calculated as followed:

$$BPP_{score} = 75 \left( \frac{P_{team}}{P_{max}} \right)$$

- $P_{team}$  is the score awarded to the team.
- $P_{max}$  is the highest score awarded to any team.

## FR 7 - Dynamic events

### FR 7.1 - Driver limitations

D 1.1.1 is void: a minimum of 4 drivers for each team are necessary if a team wants to run all its runs (but no team is required to run any dynamic event). A maximum of 6 drivers are allowed for each team.

### FR 7.2 - Drivers briefing

All partaking drivers must attend the mandatory driver briefings.

### FR 7.3 - Acceleration event

Each team has four runs, driven by two drivers with two runs each.

$$ACCELERATION_{score} = 71.5 \left( \frac{\frac{T_{max}}{T_{team}} - 1}{0.5} \right)$$

- $T_{team}$  is the team's best time including penalties.
- $T_{max}$  is 1.5 times the time of the fastest vehicle including penalties.

3.5 additional points are awarded to every team that finishes at least 1 valid acceleration run.

### FR 7.4 - Skidpad event

Each team has four runs, driven by two drivers with two runs each.

$$SKIDPAD_{score} = 71.5 \left( \frac{\frac{T_{max}^2}{T_{team}} - 1}{0.5625} \right)$$

- $T_{team}$  is the team's best time including penalties.
- $T_{max}$  is 1.25 times the time of the fastest vehicle including penalties.

3.5 additional points are awarded to every team that finishes at least 1 valid skidpad run.

The FSF 2024 skidpad track may be artificially wet.

## FR 7.5 - Autocross event

$$AUTOCROSS_{score} = 95 \left( \frac{\frac{T_{max}}{T_{team}} - 1}{0.25} \right)$$

- $T_{team}$  is the team's best time including penalties.
- $T_{max}$  is 1.25 times the time of the fastest vehicle including penalties.

5 additional points are awarded to every team that finishes at least 1 valid autocross run.

## FR 7.6 - Endurance & Efficiency event

The Autocross finishing order (in reverse) will form the basis for the endurance running order. However, the running order creation can deviate from a speed-based approach to accommodate organizational needs. Officials may allow or require cars to run out of order if needed to finish the endurance event within the given time limits. At least the five next vehicles according to the running order must queue up at any time during the endurance. The queue must be continuously filled up by the following vehicles. When the queue runs empty (i.e. there is no vehicle in the queue) for more than 5 min, all vehicles after the last that actually started its endurance run in the running order are considered as running Out-of-order.

The running order for the endurance according to D 7.3 will be published before the start of the endurance.

The endurance event closes if all these conditions are met:

- the only cars that have not started yet are running Out-of-order,
- the last car to run finished its run,
- the queue is empty.

Officials may maintain open as well as close the endurance event at any time if considered necessary.

$$ENDURANCE_{score} = 300 \left( \frac{\frac{T_{max}}{T_{team}} - 1}{0.333} \right)$$

- $T_{team}$  is the team's corrected elapsed time.
- $T_{max}$  is 1.333 times of the corrected elapsed time of the fastest vehicle.

1 point is awarded every endurance lap completed and 3 additional points are awarded to teams that finishes endurance without DQ (i.e. a total of 25 points are assured if a team finishes endurance without DQ).

$$EFFICIENCY_{score} = 100 \left( \frac{EF_{max} - EF_{team}}{EF_{max} - EF_{min}} \right)$$

- $EF_{team}$  the team's efficiency factor
- $EF_{min}$  the lowest efficiency factor of all teams which were considered for efficiency
- $EF_{max}$  is defined as 1.5 times  $EF_{min}$
- $EF = E \times T^2$ , with
  - $T$  uncorrected elapsed driving time
  - $E$  used energy

## FR 8 - General onsite information

### FR 8.1 - Emergency contacts

If you have an emergency that requires the police, fire department or an ambulance, you should call the emergency number 112. If you don't have an emergency, but you still need to contact the police, you can dial 17.

