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Formula SAE Italy, Formula Electric Italy & Formula Driverless 2019

Information & Rules

AD ADMINISTRATIVE REGULATIONS

AD.1 THE FORMULA SAE SERIES

The 15th edition of the Formula SAE Italy, Formula Electric Italy & Formula Driverless 2019 will take place at the "Riccardo Paletti" Circuit in Varano de' Melegari (PR) on July 24-28, 2019.

Formula SAE Italy, Formula Electric Italy & Formula Driverless 2019 will follow the “[2019 FSAE Rules](#)”, with the exceptions and additions listed below and use the FSAE scoring methods.

AD.1.2 Official Announcements and Competition Information

Formula SAE Italy, Formula Electric Italy & Formula Driverless 2019 news will be provided to students in following forms of media:

- Emails to registered team leaders
- Press releases 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 Association they can choose to subscribe to their national association.

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

AD.5 TEAM ADVISORS AND OFFICERS

AD.5.1 Faculty Advisor

AD.5.1.4 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.5.1.5 The Faculty Advisor will have to communicate his/her absence and/or any other changes by sending official letter with University head paper by **June 28, 2019**.

AD.5.2 Electrical System Officer (EV only)

AD.5.2.1 Every participating team must appoint one to four ESO for the event



AD.5.2.4 ESO is not required for Class 3. In case no ESO is appointed, then team is not allowed having any accumulator container at the event site.

AD.5.3 Electric System Advisor (EV only)

AD.5.3.6 The ESA must review the Electrical System Form document to confirm that in principle the vehicle has been designed using good engineering practices. Signed version of review checklist has to be attached to uploaded ESF version as proof of approved review.

AD.5.3.8 ESA is not required for Class 3.

GR.7 VEHICLE ELIGIBILITY

GR.7.2.1 Competition Year

The period beginning at the event of the Formula SAE series where the vehicle first competes and continuing until the start of the corresponding event held approximately 12 months later.

The vehicle first competes as soon as it begins the technical inspection process or participates at any static event valid for class 1.

GR.7.2.5 First Year Vehicles: Class Driverless

Vehicles which will attend the 2019 edition built after 2012 are classified as "first year vehicle". Also U.K. platforms are allowed.

GR.7.2.6 Design review category: Class 3

GR.7.2.6.1 Teams that participate in the "Design review category" will be admitted to the Design, Presentation and Cost events.

GR.7.2.6.2 A static presentation of the car, or part of it, can be conducted in order to better explain the project.

GR.7.2.6.3 A separate classification will be reserved for this category.

GR.7.2.3.4 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.

GR.7.2.3.5 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, Formula Electric Italy & Formula Driverless 2019 is made into two phases: early registration for reserved slots and main registration for all teams.

Reserved 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, Formula Electric Italy & Formula Driverless 2018 will have a granted *early registration* slot in 2019 event:

Class 1C

- TU Graz Racing - Team Technical University of Graz (Austria)
- High-Octane Motorsports e.V - Friedrich-Alexander University Erlangen Nuremberg (Germany)
- PWR Racing Team - Wroclaw University of Science and Technology (Poland)

Class 1E

- FS Team Tallinn- Tallinn University of Applied Sciences (Estonia)
- Global Formula Racing - DHBW Ravensburg (Germany)
- Squadra Corse - Politecnico di Torino (Italy)

Class 1D

- AMZ driverless - ETH Zürich (Switzerland)
- munichMotorsport - University of Applied Sciences Munich (Germany)
- KA-RaceIng - Karlsruhe Institute of Technology (Germany)

Class 3

- Polimarche Racing Team - Università Politecnica delle Marche (Italy)
- Arab Academy Motors Arab Academy for Science, Technology and Maritime Transport (Egypt)

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

Further five *early registration* slots will be granted for North and South America Australia and rest of the world (non-European) 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 per electronic form that will be available on the event website in each registration period. The registration will be confirmed only when the due amount is credited on the ANFIA bank account.



