



FORMULA STUDENT AUSTRIA

A sheet of graph paper with handwritten notes in yellow, red, and blue ink. The notes include a diagram of a car chassis, a list of items, and various calculations and questions. The diagram shows a car chassis with labels like 'nicht symmetrisch', 'Länge', 'Bump?', 'voll?', and 'unterschiedlich wenn messen?'. The list includes 'Start 13 30', 'Erde 1000', 'Keine Verlängerung', 'Einkaufsliste', 'Cabanossi 10x', 'Wassers 10x6', 'Durot Papier', 'Schrauben M6x25 20x', and 'branspl. Jats.A'. There are also questions like 'Walter: Regen?' and 'Acunweather 30% of 1000', 'Google 30% of 1000', and 'witter.com 10%?'. A yellow starburst graphic is overlaid on the right side of the page.



Team Capatain's Handbook

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FSA 2018 Officials



Christoph Hirt
Event Manager



Christoph Lorenzutti
Sponsor Relations, Scoring



Ralph Moser
Timing, IT, Human Resources



Lukas Raschendorfer
Head of Statics, Head Design Judge, Rules, International Relations



Benjamin Möller
Head of Scrutineering



Eugen Hoffelner
Head of Electric Scrutineering



Manuel Seeböck
Head of Dynamics



Thomas Gerstorfer
Head Design Judge



Rabel Franz
Head Business Judge



Alexander Rauch
Head of Dynamics



Paul Mayr-Harting
Head of SES, Scrutineering

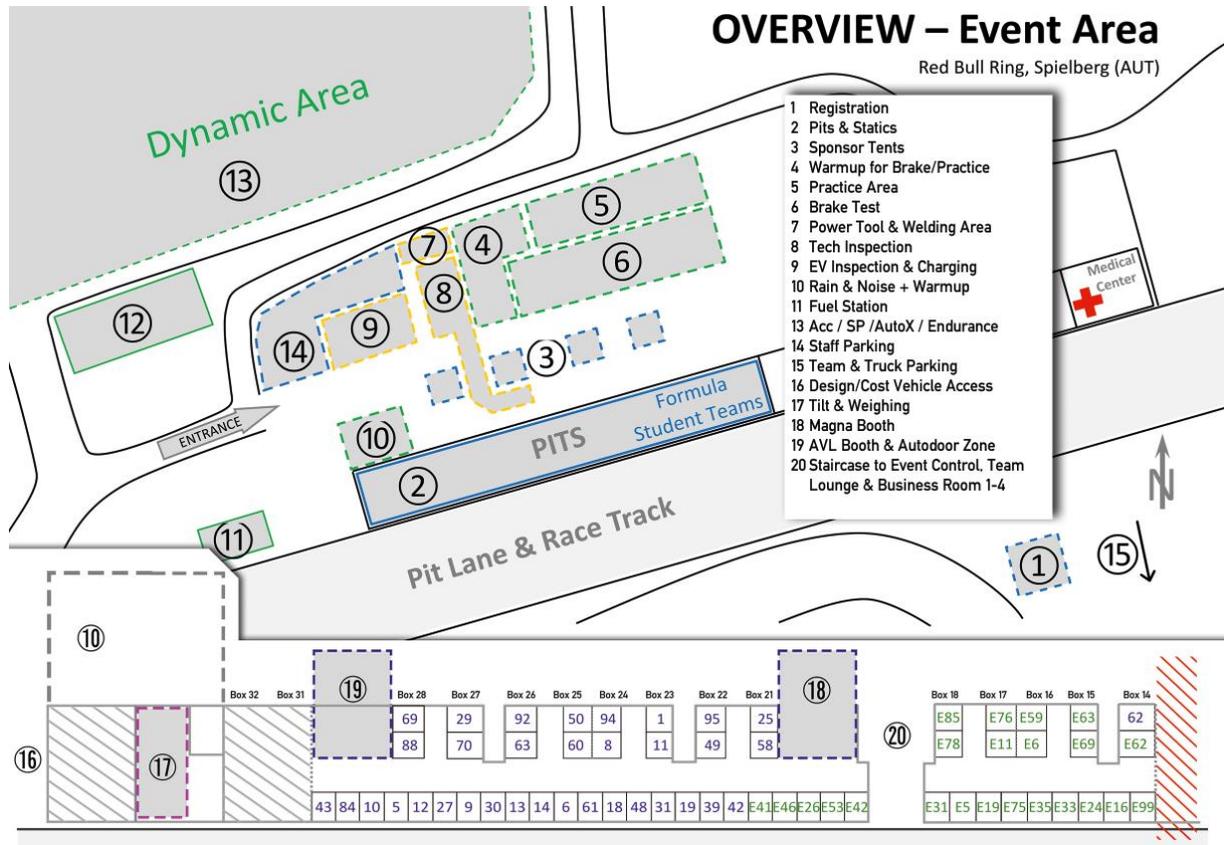


Sebastian Frager
Head of Cost

Participating teams

Car#	Pit#	Country	Team	University
1	23		Austria TU Graz Racing Team	Technische Universität Graz
E5	18		Germany Green Voltage Racing	Technische Universität Clausthal
5	28		Germany Baltic Racing	Fachhochschule Stralsund
6	25		United Kingdom LUMotorsport	Loughborough University
E6	16		Germany CURE	Duale Hochschule Baden-Württemberg - Mannheim
8	24		India STES's STALLION MOTORSPORT	Smt. Kashibai Navale College of Engineering
9	27		Israel Formula Technion	Technion - Israel Institute of Technology
10	29		Austria OS.Car Racing Team	FH Campus Wien
E11	17		Germany eMotorsports Cologne	Technische Hochschule Köln
11	23		Germany Infinity Racing	UAS Kempten
12	28		United States Global Formula Racing (US)	Oregon State University
13	26		Germany FaSTTUBe	Technische Universität Berlin
14	26		Germany RUB Motorsport	Ruhr-Universität Bochum
E16	14		Croatia FSB Racing Team Electric	University of Zagreb
18	24		Denmark AAU Racing	Aalborg University
E19	17		Germany HorsePower Hannover e.V.	Leibniz Universität Hannover
19	22		Austria joanneum racing graz	Fachhochschule Joanneum Graz
E24	15		Estonia FS Team Tallinn	Tallinn TU UAS
25	21		Greece Prom Racing	National Technical University of Athens