Always inform event officials about your emergency.

### FR 8.2 - Campsite

A document specific to the campsite will be released prior to the event on the official website. It will provide all the information needed for the teams stay. This document is to be considered part of the rules.

### FR 8.3 - Event site

The event site consists of all paddock areas, including the static event area, the scrutineering area, the pit garages, all dynamic event locations including spectator areas, the media centre, the business plan presentation rooms and the welcome centre.

The use of motorcycles, quads, bicycles, scooters, skateboards or other similar mobility devices as well as self-propelled devices in general by team members and spectators is prohibited. Teams utilizing any of the listed mobility devices may be penalized.

No vehicles are allowed on the event site, except for loading and unloading during pit construction and deconstruction times (**maximum authorized speed is 30km/h**). Teams with vehicles on the event site outside of these timeslots may be penalized.

The use of alcohol or any other drug is strictly prohibited. Team members may be asked to perform an alcohol test if doubts arise.

It is forbidden to carry out heavy work in the pits (e.g. welding, grinding, etc.). However, such work is permitted in the designated areas (see map). If you are in any doubt as to whether or not you are authorized to carry out a task in the pits, please contact the scrutineering crew.

TS cannot be activated in the pits without prior approval of an electrical scrutineer. The approval must be asked for by the ESO who will oversee the work

done during TS activation. He/She must be able to clearly explain the goal and necessity of the activation, and the details of the planned work from start to finish.

Smoking (including electronic cigarettes) is prohibited outside smoking areas (see map).

An infirmary is located on the event site (see map). A first-aid kit is available as well as a defibrillator in case of emergency.

### **FR 8.4 - Arriving at FSF 2024**

Details about arrival and check-in will be published on a specific document prior to the event. This document is to be considered part of the rules.

### **FR 8.5 - Driver Registration**

Driver registration will take place at the Welcome Centre during the teams check-in. Every driver must have their government issued driver's license and national ID card as well as their student ID ready for inspection.

### **FR 8.6 - ESO Registration**

Electrical System Officer registration will take place at the Welcome Centre during the teams check-in. Every ESO must have their national ID card as well as their student ID ready for inspection.

### **FR 8.7 - Pit garages**

Each team will be allocated a dedicated area to set up their pit garage of approximately 35m<sup>2</sup> (about 5.85m by 6m). A list of pit garage allocations with their dimensions will be published prior to the event on the competition website.

Pit garages are equipped with electricity (230v 16A, CEE 7/7) but teams are required to bring cord extensions.

### **FR 8.8 - Team Managers meetings**

Team Managers are required to attend Team Manager meetings. Team Manager meetings will take place online if prior to the event, in the place mentioned on the time schedule if during the event. Please see the time schedule for exact times.

**Team Managers meetings are mandatory.** A Team Manager can be replaced by a team member if not available. Specifically, a security briefing will be given prior to the event: a team won't be accepted onsite if the Team Manager (or a representative) doesn't show up during the security briefing.

*Note: briefings prior to the events will be announced by email. Teams are responsible for checking their electronic mailbox (meetings will be announced at least one week before they take place).*

### **FR 8.9 - Driver briefings**

Driver Briefings will take place in the place mentioned on the time schedule. Please see the time schedule for exact times of the meetings. Depending on room availability, driver briefings might be combined for different dynamic events.

### **FR 8.10 - Warnings and penalties**

Any violation of the rules may lead to a warning or penalty. Warnings can be issued in writing or verbally by event officials. Any penalties will be issued in writing and will be published publicly after the event.

### **FR 8.11 – Live streaming and live timing**

There won't be livestreaming at FSF 2024.

Live timing will be available at FSF 2024. Live timing consultation details will be published as the event approaches. Points allocated to each event will be published progressively during the event, after processing by the judges, on the official website.