Formula SAE Italy, Formula Electric Italy & Formula Driverless will grant 3 registration slots to the 2020 event to the first 3 Class 1C, 1E & 1D 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, EV and DV teams

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

The Formula SAE Italy, Formula Electric Italy & Formula Driverless 2019 will admit 95 teams in Class 1 and 5 teams in Class 3 with following criteria:

- 52 Class 1C - IC Engine
- 33 Class 1E - Electric Propulsion System
- 10 Class 1D - Driverless
- 5 Class 3 teams (both IC, Electric and Driverless)

Registration Dates

Early registration for the Formula SAE Italy, Formula Electric Italy & Formula Driverless 2019 will open on **January 25th, 2019 at 10 AM CET (GMT+1)** and will close on **January 27, 2019 at 1:00 PM CET (GMT+1)**.

Main registration for the Formula SAE Italy competitions will open on **January 28, 2019 at 10:00 AM CET (GMT+1)** and will close on **February 25, 2019 at 1:00 PM CET (GMT+1)**.

Main registration is based on first come, first serve basis. The list of registered teams will be online right after forwarding.

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, 1E, 1D: € 1.415,00 + 22% VAT = **€1.726,30**

Class 3: € 1.015,00 + 22% VAT = **€1.238,30**

AD.6.3.2 Registration fees are not refundable and are not transferred to a subsequent year's competition.

AD.6.3.3 The registration fee includes 25 team members. Additional team member/guest can be registered by paying an extra fee of € 30,00 + 22% VAT = € 36,60 by **May 10, 2019** 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 Teams in the waiting list must not submit any documents until they will be accepted.

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 14, 2019**, by notifying the following e-mail:

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

AD.6.6 Italy Visas

Teams requiring visas to enter Italy are advised to upload on event website the [list of team members](#) with their passports numbers, the arrival and departure dates by **June 3, 2019**.

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 being 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 which 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, Formula Electric Italy & Formula Driverless 2019

Autodromo Riccardo Paletti

Strada per Fosio 1

44030 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 organization names and mobile numbers of at least two persons, which likely are the Team Leader and the Faculty Advisor, to be contacted in case of problems.

Delivery and collections dates

- Delivery: Monday 22 or Tuesday 23, 2019 from 9:00 AM to max 6:00 PM;
- Collection: **the maximum date to pick up your car will be: Monday 29, or Tuesday 30, 2019 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, team 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 cars

- From 1 to 59
- From 70 to 99

Electric cars

- From 100 to 159
- From 170 to 199

Class 3 teams

- From 300 to 399



Driverless cars

- From 700 to 759
- From 770 to 799

Take note that it could be already taken by another team. The acceptance order will follow the registered team list published in the Formula ATA web site.

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

If a team decides to change the participation class (Class 1 to Class 3), car number may change depending on availability.

AD.6.9 Fuel Supply

AD.6.9.1 The fuels provided at Formula SAE Italy, Formula Electric Italy & Formula Driverless 2019 are expected to be 98 octane gasoline and E-85. 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 08, 2019**

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 08, 2019** main information about their electrical system and charger.

AD.6.11 Lists of team members

[Preliminary List](#) : once a team have been registered for the competition, it will have to upload within **March 08, 2019** the preliminary list of team members and the proof of membership, such as membership card or Society membership number.

[Final List](#), health insurances, emergency contacts and drivers' data (link al form): within **May 10, 2019** every team will have to upload the final list of members, together with all members' personal documents (ID or passport, driver license and health insurance) in scanned .pdf file. Because of maximum file size limit of about 20 MB, three different separate files could be uploaded.

Payment for **Additional Team Members/guests** (more than 25 persons) can be made by bank transfer (See Appendix 1 for further information).



AD.7.5 Onsite Working Safety

AD7.5.1 Everyone in the dynamic area and everybody working on the vehicle must wear appropriate, closed-toed shoes.

AD7.5.2 Appropriate personal protective equipment must be used.

AD7.5.3 Any operation producing litter or debris, e.g. cutting of carbon fiber, should not be performed in the pits.

AD7.5.4 When jacking up the vehicle a safe and stable support device rated for the load must be used.



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 <http://fsaeonline.com>

- Design Spec Sheet (DSS)
- Design Report (DR)
- ETC - Notice of Intent (ETC-NOI)
only for IC team with ETC

DR.1.1.4 Cost files are located at FSG Website Tool (<https://www.formulastudent.de/>).