E26	20		Germany GreenTeam Uni Stuttgart	Universität Stuttgart
27	27		Germany GET racing Dortmund e.V.	Technische Universität Dortmund
29	27		Germany Rennteam Uni Stuttgart	Universität Stuttgart
30	27		United States Zips Racing	The University of Akron
E31	18		Germany TUfast Racing Team e-Technology	Technical University of Munich
31	23		Germany municHMotorsport	Fachhochschule München
E33	15		Switzerland AMZ Racing Team	ETH Zürich
E35	16		Germany Team wob-racing.	Ostfalia University of Applied Sciences
39	22		Germany HHN Racing e.V.	Hochschule Heilbronn
E41	21		Austria TUW Racing	Technische Universität Wien
E42	19		Germany TU Darmstadt Racing Team e.V.	Technische Universität Darmstadt
42	22		Germany UAS, Formula Student Team Darmstadt	Hochschule Darmstadt
43	30		Germany Bodensee Racing Team	Fachhochschule Konstanz
E46	20		Sweden Chalmers Formula Student	Chalmers University of Technology
48	23		Germany High-Octane Motorsports e.V.	Friedrich-Alexander-Universität Erlangen-Nürnberg
49	22		Germany HSNR Racing	Hochschule Niederrhein
50	25		Germany Seagulls Luebeck	Technische Hochschule Lübeck
E53	19		Germany Raceyard E	Fachhochschule Kiel
58	21		Germany UPBRacingTeam e.V.	Universität Paderborn
E59	16		Germany Elbflorace	Technische Universität Dresden
60	25		Germany Formula Student Team Weingarten	University of Applied Sciences Ravensburg-Weingarten
61	25		United Kingdom Team Bath Racing	University of Bath
62	14		Germany Dynamics e.V.	Ostbayerische Technische Hochschule Regensburg
E62	14		Germany Dynamics Electric	Ostbayerische Technische Hochschule Regensburg
E63	15		Norway Revolve NTNU	Norwegian University of Science and Technology
63	26		Germany Aixtreme Racing	Fachhochschule Aachen
E69	15		Slovenia Superior Engineering FS Ljubljana	University of Ljubljana
69	28		Germany HAWKS Racing e. V.	Hochschule für Angewandte Wissenschaften Hamburg
70	27		Germany CAT-Racing	Fachhochschule Coburg
E75	17		Iceland Team Spark	University of Iceland
E76	17		Germany Racetech Racing Team	Technische Universität Bergakademie Freiberg
E78	18		Germany e-ignition Hamburg	Technische Universität Hamburg-Harburg
84	30		Germany Campus Motorsport Hannover	Fachhochschule Hannover
E85	18		Netherlands Formula Student Team Delft	TU Delft
88	28		Finland Formula Student Oulu	University of Oulu
92	26		United Kingdom Oxford Brookes Racing	Oxford Brookes University
94	24		Germany Rennstall Esslingen	Hochschule Esslingen
95	22		Spain FSUPV Team	Universidad Politécnica de Valencia
E99	14		Germany Ecurie Aix	Rheinisch-Westfälische Technische Hochschule Aachen

