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## Formula SAE Italy 2023

### AD ADMINISTRATIVE REGULATIONS

#### AD.1 THE FORMULA SAE SERIES

The 18<sup>th</sup> edition of the Formula SAE Italy 2023 will take place at the "Riccardo Paletti" Circuit in Varano de' Melegari (PR) on July 12-16, 2023.

Formula SAE Italy will follow the "[Formula Student Rules 2023](#)", with the exceptions and additions listed below and [Formula SAE Rules](#) for all administrative and document requirements.

##### AD.1.1 Competition Procedure

The competition is split into the following classes:

- Internal Combustion Engine Vehicle (CV)
- Electric Vehicle (EV)
- Driverless Vehicle (DV)
- Design review category: Class 3

Combustion Vehicle Class will accept Hybrid Vehicles, following the "[FS CV Hybrid Rules Extension 2023](#)" document.

##### AD.1.2 Maximum points awarded

	Class 1CV, 1EV	Class 1DV	Class 3
<b>Static Events</b>			
Business Plan Presentation	75	75	75
Cost and Manufacturing	100	100	100
Engineering Design	150	200	150
<b>Dynamic Events</b>			
Skidpad	75	100	
Acceleration	75	100	
Autocross	100	150	
Endurance	325		
Efficiency	100		
Trackdrive		275	
<b>Overall</b>	<b>1000</b>	<b>1000</b>	<b>325</b>

#### AD.2 Official Announcements and Competition Information

Formula SAE Italy news will be provided to students through the following communication tools:

- Emails to registered team leaders
- Communications published on-line on Formula-ATA website



### **AD.3 INDIVIDUAL PARTICIPATION REQUIREMENTS**

#### **AD.3.4 Society Membership**

Team members must be members of at least one of the following societies: (1) SAE International, (2) SAE Australasia, (3) SAE Brazil, (4) IMechE, (5) VDI, or (6) JSAE.

Furthermore, in case of teams coming from nations which have FISITA member Associations they can choose to subscribe to their national association.

**Proof of membership, such as membership card, is required at the competition.**

#### **AD.3.7 Protest Period**

Protests concerning any aspect of the competition must be filed in the protest period announced by the competition organizers or **2 hours** after the posting of the scores of the event to which the protest relates.

### **AD.4 TEAM ADVISORS AND OFFICERS**

#### **AD.4.1 Faculty Advisor**

AD.4.1.4 The Faculty Advisor must be present at the event for all the time. In case the Faculty Advisor will be not able to attend, the organizers will accept only a staff representative of the University.

AD.4.1.5 The Faculty Advisor will have to communicate his/her absence and/or any other changes by sending an official letter with University head paper by **June 16, 2023**.

#### **AD.4.2 Electrical System Officer (EV only)**

AD.4.2.1 Every participating team must appoint one to four ESO for the event

AD.4.2.4 ESO is not required for Class 3. In case no ESO is appointed, then the team is not allowed to have any accumulator container at the event site.

#### **AD.4.3 Electric System Advisor (EV only)**

AD.4.3.8 ESA is not required for Class 3.

### **AD.5 VEHICLE ELIGIBILITY**

#### **AD.5.1 First Year Vehicles**

A vehicle may only be used for one year, counting from the first day onsite of its first competition.

#### **AD.5.2 First Year Vehicles: Class Driverless Vehicle (DV)**

Vehicles which will attend the 2023 edition built after 2012 are classified as "first year vehicle". Also U.K. platforms are allowed.

#### **AD.5.3 Design review category: Class 3**

AD.5.3.1 Teams that participate in the "Design review category" will be admitted to the Design, Presentation and Cost events.



AD.5.3.2 A static presentation of the car, or part of it, can be conducted in order to better explain the project.

AD.5.3.3 A separate classification will be reserved for this category.

AD.5.3.4 Design, Presentation and Cost events follow the rules as per Class 1. In particular the Cost Report must contain an estimation of the cost of the actual car.

AD.5.3.5 Class 3 electric vehicles are not allowed to activate tractive system at the event site.

## **AD.6 COMPETITION REGISTRATION**

### **AD.6.2 Registration Details**

AD.6.2.1 Registration for Formula SAE Italy 2023 is made into two phases: early registration for reserved slots and main registration for all teams.

#### **Reserved early registration slots**

The first 3 Class 1C, the first 3 Class 1E, the first 3 Class 1D and the first 2 Class 3 classified teams at the Formula SAE Italy 2022 will have a granted *early registration* slot in 2023 event:

#### **Class 1C**

- Rennstall Esslingen - UAS Esslingen
- FaSTDa Racing Combustion - University of Applied Sciences Darmstadt
- Unical Reparto Corse - Università della Calabria

#### **Class 1D**

- Formula Student Team Tallinn Driverless - Tallinn University of Technology
- UniNa Corse - Università Federico II di Napoli
- Squadra Corse Polito DRIVERLESS - Politecnico di Torino

#### **Class 1E**

- Formula Student Team Tallinn - Tallinn University of Technology
- BRS Motorsport - Hochschule Bonn-Rhein-Sieg
- ARUSe - University of Seville

#### **Class 3**

- Firenze Race Team - Università di Firenze
- Formula Student FEUP - University of Porto

Further **two** *early registration* slots will be granted for North and South America, Australia and rest of the world (non-European EFTA) teams.

The early registration will open on **February 2, 2023 at 10:00 AM CET (GMT + 1)** and will close on **February 3, 2023 at 1:00 PM CET (GMT + 1)**.

After *early registration* closure, no more slot will be granted for these teams.



Slots that are not allocated for *early registration* will become available for all teams during *main registration* period.

Registration must be completed on-line via the electronic form that will be available on the event website in each registration period. The registration will be confirmed only when the due amount will be credited on the ANFIA Service Srl bank account.

Formula SAE Italy 2023 will grant 3 registration slots to 2024 event to the first 3 Class 1C & Hybrid, 1D & 1E winner teams of this year event and 2 slots to the first 2 Class 3 winner teams.