DR.1.1.5 Following documentation can be filled in directly on event website (<http://formula-ata.it/docs>):

- Structural Equivalency Spreadsheet (SES)
- Impact Attenuator Data (IAD)
- Structural Requirements Certification Form (SRCF)
- Electrical System Form (ESF)
- Fuel System Data (FSD)
- Electric System Data (ESD)
- Electrical Systems Officer Form (ESO/ASR)
- Electrical Systems Advisor Form (ESA)

Demonstrative video is required for:

- Vehicle Status (VSV)

DR.1.1.6 Executive Summary File must be submitted at the Event Website (<http://formula-ata.it/docs>).

DR.1.2 Definitions

DR.1.2.1 Submission Date

- The date and time of upload to the website

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 that documents 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 - IC1.18 ETC - Failure Modes and Effects Analysis (FMEA)* is not required.

DR.1.2.9 *PART EV - EV9.2 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 event documentation website (<http://formula-ata.it/docs>).

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

Notice: Teams is not notified if a document is submitted incorrectly. Therefore, teams are advised to verify after 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	
January 25, 2019	-	Early Registration opens on January 25, at 10.00 AM CET (GMT +1). It closes on January 27, 2019 at 1.00 PM CET (GMT +1)
January 28, 2019	February 25, 2019	Registration opens on January 28 at 10.00 AM CET (GMT +1) It closes on February 25, 2019 at 1.00 PM CET (GMT +1)
February 08, 2019	March 08, 2019	CLASS 1C – Notice of Intent – Electronic Throttle Control (ETC)
	March 08, 2019	ALL CLASSES – Camping booking form
	July 3, 2019	CLASS 1E/1D – Electrical Systems Officer and Electrical Systems Advisor Form
March 08, 2019	March 08, 2019	ALL CLASSES – Acceptance of camping requests
	March 15, 2019	ALL CLASSES – Preliminary team member list
	July 09, 2019	CLASS 1E/1D – Electric System Data
	March 15, 2019	CLASS 1C – Fuel system data
March 20, 2019	April 19, 2019	ALL CLASSES – Structural Equivalency Spreadsheet (SES) or Structural Requirements Certification Form (SRCF). Teams using a monocoque chassis must submit the SES Autocertification, in addition to the SES deadline
April 04, 2019	July 09, 2019	CLASS 1E/1D/3 – Electrical System Form
April 05, 2019	April 12, 2019	ALL CLASSES – Camping confirmation and payment
May 10, 2019	May 15, 2019	ALL CLASSES – Final team member list
May 31, 2019	June 20, 2019	CLASS 1C/1E/1D – Impact Attenuator Data
June 03, 2019	June 10, 2019	ALL CLASSES – Invitation letters for VISA
June 06, 2019	June 21, 2019	ALL CLASSES – Design Report & Design Spec Sheet
June 06, 2019	June 21, 2019	ALL CLASSES – Executive Summary
June 14, 2019	June 14, 2019	ALL CLASSES – Team & camping withdrawal
June 21, 2019	June 21, 2019	ALL CLASSES – e-Cost Report, e-BOM
June 26, 2019	July 03, 2019	CLASS 1C/1E/1D - Vehicle Status Video
June 28, 2019	June 28, 2019	ALL CLASSES – Change of Faculty Advisor



* **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, Formula Electric Italy & Formula Driverless 2019 must submit the documents online through <http://formula-ata.it/docs>.

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 inspection (IAD, SES, ESF, FMEA and ESO/ESA). In this case, team may not be allowed to attend dynamic events.

DR.2.4 Account Signup for Online Submission - FSAEI Event Only

After confirmation of team registration, organization will send website user credential to each team leader.

DR.2.5 Vehicle Status Video

DR.2.5.1 All teams belonging to Class 1 must upload a video showing the vehicle driving prior to the competition. The purpose of the video is to define the scrutineering order for the technical inspection.

DR.2.5.2 The video must show the following sequences:

- Standing still (video close-up of the vehicle front left-side; min. 70%)
- Straight driving
- 180° cornering
- Straight driving back to start point
- Execution of a hard brake (possibly locking the wheels)
- Standing still (video close-up of the vehicle front right-side; min. 70%)

DR.2.5.3 The video must fulfill the following criteria:

- Continuous video from a third person view - no assembled sequences
- Vehicle must be clearly visible (light, video resolution, frames and frequency)
- Vehicle must run by its own power
- Driving in a clearly separated and/or protected area



- Vehicle must be presented in ready-to-race conditions incl. body work
- Driver must wear clothes as specified in the rules, incl. helmet, driver suit, gloves and arm-restraints
- [EV ONLY] Tractive System Active Light (TSAL) must be clearly visible in the video
- [EV ONLY] Ready-to-drive sound must be audible in the video
- Must not exceed a length of 45 seconds and size of 20 MB
- File format must be common like avi, mpg, mp4, wmv

DR.2.5.4 The submitted VSV will be reviewed based on the specified criteria above. Fulfilling the specified criteria is the responsibility of the team. The goal of the review is to recognize if the vehicle is in ready-to-race condition for the competition.