Site plan & Pit plan



Event schedule, Judging schedule & Scrutineering schedule

You will find the schedules @ <https://fsaustria.at/fsa-2019/rules/>

General procedures

On-site registration process

When arriving at FSA, you first must come to registration booth at the road leading to the Red Bull Ring. Only afterwards, you will be allowed to enter the paddock area and the campsite. However, the campsite is exempt from this rule until Sunday 1pm.

To avoid a rush and waiting times on Monday morning, you can also register on Sunday 13:00-20:00 at the registration booth.

Camping wristbands are available on Sunday from 10:00 at the registration booth.

The registration has to be done by the team captain. Please do not bring more than two or three team members to the registration.

Check-list for on-site registration

To streamline the registration process and ensure short waiting times for everyone, please only come to the registration booth if you have all of the following items ready:

- Cash for additional team members and the campsite fee, please have the exact amount ready if possible; large bank notes are appreciated (500€)
- The knowledge who your Safety Responsible (E-Cars only)/Team Captain is
- The signed liability waiver

If you do not have these entire things ready, you will have to re-queue (no shortcuts). So please be prepared!

At the end of the registration process, you will get the following things among others. You will also be asked to sign for them, so please check if you got all of them.

- Vehicle pass for campsite (2 pcs)
- Campsite wristbands (please count them!)
- Team member badges + covers + lanyards
- Event T-shirts
- 4 Dynamic "pass" safety vests
- Garbage bags
- KTM merchandise shirts
- AVL umbrella (for your driver)
- Mercedes G drinks
- Scruti Sheet
- Poster & FSA magazine & FSA timetable helper guide folded A6 supernice
- Trans Gourmet 10% Off voucher (valid for the whole competition time)

Parking at Red Bull Ring

For all vehicles, parking must take place outside of the event site. This regards especially passenger cars, trucks and motorcycles. The gravel car park at the entrance road of Red Bull Ring provides space for all vehicles. You can park there for free with no limitation in number of vehicles.