### **Entries per University - FSAE-I Competition - Registering IC & Hybrid, EV and DV teams**

For the purposes of registering and competing, a school IC & Hybrid, EV and DV teams are considered separate and independent entities. A university may register both an IC & Hybrid, EV and DV team in the same competition.

The Formula SAE Italy 2023 will admit 75 teams in Class 1 and 5 teams in Class 3 with following criteria. The Class 1C will also include the Hybrid cars, following [FS-CV-Hybrid-Rules-Extension-2023-V1](#).

- Class 1C - IC & Hybrid Engine .....30
- Class 1D – Driverless .....10
- Class 1E - Electric Propulsion System .....35
- Class 3 both IC, Electric and Driverless ..... 5

Each team must compete in the class of its registration. Teams must not participate with one car in the events of two classes.

### **Registration Dates**

Early registration for the Formula SAE Italy 2023 will open on **February 2, 2023 at 10 AM CET (GMT+1)** and will close on **February 3, 2023 at 1:00 PM CET (GMT+1)**.

Main registration for the Formula SAE Italy competition will open on **February 6, 2023 at 10:00 AM CET (GMT+1)** and will close on **March 6, 2023 at 1:00 PM CET (GMT+1)**.

Main registration is based on first come, first served basis. The list of admitted teams will be published on the website as soon as all the eventual double registrations will be cleaned up. All the updates will be available immediately after this action.

### **AD.6.3 Registration Fees**

AD.6.3.1 Teams will have 48 hours, starting from registration time, to send us the proof of the bank transfer, certifying the payment date and time:

Class 1C & Hybrid, 1D, 1E: € 1.638,52 + 22% VAT = **€ 1.999,00**

Class 3: € 1.189,65+ 22% VAT = **€ 1.451,37**

AD.6.3.2 Registration fees are not refundable and are not transferred to a subsequent year's competition, unless for COVID-19 reasons. In case the statics events will be rescheduled in digital format, part of the paid fee will be refunded.

AD.6.3.3 The registration fee includes 20 team members. Additional team member/guest can be registered by paying an extra fee of € 40,00 + 22% VAT = € 48,80 by **May 22 2023** with bank transfer (See Appendix A-2 for further information).



AD.6.3.4 ATM/Guest form is available [here](#)

#### **AD.6.4 Waitlist**

AD.6.4.1 Waiting list will not be published on the website, teams will be informed by e-mail about their possible admission to the main registration list.  
New deadlines will be set for each team when it will be included in the official list.

AD.6.4.3 The team will then have 48 hours to accept or reject its slot and to make the payment and send the proof of it.

#### **AD.6.5 Withdrawals**

Registered teams that won't be able to attend the competition are requested to officially withdraw not later than **June 7, 2023**, by notifying the following e-mail:

- **formula.sae@ata.it** for 1C & Hybrid teams
- **formula.ei@ata.it** for 1D, 1E & Class 3

#### **AD.6.6 Italy Visas**

Teams requiring visas to enter Italy are advised to complete the [list of team members](#) with their passports numbers, the arrival and departure dates and send it to the above mentioned email addresses by **June 1, 2023**.

**Late requests will be not considered.**

ANFIA will provide your team an official invitation letter, which can be used for your VISA application.

Teams that need VISA are advised to apply for it as soon as possible and to refer to the Italian VISA rules to determine the VISA requirements and applications.

ANFIA will not send personal letters or contact directly the Italian Embassies or Consulates for your team participation in the event. VISA information about required documentation can be found on the Italian Ministry of Foreign Affairs and International Cooperation's website at <http://vistoperitalia.esteri.it/home/en>.

#### **AD.6.7 Vehicle Shipping**

Vehicle shipments by commercial carrier must comply with the laws and regulations of nations from which, and to which, the car is sent. Teams are advised to consult with their shipping company or freight forwarder to be sure their shipment fully complies with all relevant customs, import/export and aviation shipping requirements.

Shipments must be sent with the sending team or university listed as the receiving party. Neither the competition organizers nor the competition site (Riccardo Paletti Circuit) can be listed as the receiving party.

Stick labels on crates/containers must have the below receiving address permanently and clearly marked:

#### **Receiving address**

**University and/or team name**  
**Car number: 000**  
**c/o Formula SAE Italy 2023**



**Autodromo Riccardo Paletti**  
**Strada per Fosio 1**  
**43040 Varano de' Melegari (PR) – Italy**

**Shipping documents** All shipping documents and custom clearances must be completed and supplied by the University and/or Team.

**Damage** Damage to the shipment is the sole responsibility of the University/Team. Be aware that the crates/containers will be stored outdoor without any shelter.

**Team contact** Please communicate to the organizers names and mobile numbers of at least two persons, who likely are the Team Leader and the Faculty Advisor, to be contacted in case of problems.

#### **Delivery and collection dates**

- Delivery: Monday 10 or Tuesday 11, 2023 from 9:00 AM to max 6:00 PM;
- Collection: **the maximum date to pick up your car will be:** Monday 17, or Tuesday 18, 2023 from 9:00 AM to max 6:00 PM.

Forklift service for loading and unloading cars will be only available on these dates. Out of these days, its availability and use are not guaranteed and, in case, teams should bear the cost.

Crates/containers must have a low access for fork lift maneuver. Crating and uncrating is the sole responsibility of the team.

#### **AD.6.8 Car Number**

When choosing your car number, please consider the numbering listed here below:

##### **Combustion & Hybrid cars**

- From 1 to 59
- From 70 to 99

##### **Driverless cars**

- From 700 to 759
- From 770 to 799

##### **Electric cars**

- From 100 to 159
- From 170 to 199

##### **Class 3 teams**

- From 300 to 399

Take note that it could be already taken by another team. The acceptance order will follow the registered team list published on the Formula-ATA website.

In that case, you will receive an e-mail message asking for a new choice.