DR.2.5.5 The VSV will be reviewed in order of submission.

DR.2.5.6 If a team receives a "fail" for its video prior the VSV deadline, the video will be treated as not submitted. A new upload is possible afterwards.

DR.2.5.7 There will be no penalty for missing the upload deadline but if a team doesn't upload the video it will be ordered in the last position of the scrutineering list.

The last upload of a video is possible until 336 hours (14 days) after the VSV deadline.

DR.2.5.8 If a team receives a "fail" for its video after the VSV deadline, the team has 7 days, beginning from the point of notification, to improve the video and upload it again for a new review. If the team fails the review again, the team will be ordered in the last position of the scrutineering list.

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 Late Submission Penalties

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

Penalty Group	Penalty Points per day	Maximum penalty points	Not Submitted
Tech (SES, IAD, ESO/ESA, ESF, E-FMEA)	-10	-50	Removal of Team Entry – see FSAE rule DR.3.3
ETC	-10	-50	Not Approved to use ETC – see FSAE Rule DR.3.4
Presentation - BPP	-10	-50	Removed from Presentation Event; Score -100 points in Presentation Event
Cost (eBOM, Report)	-10	-80	Removed from Cost Event Score -100 points in Cost Event
Design (DR, DSS)	-10	-100	Removed from Design Event Score -100 points in Design Event

DR.3.2.3 Teams that change category from Class 1 to Class 3 will receive applicable point penalties for documents whose deadline is earlier than change.



APPENDIX 1: PAYMENT DETAILS AND INVOICE

PAYMENT DETAILS

- Team registration: teams will have 48 hours, starting from registration time, to send us the proof of the bank transfer, certifying the payment date and time.
Registrations to the Formula SAE Italy, Formula Electric Italy & Formula Driverless 2019 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 05, 2019** 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 10, 2019** to the respective email address.

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

- 22% Italian VAT is **ONLY** required from European and non-European natural persons, who make the payment, i.e.: registration fee = **1.415,00€+ 22% VAT = 1.726,30€ total amount to be paid.**
- 22% Italian VAT is **NOT** required from European companies owing a VAT code and from non-European companies, who make the payment, i.e.: registration **fee = 1.415,00€total amount to be paid.**
- 22% Italian VAT is **ALWAYS** required from all Italian participants (natural persons/companies), except for the Public Administrations, i.e.: registration fee = **1.415,00€+ 22% VAT = 1.726,30€ total amount to be paid.**

For Italian teams only

Following the recent rule (January 2019) on the electronic invoicing extended to 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.

Payments method

- Bank transfer to: ANFIA Service Srl – **Bank name**: Cassa di Risparmio di Bra – Turin Branch - Corso Galileo Ferraris, 26 - Torino – Italy – **IBAN n.:** IT04G0609501001000000003046 – **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.



INVOICE

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

- University name/company name,
- Department (if needed),
- Address, post code, town, country,
- VAT number,
- "Codice Fiscale" field is ONLY FOR ITALY,
- "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.



APPENDIX 2: CAMPING

A camping site will be available for the event **from July 23, at 3.00 PM to July 29, 2019 at 2:00 PM.** It will be located next to the circuit in Varano de' Melegari.

The camping check-in is foreseen on **July 23, 2019 from 3.00 PM to 7:00 PM.** It is **MANDATORY** for all teams to comply with the timetable.

Interested teams have to send ATA (c.rossi@anfia.it) the [Camping Booking Form](#) within **February 08, 2019.**

Camping requests will be accepted in the order they will be received. The camping availability will be communicated to teams within **March 08, 2019.**

The fee for 6 days is 61,00 € + 22% VAT = **74,42 €/person**

Within **April 05, 2019** 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: Cassa di Risparmio di Bra – Turin Branch - Corso Galileo Ferraris, 26 - Torino – Italy –

IBAN n.: IT04G0609501001000000003046 – **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 14, 2019.**



T General Technical Requirements

On this chapter Formula SAE Italy, Formula Electric Italy & Formula Driverless 2019 will follow the “[FS-Rules 2019 v1.1](#)”.