Entering the event site / set up day

Unloading of your race car and other equipment takes place on Monday morning. The order for entering the event site is based on the scrutineering slots (quiz times of the event registration quiz in February 2019). At the parking lot, we will announce the next few teams to get ready for the queueing process. You will be allowed to enter the event site with your team truck, for a time frame of half an hour. After half an hour, your truck must leave the event site again.

In the case of two teams arriving with one vehicle (i.e. universities attending with both a combustion and an electric team), both teams can enter the event site in the earlier slot.

Teams missing their entrance slot or have time troubles when unloading they shall get in touch with the queue personnel.

Leaving the event site / closing day

After the endurance event, cars are locked up in parc fermé. As soon as your car may leave parc fermé, you have to start packing your equipment and leave the pit within two hours. Your team truck may enter the event site as soon as your car is released from parc fermé.

As soon as your pit is packed, please inform the eventcontrole @ the helpdesk, so FSA can check the cleanness of your pit.

In any case, all pits must be clean by 18:30.

We will try to start the award ceremony at the campsite as punctual as possible – so please start packing up as early as possible to help us in this endeavor.

Emergencies

In case of injuries, please go to the medical truck at the Eventsite.

For off-site accidents, call the European emergency number **112**.

Weather conditions

In previous years, we've had all weather conditions at Red Bull Ring. By experience, we recommend the following actions:

Sunshine

Please prepare yourselves with sufficient sun protection (sun cream, sun glasses, sun hat).

Unfortunately, wasps also enjoy the sunny weather. Fly swats to prevent and cooling gels to cure wasp stings are recommended.

Wind and rain

Wind and rain tend to be very intense in this region. Remember to secure tents at the campsite accordingly. Personal rain equipment (jackets, umbrellas, etc.) is strongly recommended.

Pits

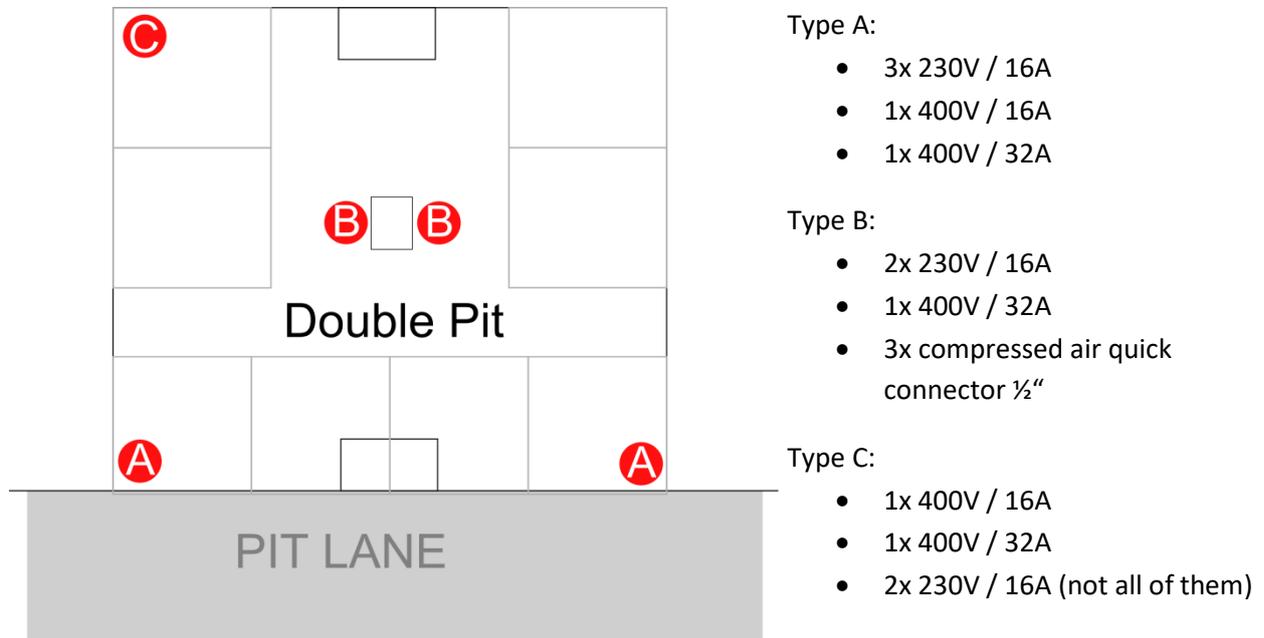
After you enter the paddock area with your team vehicle, please follow the instructions of the Pit Marshall about vehicle parking.