For teams taking part in dynamic events, please return the transponder at the end of the event (it will be installed on the car by the scrutineers).

### **FR 8.12 - Event Photo**

All teams are required to attend the event photo. Final timing and instructions will be given on the Team Managers WhatsApp conversation (please check the time schedule for preliminary timing).

### **FR 8.13 - Charging**

The charging area is a separated dynamic area including separate entrance restrictions. Only three members per team may enter the charging area at the same



time. All of them must be Electrical System Officers (ESO). Inside the charging area, team members must not wear any conductive jewelry and must not wear any conductive objects of any kind which could touch the accumulator.

The power supply connector of the teams' charger must be according to IEC 60309 (CEE-form plug) and rated for 16A or according to CEE 7/7 (type F) and rated for 16A. Adapters are permitted.

TS Accumulators must be left to rest for 30 minutes after charging. The AMS must be live and monitored by at least one team member during the resting period.

### **FR 8.14 - Dynamic area**

Dynamic areas are specified on the map and delimited by barriers onsite. Only 4 members of the same team can access a Dynamic area. They must be wearing a vest (provided at the check-in). Penalties will be applied in the event of non-compliance.

### **FR 8.15 - Crafting area**

It is prohibited to carry out heavy work in the pits (e.g. welding, grinding, etc...). However, this type of work is permitted in the designated crafting area (see map). If you have any doubts about whether a task is authorized in the pits, please consult the scrutineers who will provide you with an answer.

## FR 9 - Security briefing

### FR 9.1 - General information

The competition is hosted on Transpolis' private site. In this context, the arrival of teams is partly supervised by Transpolis and must therefore follow the internal regulations in force. Team managers (or their representatives) are required to attend the **compulsory online safety briefing, which will take place on August 20<sup>th</sup> at 18:30**. A conference call link will be issued and sent to the teams prior to the meeting.

Transpolis will send Team Managers a prevention plan, which they must read and sign. This signature will be valid for the whole team: the Team Manager is therefore responsible for passing on the contents of this prevention plan to his team members.

Teams are required to take note of the safety rules to be published on the official website as they are considered as part of the rules.

### FR 9.2 - Points of attention

Any person onsite is required to stay on paved roads (i.e. not on grass), with the exception of unpaved but marked areas.

Wearing safety shoes is recommended. Should a person fail to wear safety shoes, he/she refuses the right to blame Transpolis or the event management in the event of an accident that could be prevented by wearing safety shoes.

The Endurance and Autocross viewers area is located on a slope. Teams are required to be careful and will be entirely responsible in the event of slips or scrambles.

## FR 10 - H<sub>2</sub> Concept Challenge

FSF 2024 will host the EV category of the Hydrogen Concept Challenge (no CV category). The specific rules for this challenge is released on the official FSF website.

Every team participating in FSF 2024 can participate in this challenge free of charge. Teams not registered for FSF 2024 can also participate in this challenge but will be charged €200. In any case, if a team wishes to participate in the challenge, please contact Event Management to apply for a slot (10 slots available). The registration process is on a first-come, first-served basis and is only possible until the TMRF deadline.

A team can participate both in the FSF 2024 H2 concept challenge and in another European event's H2 concept challenge, there is no restriction on the number of participations in the challenge for a team.

A team participating in the FSF 2024 H2 concept challenge but not registered as an EV or a 3C team will be granted access to the event site for the duration of the event and can claim a camping slot.

The winning team will be offered a Hydrogen embedded system bootcamp valued at 20 000 € by [Symbio](#), the FSF 2024 H<sub>2</sub> Concept Challenge sponsor. During this bootcamp, the team will study, with the support of Symbio experts, the basics of Fuel Cell understanding, system sizing and integration. For practical reasons, the bootcamp will be split over 3 week-ends along the academic year. It will take place on a French racetrack with hydrogen infrastructure / equipment.

*Notes: travel cost will not be covered. Logistic and dates information will be confirmed later on.*