Any team will register in a specific class and **no switch among classes** will be allowed after the registration

#### **AD.6.9 Fuel Supply**

AD.6.9.1 The fuels provided at Formula SAE Italy 2023 are expected to be 98 octane gasoline and E85. No other fuel will be supplied.



AD.6.9.2 Fuel specifications will follow the standard specification for fuel for automotive spark-ignition engines.

AD.6.9.3 Fuel choice must be communicated per Fuel System Data form available on <http://formula-ata.it/docs> by **March 8, 2023**

#### **AD.6.10 Electric Supply**

AD.6.10.1 Electric vehicle teams must communicate per Electric System Data form available on <http://formula-ata.it/docs> by **March 8, 2023** the main information about their electrical system and charger.

#### **AD.6.11 Lists of team members**

**Preliminary & Final Lists:** once a team have been registered for the competition, every team member has to upload within **March 15, 2023** its own personal data. All changes, cancellations, additions can be made to the preliminary list till **May 15, 2023**, when the final list will be due. After **May 22, 2023** no modifications will be accepted.

Payment for **Additional Team Members/guests** (more than 20 persons) can be made by bank transfer (See Appendix 1 for further information).

#### **AD.7.5 SMOKING**

Smoking – Prohibited

Smoking and e-cigarette use is prohibited in all competition areas, including the paddock.

#### **AD.7.6 Motorcycles, Bicycles, Rollerblades, etc. - Prohibited**

The use of motorcycles, quads, bicycles, scooters, skateboards, rollerblades or similar person-carrying devices by team members and spectators in any part of the competition area, including the paddocks, is prohibited.

#### **AD.7.7 Self-propelled Pit Carts, Tool Boxes, etc. - Prohibited**

The use of self-propelled pit carts, tool boxes, tire carriers or similar motorized devices in any part of the competition site, including the paddocks, is prohibited.

#### **AD.7.8 Trash Cleanup**

Cleanup of trash and debris is under the responsibility of the teams.

- The team's work area should be kept uncluttered
- At the end of the day, each team must clean all debris from their area and help with maintaining a clean paddock

Teams must remove all of their material and trash when leaving the site at the end of the competition.

Teams that abandon furniture, or that leave a paddock that requires special cleaning, will be billed for removal and/or cleanup costs.





## **DR DOCUMENT REQUIREMENTS**

### **DR.1 DOCUMENTATION**

#### **DR.1.1 Requirements**

DR.1.1.1 The documents supporting each vehicle must be submitted by the deadlines posted on the Event Website or otherwise published by the organizers.

DR.1.1.3 Following document templates are located at FSG Website (<http://bit.ly/3OIVkfU>).

- Design Spec Sheet (DSS)
- Engineering Design Report (EDR)

DR.1.1.4 Cost files are located at FSG Website Tool (<http://bit.ly/3OIVkfU>).

DR.1.1.5 Please refer to the templates and forms which can be found on the FSAE Italy documentation website: (<https://docs.formula-ata.it/>):

- Structural Equivalency Spreadsheet (SES)
- Structural Equivalency Spreadsheet Approval (SESA)
- Structural Equivalency 3D Model (SE3D)
- Impact Attenuator Data (IAD)
- Electrical System Form (ESF)
- Fuel System Data (FSD)
- Electric System Data (ESD)
- Electrical Systems Officer Form (ESO/ASR)
- Electrical Systems Advisor Form (ESA)
- Business Plan Pitch Video (BPPV) must be submitted online on the Event Website

A new platform to upload the team documents is now available: (<https://docs.formula-ata.it/>). If a team is admitted to take part in the event, it will receive an email with the instructions to create its new account and password.

#### **DR.1.2 Definitions**

##### **DR.1.2.1 Submission Date**

- The date and time of upload to the website. Uploading time will be considered till 11:59 p.m. CET of the deadline date

##### **DR.1.2.2 Submission Deadline /Mandatory first submission date**

- The date and time by which the document must be uploaded or submitted

##### **DR.1.2.3 No Submissions Accepted After / Update allowed (with penalties) date**

- The last date and time by which the document may be uploaded or submitted

##### **DR.1.2.4 Late Submission**

- Uploaded after the Submission Deadline and prior to No Submissions Accepted After
- Submitted largely incomplete prior to or after the Submission Deadline

##### **DR.1.2.5 Not Submitted**

- Not uploaded prior to No Submissions Accepted After



- Not in the specified form or format

#### DR.1.2.6 Amount Late

The number of days between the Submission Deadline and the Submission Date.  
Any partial day is rounded up to a full day. Examples: submitting a few minutes late would be one day penalty; submitting 25 hours late would be two days penalty

#### DR.1.2.7 Reviewer

A designated event official who is assigned to review and accept a Submission

DR.1.2.8 *PART IC – IC.4.3.1 ETC – Notice of Intent and IC.4.3.2 ETC – Failure Modes and Effects Analysis (FMEA)* are not required.

DR.1.2.9 *PART EV – EV11.2 Failure Modes and Effects Analysis* is not required for Class 1E vehicle.

## DR.2 SUBMISSION DETAILS

### DR.2.1 Submission Location

All documents shall be uploaded and filled in on the event documentation website (<https://docs.formula-ata.it/>)

DR.2.1.1 Allowed formats are pdf, txt zip xls, doc, xlsx, docx, jpeg. It is allowed to upload a zip-archive containing files in the mentioned formats. Submitting files in other formats will be considered as “Not submitted”. Maximum file size is indicated on the website.

Notice: teams are not notified if a document is submitted incorrectly. Therefore, teams are advised to verify after the upload that their documents can be downloaded and can be read for entire and that deadlines have been met.