You can identify your pit either by the plan in this document or the sign with your team name above it. The doors to the pit lane must always remain closed – breaking this rule will lead to immediate penalties up to disqualification.

Usage of tools that are noisy or represent a fire hazard (angle grinder, welder, ...) is prohibited. Please work outside the pits at the mechanical tool area. Repeat offenders will be penalized.

Power outlets

In the pits, there are numerous power outlets of different types. The plan below will give you a rough idea of the type and position of the outlets, so that you can bring matching adapters.



Bikes, scooters, etc.

We understand the need for quick personal transport on and around the event site – therefore bikes, scooters, etc. are NOT forbidden.

However, there are some rules so that we can continue make this concession:

- Drive responsibly, do not endanger or scare any people
- If your vehicle is very noisy (IC engine), do not operate it during the “no engine running” times.

Services

Tire changing

Red Bull Ring offers a tire change service for the Formula Student teams. The cost for the change of a set of tires is 20€ and must first be paid at the information desk in the Red Bull Ring welcome center. Then the tires can be changed in the car park (marked below).



Free WiFi

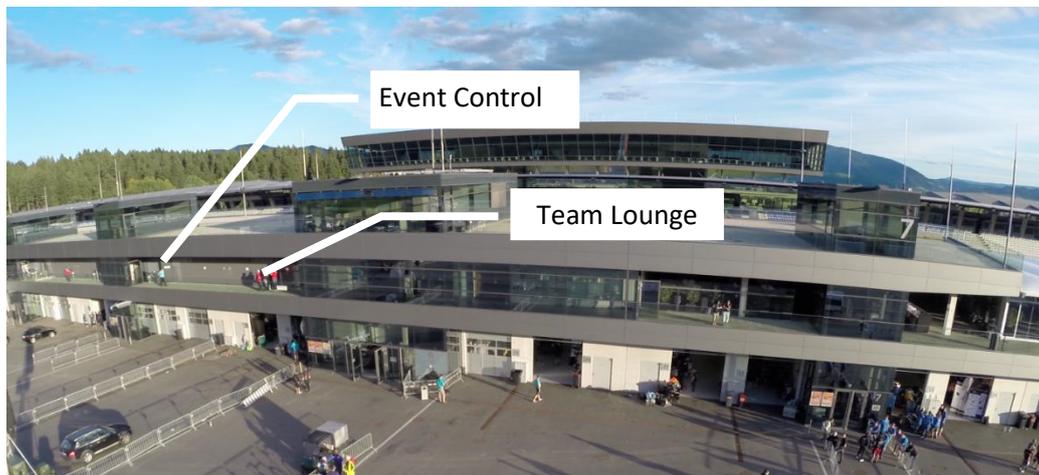
Free WiFi is available at the team lounge. Just look for the SSID "FSA FREE" – key is "sunshine" ☀

Team lounge

The Team lounge is on the 1st floor above the pit lane in Lounge 4 – it is to the left of staircase 6 ("Bulls Lane" entrance). A room for you to sit down and relax, update your social media feeds etc. Please note, that the lounge may sometimes not be available due to special events. Here will also be a infopoint "Helpdesk" where you can ask any question to FSA.

Event control

The Event control is restricted to FSA officials, any requests to the officials shall be done via the "Helpdesk"



Dynamic passes/ safety vests

The safety vest are your dynamic passes. You will NOT need to return them at the end of the event.