CV Internal Combustion Engine Vehicles

On this chapter Formula SAE Italy, Formula Electric Italy & Formula Driverless 2019 will follow the “[FS-Rules 2019 v1.1](#)”.



EV Electric Vehicles

On this chapter Formula SAE Italy, Formula Electric Italy & Formula Driverless 2019 will follow the “[FS-Rules 2019 v1.1](#)” with the exceptions and additions listed below.

EV 4.6 Energy Meter

EV 4.6.1 All electric vehicles must run with the Energy Meter provided by the organizer.

EV 4.6.2 The Energy Meter must be installed in an easily accessible location

EV 4.6.3 Power and voltage limits will be checked by evaluating the Energy Meter data. Energy is calculated as the time integrated value of the measured voltage multiplied by the measured current logged by the Energy Meter.

EV 4.6.4 A violation is defined as using more than the specified maximum power OR exceeding the maximum voltage EITHER:

- a. Continuously for 100 ms or more
- b. After a moving average over 500 ms is applied

EV 4.6.5 Non availability of Energy Meter data due to the team's fault, tampering, or attempting to tamper with the Energy Meter will be treated as a violation.

EV 4.6.6 Tampering, or attempting to tamper may result in Disqualification (DQ)

EV 4.6.7 Violations during the Acceleration, Skidpad, Autocross Events:

- a. Each violation will Disqualify (DQ) the best run of the team
- b. Multiple violations will DQ multiple runs, ex two violations DQ the two best runs

EV 4.6.8 Violations during the Endurance event:

- a. Each violation will receive a 60 second penalty

EV 4.6.9 Repeated violations may void Inspection Approval or receive additional penalties up to and including Disqualification.

EV 4.6.10 The respective data of each run in which a team has a violation and the resulting decision may be made public.

EV 6.3.7 A red indicator light in the cockpit that is easily visible from inside and outside the cockpit even in bright sunlight and clearly marked with the lettering “IMD” must light up if the IMD opens the shutdown circuit. It must stay illuminated until the error state has been manually reset, see EV6.1.6. Signals controlling this indicator are SCS, see T11.9. This indicator shall be mounted on non removable bodywork.



EV 9.1.1 Prior to the competition, all teams must submit clearly structured documentation of their entire electrical system (including control and TS) called the ESF. This documentation shall include version of review checklist signed by ESA. In absence of signed checklist, ESF will be considered largely incomplete.



DV Driverless

On this chapter Formula SAE Italy, Formula Electric Italy & Formula Driverless 2019 will follow the [“FS-Rules 2019 v1.1”](#) with the exceptions and additions listed below.

(Please note that, in this case, rule numbers refer to “FS-Rules 2019 v1.1”)

DV 2.6 Autonomous System Form (ASF): No ASF is requested.



IN Technical Inspections

On this chapter Formula SAE Italy, Formula Electric Italy & Formula Driverless 2019 will follow the [“FS-Rules 2019 v1.1”](#) with the exceptions and additions listed below.

(Please note that, in this case, rule numbers refer to “FS-Rules 2019 v1.1”)

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 3 [EV ONLY] ACCUMULATOR INSPECTION: No accumulator inspection will be performed.



S Static Events

On this chapter Formula SAE Italy, Formula Electric Italy & Formula Driverless 2019 will follow the [“2019 FSAE Rules”](#), with the exceptions and additions listed below.

S 1 BUSINESS PLAN PRESENTATION EVENT (BPP)

On this chapter, Formula SAE Italy, Formula Electric Italy & Formula Driverless 2019 will follow chapter S 1 of “FS-Rules 2019 v1.1” with the exceptions and additions listed below.

(Please note that, in this case, rule numbers refer to “FSR 2019 v1.1”)

S 1.2 Business Plan Presentation Procedure

S 1.2.7 Data projectors or screens with VGA and HDMI (type A) input connectors will be provided for video signal transmission. Teams planning to use audio or other presentation equipment are responsible for bringing it themselves.

S 1.3 Executive Summary

S 1.3.3 The executive summary must not exceed one page. The vehicle number and university name must be written in the top right corner.