#### DR.2.2.5 Submission Deadlines

Deadline / Mandatory First submission date	No submission* accepted after/ Updates allowed with penalties	
February 2, 2023	February 3, 2023	<b>Early Registration</b> opens on February 2 at 10.00 AM CET (GMT +1). It closes on February 3, 2023 at 1.00 PM CET (GMT +1)
February 6, 2023	March 6, 2023	<b>Registration</b> opens on February 6 at 10.00 AM CET (GMT +1). It closes on March 6, 2023 at 1.00 PM CET (GMT +1)
February 27, 2023	March 06, 2023	ALL CLASSES – Camping booking form
	June 26, 2023	CLASS 1E/1D – Electrical Systems Officer and Electrical Systems Advisor Form
March 08, 2023	March 14, 2023	CLASS 1C – Fuel system data
	July 03, 2023	CLASS 1E/1D – Electric System Data
March 15, 2023	March 22, 2023	ALL CLASSES – Preliminary team member list
March 27, 2023	April 28, 2023	ALL CLASSES – Structural Equivalency Spreadsheet (SES) or Structural Equivalency Spreadsheet Approval (SESA) and Structural Equivalency 3D Model (SE3D). <b>Teams using a monocoque chassis must submit the SES Autocertification, in addition to the SES deadline</b>
April 3, 2023	April 3, 2023	ALL CLASSES – Acceptance of camping requests
April 10, 2023	April 17, 2023	ALL CLASSES – Camping confirmation and payment
	July 03, 2023	CLASS 1E/1D/3 – Electrical System Form
May 23, 2023	June 02, 2023	CLASS 1C/1E/1D – Impact Attenuator Data
May 15, 2023	May 15, 2023	ALL CLASSES – Video & Executive Summary
	May 15, 2023	ALL CLASSES – BPP publish of Deep Dive Topics
	May 22, 2023	ALL CLASSES – Final team member list & payment for Additional Team Members
May 26, 2023	June 09, 2023	ALL CLASSES – Engineering Design Report & Design Spec Sheet
May 31, 2023	May 31, 2023	ALL CLASSES – BPP outcome of Stage 1 and acceptance to Stage 2
June 1, 2023	June 8, 2023	ALL CLASSES – Invitation letters for VISA
June 7, 2023	June 7, 2023	ALL CLASSES – Team & camping withdrawal
June 9, 2023	June 9, 2023	ALL CLASSES – e-Cost Report, e-BOM
June 10, 2023	June 10, 2023	ALL CLASSES – BPP Stage 2 Business Pitch performance
June 16, 2023	June 16, 2023	ALL CLASSES – Change of Faculty Advisor
June 30, 2023	June 30, 2023	ALL CLASSES – BPP Stage 2 Business Pitch result and team acceptance to Stage 3

\* First column indicates the mandatory date for the submission of the first version of documents. Second column indicates the date within the update of documents is allowed (**WITH PENALTIES**, following FSAE Italy DR 3 rule). **Please, check the rules.**



### DR.2.3 Web Based Submission

Teams entering Formula SAE Italy 2023 must submit the documents online through <https://docs.formula-ata.it/>.

The upload date and time on the website constitute the official record for deadline compliance.

Documents may be uploaded on the website from the time your account has been created until the "**Mandatory First Submission Date**" deadline. Submissions may be replaced with new uploads at any point during that period without penalty.

Unless for changes specifically requested by the reviewers, documents uploaded after the "**Mandatory First Submission Date**" and the "**Updates allowed (with penalties) date**" deadline are classified as late submissions and the appropriate penalties will be applied.

No submissions will be allowed after the "**Updates allowed (with penalties) date**" deadline, even if the document is required to access technical inspections (IAD, SES, ESF, FMEA and ESO/ESA). In this case, teams may not be allowed to attend dynamic events.

### DR.2.4 Account Signup for Online Submission – FSAEI Event Only

After confirmation of team registration, teams will receive an email with the instructions to create their new account and password.

### DR.2.5 SES Submission

DR.2.5.1 Teams using a monocoque chassis must submit a SES Autocertification as one document, in addition to the SES deadline.

DR.2.5.2 The Structural Equivalency Spreadsheet (SES) must be checked and approved by:

- Validation/inspection organization (e.g. DEKRA, ...)
- Engineering firm for lightweight structures
- Engineering consultancy company
- Any other official competition

DR.2.5.3 If any changes to the original SES become necessary due to the approval process, the updated final SES must be uploaded again on the competition website.



### DR.3 SUBMISSION PENALTIES

DR.3.2.1 Late Submissions will receive a point penalty as shown in following table, subject to officials discretion.

Penalty Group	Penalty Points per day	Maximum penalty points	Not Submitted
Tech (SES, IAD, ESO/ESA, ESF)	-10	-50	Removal of Team Entry – see FSAE rule DR.3.3
Business Plan Pitch Video (BPPV)	-10	-50	Removed from Presentation Event; <b>Score -100 points in Presentation Event</b>
Cost (Ebom, Report)	-10	-80	Removed from Cost Event <b>Score -100 points in Cost Event</b>
Design (DR, DSS)	-10	-100	Removed from Design Event <b>Score -100 points in Design Event</b>



## APPENDIX 1: PAYMENT DETAILS AND INVOICE

### PAYMENT DETAILS

- **Team registration:** teams will have 48 hours, from the shift to awaiting for payment status, to send us the proof of the bank transfer, certifying the payment date and time. Registrations to the Formula SAE Italy 2023 will be confirmed only when the due amount is credited on the ANFIA Service Srl bank account.
- **Camping confirmation:** teams will have to send the camping confirmation form and the evidence of payment within **April 10, 2023** to the respective email address.
- **Additional team member/guest:** teams will have to send the ATM/Guest form with the evidence of payment within **May 15, 2023** to the respective email address.