The dynamic passes are needed to enter

- all dynamic areas
- the scrutineering area
- the charging tents (electric teams)

Media passes

For the dynamic events, media passes are available. Each team can get two at the official Red Bull Ring entrance. A deposit of 25 EUR each is collected and will be refunded at return.

Results & announcements

Results and Announcements will be posted to the website today.fsaustria.at.

Ramp to the dynamic area

The ramp to the dynamic area is quite steep – so make sure that you have a driver properly seated in the car so that he is able to brake.

Like on the rest of the site it is only allowed to move the car at walking pace.

Smoking

Smoking is only allowed next to the provided ashtrays on the site.

Team captain's meeting

As in previous years, we will again host a meeting between event and team representatives to gather feedback and discuss the event and FSAE in general. The meeting will be on Tuesday from 19:30 to 20:30 at the Media Center.

To increase the quality of the discussion, please make up your mind (e.g. discussing it with your teams' expert) about the following topics:

- What do you like/dislike about this event – how can it be improved?
- Rules Related topics
- Documents: They take a lot of time to make write and to review; do you feel something needs to change here?
- Did you have any trouble with diverging rulings between the events? A allows it, B not?
- Anything else you want to bring to our attention.

Scrutineering

Bemo's guide for scrutineering

As always, this year's edition of Formula Student Austria will start with scrutineering. To make the whole process as efficient as possible and get all cars inspected as soon as possible here is some advice about the process. Please make sure you are on time where you are expected to be and to bring everything which is necessary to avoid unnecessary delays.

Scrutineering will start on Monday at 10am. The first six teams are asked to come to the scrutineering pits on time to make sure there is no delay. If you miss your slot you will be set back to the end of the scrutineering order! E-teams must pass E-scrutineering first. If the slot for the mechanical scrutineering is already over when an electric car passes the electrical inspection, it will get the next free slot.

For the inspection, you have to bring all driver's equipment you want to use, all drivers with their driving licenses, all tires and rims, your push bar and quick jack device and some tools to be able to remove covers, wheels etc. quickly if scrutineers ask you to do so.

The inspection will start with the check of your driver equipment and the egress tests in front of the scrutineering pits (all drivers have to do the egress test before they are allowed to drive). After the egress test and a check of their driver's license, the driver will be issued a "driver" wristband. After this, you will be asked to come to the next free scrutineering pit where the inspection will take place. **There are only four team members allowed in the scrutineering pits at the same time!** It is, of course, possible that one leaves and another team member enters.

If you don't pass scrutineering on the first try, you have to take your car back your pit and fix the issues which were pointed out by your scrutineers. As soon as you think everything is ok, come back to the scrutineering pits. Inform the scrutineer you have been with that you are ready for re-scrutineering. The re-inspection will always be done by the scrutineer who inspected the car or by the chief scrutineer if he/she should not be available.

Last but not least: Scrutineers don't like discussions! Be aware that you might just make things worse by not accepting that you need to change something ;-)

Tilt & noise

To make sure that the car is in the ready-to-run configuration for the official weighing at the tilt table, you will be required to do the noise test immediately after the tilt test. Also, you need to mount the tire & rim combination that you intend to run in dry conditions. If you are not able to do the noise test (no fuel, missing parts, etc.), you will be required to re-do tilt & weighing before the next attempt.

Brake test

The maximum number of attempts per run is 3. After that, you will have to re-queue for the brake test.

Static events

Cost and design

The Schedule for Cost and Design has been made so that

- Design & Cost are back-to back (with very few exceptions) so that you have more continuous time to tackle scrutineering
- You do not have to leave the judging Bay between Cost and Design
- Teams from the same university are in the same time slot to avoid “leaking” expertise
- You have 1 hour time before and after your Design/Cost event to use the forklift to bring your car up/down from the Design/Cost area. Please queue up early so that you don't get in any troubles at the fork lift.