S 1.3.4 If the executive summary is not compliant with the rules, 5 penalty points are deducted from the final BPP score.

S 1.4 Business Plan Presentation Scoring

S 1.4.2 The judging at the competition will start with an initial judging, where all teams are judged by different judging groups. The top three are then judged by all business judges in the BPP finals.

S 1.4.3 The scoring of the BPP is based on the plenary decision of the judges.

S 1.4.4 The scoring for the non-finalist 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, including the finalists

S 1.4.5 The scoring of the BPP finalists will vary in the range between the normalized scoring assigned to the best team who was not eligible for the final (4^o position) and 75 points, and is scored immediately after the BPP finals by all judges.



S 2 COST AND MANUFACTURING EVENT

On this chapter, Formula SAE Italy, Formula Electric Italy & Formula Driverless 2019 will follow chapter S 2 of “FS-Rules 2019 v1.1” .

Once a team completed the BON, 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.4 DESIGN EVENT

S.4.1.4 [DV Only] For DV teams an evaluation concerning the capability of the vehicle to drive autonomously will also be part of this event. Therefore, all systems that are required to drive autonomously will be investigated. This also includes a discussion about the hardware and the software used in the AS.

S.4.3.5 [DV ONLY] Autonomous Design Report (ADR)

S.4.3.5.1 The ADR will be used to sort the teams into appropriate design queues, based on the quality of its review.

S.4.3.5.2 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.4.3.5.3 Evidence of information mentioned in the ADR should be brought to the competition and be available, on request, for review by the judges.

S.4.3.5.4 The ADR must not exceed five pages of content (text, which may include pictures and graphs).

S.4.3.5.5 Any portions of the ADR that exceed five pages of content will not be evaluated.

S.4.3.5.6 The ADR must be written as a scientific paper.

S.4.7.2 [DV Only] The design event starts with the submission of the DSS and the ADR and their review respectively.

S4.7.3 [DV ONLY] Teams need to show some simulation test data, where the judges can see how the algorithms work. During the final, there might be videos and data from the dynamic events. Based on the data, the movements and decisions of the vehicle are discussed. Therefore, the software and the algorithms of the vehicle are investigated in detail.

S.4.8.3 Design Judging Score Sheets are available at the FSAE Online website.

[DV Only]: Design Judging score sheet could be available at discretion of DV Design Committee. The following categories will be judged:



Hardware Development
Software Development
Sensor data acquisition
Localization & Mapping
Planning
Safety & Security
Validation, Simulation & Testing
Control Architecture
Development Team Structure
Documentation (ADR)

S.4.9.1. Scoring may range from 0 to 150 points, at the discretion of the Chief Design Judge.

[DV Only] Scoring may range from 0 to 275 points, at the discretion of Chief Design Judge



D - DYNAMIC EVENT REGULATIONS

On this chapter Formula SAE Italy, Formula Electric Italy & Formula Driverless 2019 will follow the “2019 FSAE Rules”, with the exceptions and additions listed below.

D.1.1 Dynamic Events and Maximum Scores

Acceleration 100 points
Skid Pad 75 points
Autocross 125 points
Efficiency 100 points
Endurance 275 points

Total 675 points

D.1.1 Dynamic Events and Maximum Scores [DV Only]

Acceleration 100 points
Skid Pad 75 points
Efficiency 100 points
Trackdrive 275 points

Total 550 points

D.3.3.4 [DV ONLY] When driving autonomously, 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!).

D.3.7.4 [DV ONLY] A practice track for DV will be available (autonomous/manual).

D.3.10 [DV ONLY] Cones & Markings

D.3.10.1 [DV ONLY] Details of the cones used and more detailed track layout figures can be found in the competition handbook.

D.3.11 [DV ONLY] Start-up Procedure

D.3.11.1 No additional equipment (e.g. laptop, jack-up device, pressure tank, etc.) is allowed to start up the vehicle at the staging/starting line.

D.3.11.2 If the vehicle does not enter “AS Ready” state within 1 min after being staged, the team may be sent back to the preparation area by the officials.

D.3.11.3 The vehicle may only be staged with the steering system in straight position.

D.3.11.4 The vehicle may be pushed from the preparation area to the start line with activated LVS.

D.3.11.5 The EBS may be armed already in the preparation area.