### When making the payments, please consider these administrative regulations:

- 22% Italian VAT is **ONLY** required from European and non-European natural persons, who make the payment, i.e.: registration fee = **1,638.52 € + 22% VAT = 1,999.00 € total amount to be paid.**
- 22% Italian VAT is **NOT** required from European companies owing a VAT code, the Italian Public Administrations and from non-European companies, who make the payment, i.e.: registration fee = **1,638.52 € total amount to be paid.**
- 22% Italian VAT is **ALWAYS** required from all Italian participants (natural persons/companies), i.e.: registration fee = **1,638.52 € + 22% VAT = 1,999.00 € total amount to be paid.**

### Payments method

- Bank transfer to: ANFIA Service Srl – **Bank name:** BPER Banca – Turin Branch – Corso Vittorio Emanuele II, 48/F – Torino – Italy - **IBAN n.:** IT07T0538701002000038545602 – **Swift code:** BPMOIT22.

**Please indicate on the bank transfer the following payment descriptions:**

- **Team name**
- **University name/company name**

**Payment must be received in full. ALL bank transfer charges must be covered by the payer.**

### INVOICE

It is mandatory to fill in all the fields for the invoice. Be sure to put the right heading:

- University name/company name, or natural person's surname and name
- Department (if needed),
- Address, post code, town, country,
- VAT number,
- "Codice Fiscale" field is **ONLY FOR** Italian Universities, companies and natural persons
- "Codice identificativo" field is **ONLY FOR ITALY**,
- Administration email address.

Particularly, in the field of "VAT number" please check to have a correct VAT NUMBER. Please do not insert any other data: i.e. tax identification number.

If you do not have got one, please write "Not in possession" in the field.

### For Italian teams only

Following the rule on the electronic invoicing for all Italian bodies owing a VAT code, please note that we need to receive the "codice identificativo" of your company, which is an alphanumerical 7 digits code.

Public Administration invoicing will remain unchanged.

For natural persons or associations with only a "codice fiscale" we need to receive an email address to send the invoice.



## APPENDIX 2: CAMPING

A camping site will be available for the event **from July 11, at 3.00 PM to July 17, 2022 at 2:00 PM**. It will be located next to the circuit in Varano de' Melegari.

The camping check-in is foreseen on **July 11, 2023 from 3.00 PM to 7:00 PM**. It is **MANDATORY** for all teams to comply with the timetable. In order to avoid a huge crowd gathered at the campsite entrance, the Team Leader only will be allowed to register the team.

Interested teams have to send to ANFIA ([s.migliaccio@anfia.it](mailto:s.migliaccio@anfia.it)) the [Camping Booking Form](#) within **February 27, 2023**.

Camping requests will be accepted in the order they will be received. The camping availability will be communicated to teams within **April 3, 2023**.

The fee for 6 days is **83.61 € + 22% VAT = 102.00 €/person**

Within **April 10, 2023** teams must send the evidence of payment, together with the list of members and their passport/IC numbers.

We will accept only single payment for each team.

The **payment** can be made with bank transfer to:

ANFIA Service Srl

**Bank name:** BPER Banca – Turin Branch - Corso Vittorio Emanuele II, 48/F - Torino – Italy - **IBAN** n.: IT07T0538701002000038545602 – **Swift code:** BPMOIT22.

**Please indicate on the bank transfer the following payment descriptions:**

- Team name
- University name

**Payment must be received in full. ALL bank transfer charges must be covered by the payer.**

A refund of 50% of the overall amount of camping fee will be granted in case of team withdrawal, only if the communication is sent within **June 7, 2023**.

## T GENERAL TECHNICAL REQUIREMENTS

On this chapter Formula SAE Italy 2023 will follow the [“FS-Rules 2023 v1.1”](#) with the exceptions and additions listed below.

T 5.2.1 The vehicle must use a 6 or 7 point restraint harness meeting the following specifications:

- c. FIA specification currently in use (recommended 8853-2016, allowed 8853/98); please check in advance the validity of the belts set and the presence of readable labels.

### T 5.2.4 Use of HANS / FHR systems

The use of HANS \ FHR spec. FIA is highly recommended.

Please check compatibility of HANS/FHR homologation with the helmet standard

**Table for helmet and Hans/FHR compatibility**

	FHR 8858-2010	Tether (with end fitting) 8858-2010	Helmet anchorage 8858-2010	Helmet 8858-2010, 8859-2015, 8860- 2010 and 8860-2018
HANS 8858-2002		YES	YES	YES
Tether (w/ end fitting) 8858-2002	NO		If mecha- nically compatible	YES
Helmet anchorage 8858-2002	YES	If mecha- nically compatible		NO
Helmet 8858-2002 and 8860-2004	YES	YES	NO	

### T 8.1.2 Aerodynamic Devices

No power device may be used to move or remove air from under the vehicle. Power ground effects are strictly prohibited.

T11.1.2 The maximum permitted voltage that may occur between any two electrical connections in the LVS is 60VDC or **25 VACRMS**.

### T 13.3.13 Driver Equipment – Helmet

Acceptable helmet standards are: full-face helmets with the following specifications:





- FIA 8860-2018
- FIA 8860-2010
- FIA 8860-2004
- FIA 8859-2015
- Snell SA 2010 + FIA 8858-2002;
- Snell SA 2010 + FIA 8858-2010;
- Snell SAH 2010 + FIA 8858-2010;
- Snell SA 2010
- Snell SAH 2010
- Snell SA 2015

#### **T 14 AUTONOMOUS SYSTEM**

with the exceptions and additions listed below:

T14.1.1 Doesn't apply

T14.9.2 Doesn't apply

T14.12.1 Ignore the text "[DC ONLY]"



## **CV INTERNAL COMBUSTION ENGINE VEHICLES**

On this chapter Formula SAE Italy 2023 will follow the "[FS-Rules 2023 v1.1](#)" with the exceptions and additions listed below.



## EV ELECTRICAL VEHICLES

On this chapter Formula SAE Italy 2023 will follow the [“FS-Rules 2023 v1.1”](#) with the exceptions and additions listed below.