To be more consistent and efficient, the judging will be started / stopped by an external audio signal (horn), so be sure to be there on time.

Business presentation

The Business presentation rooms are all near the event control. Please also make sure to bring a device capable of VGA and HDMI and consider a spare laptop, just to be on the safe side. On Monday, the Business presentation rooms will be open for equipment test.

Dynamic events

Engine testing

If you need to run your engine, you can do that next to the practice area. The driven wheels must be jacked up and the driver must wear full safety gear.

Event closing

The Events will terminate at the time indicated in the schedule unless announced otherwise.

When the Event is over, a horn will sound. Cars that have already been green-flagged may complete their run.

So please be sure to queue on time!

Brake lights

Please note that a non-functioning brake light (never/always on) is considered a safety issue and that a car with problem may be black-flagged during the endurance.

Working on the cars inside the dynamic area

For all dynamic events, working on the car is not allowed in the lanes leading up to the starting line. If you need to adjust your wings/pedals etc. between the runs, you must leave the lane and go back to the staging area (the area where you can warm up your engine etc.)

Tire protection

Inside the dynamic area, no tire protection is allowed. It must be taken off at the entrance to the warm-up area and may only be re-applied when leaving the dynamic area.

No help zone

Using external batteries to start the car is acceptable inside the dynamic Area but is prohibited as soon as the car has crossed "no help zone" line. If you encounter problems preventing you from running after crossing the line, the run counts as DNF. The position of the no help zone will be announced in the driver briefings and is visually indicated.

Timing transponders

Please remove all UHF-Band transponders (especially those from FSG) from your car before the event.

If you have no use for your used FSG Transponders, bring them to the FSA event control, so they can have a second life as FSA transponder ;-)

Campsite

Please absolutely conform to the camping rules stated also in this document. Misbehavior and problems with the neighbors and law enforcement could have serious implications for FSAs future and, more immediately, the closing ceremony/party on Thursday. Ignorance of the camping rules, if brought to our attention, will therefore be counted as “unsportsmanlike behavior” and penalized accordingly.

Campsite regulations

1. The night hours are from 10 pm to 6 am. During this time, all activities which are likely to disturb night sleep are strictly prohibited.
2. The campsite may be entered only after registration and payment, except on Sunday until 1 pm.
You are required to wear the provided bracelets during the whole stay on the campground.
3. It's not allowed to dig holes or channels into the ground.
4. Open fire, such as bonfires and pyrotechnics are not allowed.
5. Field damage, caused e.g. by tents, caravans, trailers or group activities are charged with monetary fines.
6. Keep the campsite clean. Please collect the waste in trash bags.
7. Please keep the sanitary installations clean.
8. Defined areas such as streets must not be used for camping. Teams may set up their tents and equipment in the designated areas; defined/marked areas such as streets must remain clear at all times.
9. Campsite closes on Friday, 12 am (noon).
10. Traffic rules (Straßenverkehrsordnung, StVO) apply on the whole campsite. The speed limit is 10 km/h.
11. Parking next to the campsite is only permitted for vehicles with a maximum permissible weight of 7.5 metric tons. (including trailers and semi-trailers)
12. To support your logistics, a maximum of two vehicles may enter or leave the campsite repeatedly during the event. Only cars with the special sticker handed out at on-site registration can pass the campsite entrance. The stickers are self-destructive labels and can only be applied to a vehicle once; interchanging of these taxi vehicles is not permitted.
13. Caravans, trailers and other vehicles which will remain on the campsite may enter the area on setup day and must not be moved throughout the course of the event.
14. In any case, vehicles with a permissible maximum weight, including any trailer or semi-trailer, exceeding 7.5 tonnes are strictly forbidden to enter the campsite at any time. These vehicles must be parked at the designated spot at Red Bull Ring (see diagram above).
15. Parking on country roads (especially L544 - next to the campsite) is strictly prohibited.
16. Drones or other flying equipment is strictly prohibited both on the campsite as well as on the event grounds.
17. FSA may expel you from the campsite or charge your team with penalty points and/or monetary fines after significant or repeated violations of the camping regulations. In that case, you are not entitled to any refunds.