D.3.12 [DV ONLY] Vehicle Break Downs and Usage of RES



D.3.12.1 Stalling the engine or deactivating the tractive system for any reason during a dynamic event will result in Did Not Finish (DNF) as the autonomous system is not allowed to restart the engine/reactivate the tractive system.

D.3.12.2 If a vehicle comes to standstill for any reason, it may have up to 30 s to attempt to continue to drive. If the vehicle doesn't restart within 30 s, it will be deactivated using the RES, deemed disabled and scored as DNF for the run.

D.3.12.3 The ASR or the officials may stop the vehicle using the RES in any of the following cases:

- Its behavior seems to be uncontrolled (e.g. driving off-course without visible intention to re-enter the track immediately).
- It is mechanically or electrically damaged.
- The average speed of the first three laps in trackdrive (after completing the third lap) is below 2:5 m=s or the average speed of any of the following laps is below 3:5 m=s.
- To ensure safe conditions on the track (e.g. persons or animals on the track). In this case the team will get a re-run.

D.3.12.4 If a vehicle breaks down or is stopped by the use of the RES it will be removed from the track, will not be allowed to re-enter the track and scored DNF.

D.3.12.5 If a traceable signal loss of the RES appears and doubtless proof can be brought by the team that it is was not self-inflicted, a re-run may be granted.

D.3.12.6 At the direction of the officials, team members may be instructed to retrieve broken-down vehicles. This recovery may only be done under the control of the officials.

D.3.13 [DV ONLY] Procedure After Completing a Dynamic Event

D.3.13.1 The vehicle must be collected by the ASR and an additional team member immediately after approval from the officials.

D.4.3 [DV ONLY] There will be no flag signs for DV in autonomous mode.

D.6.1.3 [DV ONLY] DV teams need to register at least one driver for manual brake test but may register up to three drivers for testing in manual mode.

D.8 ACCELERATION EVENT

D.8.2.5 [DV ONLY] Acceleration Procedure

D.8.2.5 .1 Each team has at least two runs. The final number of runs will be published before the start of the event.

D.8.2.5 .2 Staging - The foremost part of the vehicle is staged at 0:30m behind the starting line. Vehicles will accelerate from a standing start.



D.8.2.5 .3 Starting - A go-signal from RES is used to indicate the approval to begin, timing starts only after the vehicle crosses the starting line and stops after it crosses the finish line.

D.8.2.5 .4 After the finish line, the vehicle must come to a full stop within 100m inside the marked exit lane and enter the finish-state described in DV2.3.

D.8.2.5 .5 Starting order is based upon time of arrival. Teams on their first run will receive priority.

D.9 SKIDPAD EVENT

D.9.2.5 [DV ONLY] Skidpad Procedure

D.9.2.5.1 Each team has at least two runs. The final number of runs will be published before the start of the event.

D.9.2.5.2 Starting order is based upon time of arrival. Teams on their first run will receive priority.

D.9.2.5.3 Staging - The foremost part of the vehicle is staged 15m in front of the timekeeping line.

D.9.2.5.4 Starting - A go-signal from RES is used to indicate the approval to begin.

D.9.2.5.5 The vehicle will enter perpendicular to the figure eight and will take one full lap on the right circle to establish the turn. The next lap will be on the right circle and will be timed. Immediately following the second lap, the vehicle will enter the left circle for the third lap. The fourth lap will be on the left circle and will be timed. Immediately upon finishing the fourth lap, the vehicle will exit the track.

D.9.2.5.6 The vehicle will exit at the intersection moving in the same direction as entered and must come to a full stop within 25m behind the timekeeping line, inside the marked exit lane and enter the finish-state described in DV2.3.

D.14 [DV ONLY] TRACKDRIVE AND EFFICIENCY EVENT

D.14.1 Trackdrive Tracklayout

D.14.1.1 The trackdrive layout is a closed loop circuit built to the following guidelines:

- Straights: No longer than 80m
- Constant Turns: up to 50m diameter
- Hairpin Turns: Minimum of 9m outside diameter (of the turn)
- Miscellaneous: Chicanes, multiple turns, decreasing radius turns, etc.
- The minimum track width is 3m

D.14.1.2 The length of one lap is approximately 200m to 500 m.



D.14.2 Trackdrive Procedure

There will be a track walk prior to the trackdrive. During the track walk no equipment (e.g. antennas, sensors, cameras, etc) other than analog measurement devices (i.e. measurement wheel or measurement tape) is allowed.