### EV 4.2 Tractive System Enclosures

EV 4.2.1 TS enclosures, see EV 1.1.2, must be labeled with (a) reasonably sized sticker(s) according to “ISO 7010-W012” (triangle with a black lightning bolt on yellow background). The sticker must also contain the text “High Voltage” if the voltage is more than 60 VDC or **25 VACRMS**.

### EV 4.10 Tractive System Active Light

EV 4.10.2 The TSAL itself must have a red light, flashing continuously with a frequency between 2 Hz and 5 Hz and a duty cycle of 50 %, active if and only if the LVS is active and the voltage across any DC-link capacitor exceeds

- 60 VDC or **25 VACRMS**
- Half the nominal TS voltage

whichever is lower.

EV 4.10.3 The TSAL itself must have a green light, continuously on, active if and only if the LVS is active and ALL of the following conditions are true:

- All AIRs are opened.
- The pre-charge relay, see EV 5.7.2, is opened.
- The voltage at the vehicle side of the AIRs inside the TSAC does not exceed 60 VDC or **25 VACRMS**.

### EV 5.5 Tractive System Energy Storage – Mechanical Configuration

EV 5.5.15 A sticker according to “ISO 7010-W012” (triangle with a black lightning bolt on yellow background) with the triangle side length of at least 100 mm and the text “Always Energized” must be applied on every TSAC. The sticker must also contain the text “High Voltage” if the voltage is more than 60 VDC or **25 VACRMS**.

### EV 6.1 Shutdown Circuit

EV 6.1.5 If the shutdown circuit is opened, the TS must be shut down by opening all AIRs and the voltage in the TS must drop to below 60 VDC and **25 VACRMS** in less than five seconds. All accumulator current flow must stop immediately.

The action of opening the AIRs may be delayed by  $\leq 250$  ms to signal the action to the motor controllers and reduce the TS current before the AIRs are opened. The AIR supply must be abruptly switched off before reaching the minimum AIR supply voltage.

### EV 6.3 Insulation Monitoring Device (IMD)

EV 6.3.8 The indicator for “IMD” fault shall be mounted on non-removable bodywork.

Approved equivalents for the 2023 competition year are the Bender IR425 or Sendyne SIM101MLQ.



## **DV DRIVERLESS**

On this chapter Formula SAE Italy 2023 will follow the rules of the [“FS-Rules 2023 v1.1”](#) that are listed below and all the rules that are mentioned in the listed ones

### **T 14 AUTONOMOUS SYSTEM**

with the exceptions and additions listed below:

T14.1.1 Doesn't apply

T14.9.2 Doesn't apply

T14.12.1 Ignore the text “[DC ONLY]”

### **T 15 AUTONOMOUS SYSTEM BRAKE**



## **IN TECHNICAL INSPECTIONS**

On this chapter Formula SAE Italy 2023 will follow the "[FS-Rules 2023 v1.1](#)" with the exceptions and additions listed below.

### **IN 1.2 General rules**

IN 1.2.4 The technical inspection sheet includes several inspection points and will be provided on site.

IN 1.2.8 (deleted)

IN.1.2.15 Presenting a vehicle for Technical Inspection constitutes a declaration by the team that they have determined by self-inspection that the vehicle complies with the Formula SAE Italy 2023 Rules.

### **IN 1.6 Technical Inspection Authority**

Decisions of the Technical Inspectors and the Chief Technical Inspector concerning vehicle compliance are final and may not be appealed.

**IN 2 PRE-INSPECTION: Pre-inspection will be performed as part of mechanical inspection.**



## S STATIC EVENTS

On this chapter Formula SAE Italy 2023 will follow the "[FS-Rules 2023 v1.1](#)", with the exceptions and additions listed below.

### S 1 BUSINESS PLAN PRESENTATION EVENT (BPP)

On this chapter, Formula SAE Italy 2023 will follow its own rule listed below.

#### 1. Business Plan Presentation Event (BPP)

##### 1.1. Business Plan Presentation Objective

- 1.1.1. The objective of the BPP is to evaluate the team's ability to develop and deliver a comprehensive business model, which demonstrates their product – a prototype race car – could become a rewarding business opportunity that creates a monetary profit.
- 1.1.2. The judges should be treated as if they were potential investors or partners for the presented business model.
- 1.1.3. The race car doesn't have to be the core of the business idea, however, the business plan presentation must relate to the specific prototype race car entered in the competition. The quality of the actual prototype will not be considered as part of the BPP judging.

##### 1.2. Business Plan Presentation Procedure

- 1.2.1. The Business Plan Presentation will be held in a three-stage process.
- 1.2.2. Stage 1 (1.4.) and Stage 2 (1.5.) will be held virtually prior to the competition. The Executive Summary (1.3.) and the Racing Elevator Pitch (1.4.) must be submitted at the same time. The exact dates will be published on the competition "Information & Rules" available on the competition website
- 1.2.3. Stage 1 and Stage 2 will be handled as a drop-out stage. You need to convince the judges of your idea, in order to progress to the next stage. Teams that fail to do so, will not be eligible for points of the next stages.
- 1.2.4. Stage 3 (1.6.) will take place during the competition, as part of the static events. Teams can compete only in person at the event site
- 1.2.5. Teams which won't submit the Racing Elevator Pitch within the given deadline or will be unable to attend the assigned time slot in Stage 2 will not be eligible for the following Stage.
- 1.2.6. The teams in Stage 2 and 3 are responsible for the performance of their equipment s and connectivity.

##### 1.3. Executive Summary

- 1.3.1. To convince the potential investors or partners that the team's presentation is worthy of their time, it is required that an executive summary is submitted before the competition. The executive summary should contain a brief description of the team's idea and business plan
- 1.3.2. The executive summary must be submitted online via the competition website, not later than the deadline specified in the competition "Information & Rules".