Campsite plan



Area around the Red Bull Ring

If you visit Austria or even Europe for the first time, the following hints and tips might be interesting for you. (information is spiced up with fun facts)

1. Austria is called the “Heart of Europe”

It's not an island, it's really located in centre of Europe; the -al- (i.e. AustrALia) makes the difference.

2. The official language in Austria is German

In some regions (including also Spielberg where the competition takes place), it may sound a little different. That's called 'Mundart', 'Dialekt' or 'Steirisch' or simply 'higher level German'. The official language at FSA is English, which most people at stores and everybody at Red Bull Ring speak.

3. We use the metric system and only the metric system

Hint for visitors from Germany:

- 100 g = 10 dag
- Sahne = Schlagobers
- Apfelschorle = Apfelsaft g'spritzt
- Tüte = Sackerl
- Brötchen = Semmel oder Weckerl
- Weinschorle = Spritzer
- Wiener Würstchen = Frankfurter

4. Super Market special FSA offer

- This year we have a special offer from Trans Gourmet for you. You will get a Trans Gourmet 10% Off voucher (valid for the whole competition time).
- Trans Gourmet
Triester Straße 29
8724 Spielberg

5. We use 230V AC with Type C and type F power plugs. Make sure to bring adapters

Type C: <https://en.wikipedia.org/wiki/Europlug>

Type F: <https://en.wikipedia.org/wiki/Schuko>

6. Water in Austria is one of the best all over the world

You can drink water directly from the pipe unless it's explicitly prohibited ("Kein Trinkwasser").

7. Credit card vs. Cash

Paying cash is best practice in Austria. Euro is the currency to use, USD or any other currency will not be accepted.

Big stores and hotels also accept major credit cards.

Maestro / Cirrus will work at all major retail stores; V-pay may work as well.

8. Emergency calls (free of charge)

- European emergency call: 112
- Fire brigade: 122
- Police: 133
- Ambulance: 144

9. Internet access / Mobile Phone

Apart from the cheap roaming options inside the EU (as of June 2017), there are free WiFi hotspots available at FSA. However, you might consider getting yourself a mobile internet SIM card, to use at the camp site or such. We recommend to get a HoT package, available at Hofer (see below).

For literally no money you can get 3GB data incl. LTE (5,90 EUR), 1000 minutes/sms + 4GB of data incl. LTE (9,90 EUR), 1000 minutes/sms + 6GB incl. LTE (13,90 EUR). For more details, please have a look at <https://www.hot.at/tarife>

10. ATM's are called '**Bankomat**'
and can be found **near** Red Bull
Ring **and at the Red Bull Ring**.
Watch out for the blue-green sign.



Steiermärkische Bank und Sparkasse
Marktpassage 1
8724 Spielberg bei Knittelfeld
Dist 3,4 km

Raiffeisenbank Knittelfeld
8724 Spielberg bei Knittelfeld
Dist 3,3 km

**11. Car spare parts, fluids, car and
motorcycle batteries**

Forstinger
Ingeringweg 2
8720 Knittelfeld
Dist 4,0 km

12. Tire change

Will be available at Red Bull Ring

13. Hardware Store

OBI Bau- u Heimwerkermärkte
Arena am Waldfeld 31
8753 Fohnsdorf
Dist 7,8 km

14. Office Stationary (Paper etc)

Pagro Diskont
Wienerstrasse 23
8720 Knittelfeld
Dist 6km

15. Pharmacy

Marktpassage 6
8724 Spielberg
Mo - Fr 8:00 - 12:30, 14:30 - 18:00
Sa 08:00 - 12:00

16. Gas Station

Shell
Hauptstraße 2
8740 Zeltweg