D.14.2.1 Starting order may be defined by the officials, based on previous dynamic event results.

D.14.2.2 Before starting a run, each DV, with a fuel tank (CV), must be filled to the fuel level line at the fueling station. During fueling, once filled to the scribe line, no shaking or tilting of the tank, the fuel system or the entire vehicle is allowed.

D.14.2.3 There will be at least one run consisting of ten laps. The number of runs and the starting order procedure will be announced before the start of the event.

D.14.2.4 Staging - The vehicle is staged such that the front wheels are 6m in front of the starting line on the track.

D.14.2.5 Starting - A go-signal from RES is used to indicate the approval to begin. Timing starts after the vehicle crosses the starting line.

D.14.2.6 After ten laps the vehicle must come to a full stop within 30m behind the finish line on the track and enter the finish-state described in DV2.4.

D.14.2.7 There will be no last lap signal i.e. the vehicle should count laps itself.

D.14.2.8 The team must proceed directly to the fueling station (DV with internal combustion engine only).

D.14.3 Trackdrive Scoring

D.14.3.1 If there is more than one run per vehicle, the run with the highest combined score of trackdrive and efficiency is scored for both events.

D.14.3.2 Each lap of the trackdrive event is individually timed. The corrected elapsed time is determined by adding any penalty times.

D.14.3.3 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:

$$TRACKDRIVE\ SCORE = 175 \cdot \left(\frac{T_{max}}{T_{team}} - 1 \right)$$

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

T_{max} is 2 times of the corrected elapsed time of the fastest vehicle.



D.14.3.4 An additional ten points are awarded for every completed lap, independent of the corrected elapsed time. This is also applied for teams that do not finish the trackdrive i.e. get a DNF.

D.14.4 Efficiency Scoring

D.14.4.1 Energy efficiency is measured during the trackdrive event.

D.14.4.2 Only vehicles which complete the trackdrive event will receive points for efficiency.

D.14.4.3 [EV ONLY]

D.14.4.3.1 Energy efficiency is measured during the endurance event.

D.14.4.3.2 The endurance energy is calculated as the time integrated value of the measured voltage multiplied by the measured current logged by the data logger. Regenerated energy is multiplied by 0.9 and subtracted from the used energy.

D.14.4.3.3 Only vehicles which score points in the endurance event will receive points for efficiency.

D.14.4.3.4 Teams whose corrected elapsed endurance time exceeds T_{\max} receive zero points for efficiency.

D.14.4.4 [CV ONLY]

D.14.4.4.1 Efficiency is measured during the endurance event.

D.14.4.4.2 Only vehicles which score points in the endurance event will receive points for efficiency.

D.14.4.4.3 Teams whose fuel volume used during the endurance event exceeds 26 l=100km receive zero points for fuel efficiency.

D.14.4.4.4 Teams whose corrected elapsed endurance time exceeds T_{\max} as defined in D7.7.4 receive zero points for efficiency.

D.14.4.4.5 Fuel pumps will be turned on and fuel valves will be opened to ensure complete refueling.

D.14.4.4.6 The measured fuel volume of vehicles using E 85 fuel is divided by 1.4 to be comparable to the vehicles using 98 RON.

D.14.4.5 [CV ONLY] The trackdrive energy is calculated based on following formula:

$$E_{\text{team}} = V_{\text{team}} \cdot 3.55 \text{ kWh/l}$$

V_{team} is the team's corrected used fuel volume.



D.14.4.6 The team's efficiency factor is calculated based on:

The efficiency factor is calculated based on the following formula:

$$EFFICIENCY\ FACTOR = \frac{T_{min} \cdot EN_{min}^2}{T_{team} \cdot EN_{team}^2}$$

T_{team} is the team's uncorrected elapsed driving time.

T_{min} is the fastest uncorrected elapsed driving time of all teams who are able to score points in efficiency.

EN_{team} is the team's corrected used energy.

EN_{min} is the lowest corrected used energy of all teams who are able to score points in efficiency.

D.14.4.7 Efficiency points are calculated using the following formula:

$$EFFICIENCY\ SCORE = 100 \cdot \frac{\frac{0.1}{E_{team}} - 1}{\frac{0.1}{E_{max}} - 1}$$

E_{team} is the team's efficiency factor.

E_{max} is the highest efficiency factor of all teams who are able to score points in efficiency.