##### 1.4. Stage 1: The "Racing Elevator Pitch":

- 1.4.1. You must upload on YouTube (public domain) a pre-recorded 30-second video and it must be in a common video format, e.g. avi, mpg, mp4, wmv. The hyperlink of the Video must be into the Executive summary. No other way of submission is accepted for the Video
- 1.4.2. Teams are not limited in the way they present these 30 seconds. Visual aids of any kind are allowed, but not required
- 1.4.3. The target is to catch the attention of the judges, so that they want to know more about your business idea
- 1.4.4. Two weeks after submitting the video and the Executive Summary, teams will be informed if they have made it to Stage 2.



### 1.5. **Stage 2: The “Business Pitch”:**

- 1.5.1. Content of the “Business Pitch” is a compact version of the Business Plan Presentation with a specific focus on business figures. The teams have to present a realistic financial concept of a profitable project
- 1.5.2. The Business Pitch is limited to 3 minutes. The judges will stop any presentation exceeding 3 minutes. Immediately following the Business Pitch there will be a 5 minutes question and answer session
- 1.5.3. The goal is to convince the judges that the team’s idea is worth an investment.
- 1.5.4. Teams are not limited in the way they present these 3 minutes, but it must be presented by one or more team members, however not more than three.
- 1.5.5. The event organization will provide the links to the respective software and communicate the slots in time.
- 1.5.6. 48h after presenting the Business Pitch, teams will be informed if they have made it to Stage 3.
- 1.5.7. All teams who made it to Stage 3 will be assigned a specific **Deep Dive Topic**, which has to be part of the 10 Minute Business Plan Presentation.
- 1.5.8. All team members must present their student and team member credentials, if requested by event officials.

### 1.6. **Stage 3: The 10 Minute Business Plan Presentation**

- 1.6.1. The 10 Minute Business Plan Presentation will be part of the static events onsite of the competition covering all areas of the business idea
- 1.6.2. Presentations are limited to a maximum of ten minutes. The judges will stop any presentation exceeding ten minutes
- 1.6.3. The presentation will not be interrupted by questions. Immediately following the presentation there will be a Q&A session.
- 1.6.4. A maximum of three team members, physically at the event, may present the business plan and answer the Q&A session.
- 1.6.5. The Business Plan Presentation Finals will be held only physically at the event site

### 1.7. **Feedback**

- 1.7.1. Feedback will be available to the teams upon request on the event site after the Finals, and only in person. If you drop out before stage three the respective teams will be informed additional about feedback possibilities.

### 1.8. **Business Plan Presentation Scoring**

- 1.8.1. The scoring of the stages is subsequent. For example, if a team fails to participate in Stage 1, there is no possibility for that team to score points at a later stage. Teams that fail to attend their presentation at any stage within their assigned time period will receive zero points for this stage as well as all following stages.
- 1.8.2. The maximum scoring of the BPP event is 75 points.
- 1.8.3. The scoring for the non-finalist is calculated as follows:

$$\text{PRESENTATION SCORE} = 71 \cdot \frac{P_{\text{your}}}{P_{\text{min-F}}}$$

Where:

“P<sub>your</sub>” is the score awarded to your team by the business judges in the initial judging (all 3 stages added up together).

“P<sub>min-F</sub>” is the lowest score awarded to any team participating in the finals in the initial judging (all 3 stages added up together).

The scoring of the BPP finalists will vary from 75 to highest non-finalist score and is scored immediately after the BPP finals by all judges.



Possible penalties from Rules 2020\A 5 could affect the final scoring.

*Note: The intent of these changes is to avoid skewing the initial points distribution in events with non-uniform points distribution (more likely with fewer participants)*

1.1.1. Stage 1 “Racing Elevator Pitch” will be evaluated on following categories:

Category	Points
Business Idea	5
Content	5
Demonstration and Delivery	5
Do investors want to know more	5
<b>Total</b>	<b>20</b>

1.1.2. Stage 2 “Business Pitch” will be evaluated on following categories:

Category	Points
Business Figures	5
Content	5
Demonstration and Delivery	5
Are investors convinced of profitability	5
<b>Total</b>	<b>20</b>

1.1.3. Stage 3 “Business plan presentation” will be evaluated on following categories:

Category	Points
Novelty	5
Content	10
Finances	5
Deep Dive Topic	10
Demonstration and Delivery	5
Structure	10
Questions	10
General Impression	5
<b>Total</b>	<b>60</b>

## S 2 COST AND MANUFACTURING EVENT

On this chapter, Formula SAE Italy 2023 will follow chapter S 2 of “FS-Rules 2023 v1.1” with the exceptions and additions listed below.

### S 2.10 Cost and Manufacturing Scoring

S 2.10.3-4-5 The Cost Event will host no finals





Once a team completed the BOM, DBOM and CBOM files on the FSG Website Tool, all the documents must be submitted here: <http://formula-ata.it/docs>, together with the offline ones.

### S 3 ENGINEERING DESIGN EVENT

On this chapter, Formula SAE Italy 2023 will follow chapter S 3 of “FSG-Rules 2023 v1.1” with the exceptions and additions listed below.

#### S.3.1 [DV ONLY] Autonomous Design Report (ADR)

S.3.1.1 The ADR should contain a description of the autonomous system with a review and derivation of the team’s design objectives. Any information to scope, explain or highlight design features, concepts, methods or objectives to express the value and performance of the autonomous system to the judges shall be included at the team’s discretion.

S.3.1.2 Evidence of information mentioned in the ADR should be brought to the competition and be available, on request, for review by the judges.

S.3.1.3 The ADR must not exceed five pages of content (text, which may include pictures and graphs).

S.3.1.4 Any portions of the ADR that exceed five pages of content will not be evaluated.

S.3.1.5 The ADR must be written as a scientific paper.

S.3.1.6 [DV Only] The design event starts with the submission of the DSS and the ADR and their review respectively.

S.3.2 [DV ONLY] Teams need to show some simulation test data, where the judges can see how the algorithms work.

S.3.3 Design Judging Score Sheets are available at the FSAE Online website, except for DV Design Committee, which will judge following categories:

Vehicle Concept <ul style="list-style-type: none"><li>» Architecture</li><li>» Target setting</li><li>» Validation</li><li>» Simulation / Testing</li><li>» Development approach</li></ul>
Autonomous System <ul style="list-style-type: none"><li>» Perception</li><li>» Localization</li><li>» Mapping</li><li>» Path planning</li><li>» Path tracking</li></ul>
Vehicle System <ul style="list-style-type: none"><li>» Chassis</li><li>» Actuators</li><li>» Electrics / Electronics</li><li>» Powertrain</li></ul>
Software Architecture <ul style="list-style-type: none"><li>» Controls</li><li>» Real-time architecture</li><li>» Calibration / Training</li><li>» Safety / Security management</li></ul>
Documentation



- » ADR quality
- » Coherence with the vehicle
- » Innovation from previous years

S.3.4 Scoring may range from 0 to 150 points, at the discretion of the Chief Design Judge.

[DV Only] Scoring may range from 0 to 200 points, at the discretion of Chief Design Judge

## D - DYNAMIC EVENTS

On this chapter Formula SAE Italy 2023 will follow the “[FS-Rules 2023 v1.1](#)”, with the exceptions and additions listed below.

### D.1.1 Dynamic Events and Maximum Scores

Acceleration 75 points  
 Skid Pad 75 points  
 Autocross 100 points  
 Efficiency 100 points  
 Endurance 325 points  
 Efficiency 100 points  
**Total 675 points**

#### D.1.2 Skidpad scoring

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

#### D.1.3 Acceleration scoring

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

#### D.1.4 Endurance scoring

25 points are awarded to every team that finishes endurance without DNF or DQ.

D7.8.4 If a team's corrected elapsed time is below  $T_{max}$ , additional points based on the following formula are given:

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

$T_{team}$  is the team's corrected elapsed time.

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

#### D.1.5 Efficiency scoring

Efficiency points based on the following formula are given:

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

with

$EF_{team}$  the team's efficiency factor

$EF_{min}$  the lowest efficiency factor of all teams which were considered for efficiency



$EF_{max}$  is defined as  $1.5 \cdot EF_{min}$

#### D.1.2 [DV ONLY] Dynamic Events and Maximum Scores

Acceleration 100 points  
Skid Pad 100 points  
Autocross 150 points  
Trackdrive 275 points  
**Total 625 points**

#### D.1.3 [DV ONLY] Additional Rules for DV Dynamic Events

On this chapter Formula SAE Italy 2023 will follow the rules of the "[FSG-Rules 2023 Version 1.1](#)" that are listed below and all the rules that are mentioned in the listed ones.

FSG-D2.3.8 When driving in autonomous mode, an ASR has to be present at the race control with the RES. Additionally, one single monitoring device (laptop, tablet, ...) may be brought (no complicated antenna construction or similar!)

FSG-D2.5 Cones & Markings for Autonomous Running

FSG-D2.6 Start-up Procedure for Autonomous Running

FSG-D2.7 Vehicle Break Downs and Usage of RES during Autonomous Running

FSG-D2.8 Procedure After Completing an Driverless Dynamic Event

FSG-D4 SKIDPAD EVENT

with the exceptions and additions listed below:

FSG-D4.2 Doesn't apply

FSG-D4.4 Doesn't apply

FSG-D4.5 Doesn't apply

FSG-D4.6.4 If a team's run time including penalties is below  $T_{max}$ , additional points based on the following formula are given:

$$SKIDPAD\_SCORE = 96.5 \left( \frac{\left( \frac{T_{max}}{T_{team}} \right)^2 - 1}{1.25} \right)$$

$T_{team}$  is the team's best driverless run time including penalties.

$T_{max}$  is 1.5 times the time of the fastest driverless run of all teams including penalties

FSG-D5 ACCELERATION EVENT

with the exceptions and additions listed below:

FSG-D5.2 Doesn't apply

FSG-D5.4 Doesn't apply



FSG-D5.5 Doesn't apply

FSG-D5.6.3 If a team's best time including penalties is below  $T_{max}$ , additional points based on the following formula are given:

$$ACCELERATION\_SCORE = 96.5 \left( \frac{T_{max}}{T_{team}} - 1 \right)$$

$T_{team}$  is the team's best DV time including penalties.

$T_{max}$  is 2 times the time of the fastest DV vehicle including penalties.

#### FSG-D6 AUTOCROSS EVENT

with the exceptions and additions listed below:

FSG-D6.2 Doesn't apply

FSG-D6.3 Doesn't apply

FSG-D6.5.2 If a team's corrected elapsed time is below  $T_{max}$ , points based on the following formula are given:

$$AUTOCROSS\_SCORE_i = 140 \left( \frac{T_{max} - T_{team_i}}{T_{max} - T_{min}} - 1 \right)$$

$$AUTOCROSS\_SCORE_{total}$$

$$= \max (AUTOCROSS\_SCORE_1, \text{avg}(AUTOCROSS\_SCORE_1, \dots, AUTOCROSS\_SCORE_n))$$

$T_{team,i}$  is the team's time including penalties of run i.

$T_{max}$  is the time for driving the lap with 4 m=s.

$T_{min}$  is the fastest corrected elapsed time of all teams

#### FSG-D8 TRACKDRIVE EVENT

with the exceptions and additions listed below:

FSG-D.8.3.4 If a team's corrected elapsed time is below  $T_{max}$  and the run was not DNF or DQ, points based on the following formula are given:

$$TRACKDRIVE\_SCORE = 225 \left( \frac{T_{max}}{T_{team}} - 1 \right)$$

$T_{team}$  is the team's corrected elapsed time.

$T_{max}$  is 2 times of the corrected elapsed time of the fastest vehicle over all runs.



#### FSG-D9 DYNAMIC EVENTS PENALTIES

with the exceptions and additions listed below:

FSG-D9.2 Doesn't apply

FSG-D9.3 Doesn't apply

#### D.15.4 Efficiency [DV only]

NOT APPLICABLE