



Rules 2012

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1. General

1.1. Introduction

Formula Student Austria is a competition for combustion and electric vehicles held at the same time and location. Different competitions consider different rules - FSA committee intends to closely follow to the FSG (means FSC and FSE) rules to keep the overhead and confusion for teams competing at both events to a minimum.

If you have any question regarding the FSA rules, feel free to contact the rules committee under rules@fsaustria.at

1.2. Formula Student Austria 2012 Rules

The Formula Student Austria (FSA) competition will comply with the Formula Student Germany 2012 (FSC and FSE) rules located here:

<http://www.formulastudent.de/fsc/2012/rules/>

<http://www.formulastudent.de/fse/2012/rules/>

Only the latest version of these rules is effective (latest meaning latest at any given time, not the time of publishing of this document).

Sections 1 to 3 in both the FSC and FSE rules are to be considered void for the FSA competition.

Any references in the FSC/E Rules to the FSC/E/G event are to be analogously applied to the FSA event.

The FSC/E rules themselves are based on the FSAE rules; please note that this leads to an elaborate rules hierarchy (from most to least specific):

1. FSA Rules
2. FSC/E Rules
3. FSAE Rules

If two of these rulesets conflict with each other, the one higher up in this list will be effective.

Formula Student Austria has defined some specific rule changes and additions. Those changes and additions are located within this document, and supersede the specific sections of the published Formula Student Germany rules for 2012.

1.3. Competition Dates and Location

July 17th, 2012 to July 20th, 2012

Formula Student Austria (FSA) will take place at the Red Bull Ring Spielberg/Austria.

1.4. Registration

1.4.1. Registration FSA

January 13th, 2012 at 18:00

Registration will be done on a first come, first serve basis. 42 slots are available. A list of registered teams will be published on FSA website.

Registration ends on February 30th, 2012.

A waiting list will be published online. In case of cancellations teams will move up in the list and eventually get a confirmed slot.

1.4.2. Special available slots

Four (4) slots will be available for Austrian teams.

Five (5) slots will be reserved for oversea teams.

Five (5) slots will be available for the 2011 FSA top five overall finishing teams listed below:

- Global Formula Racing (DHBW-Ravensburg / Oregon State University)
- High Octane Motorsports (Universität Erlangen-Nürnberg)
- TU Fast (TU München)
- AMZ Racing (ETH Zürich)
- KA Racing (Karlsruhe Institute of Technology)

If these slots are not confirmed within twelve (12) hours of the opening of the registration, all other teams have the chance to take those slots. Teams move up according to the waiting list published on the FSA website.

1.4.3. **Electrically powered cars**

Cars complying with the Formula Student Electric rules (see 1.2) have the chance to register for the event as every other team. The number of participating teams using electric power is limited to a maximum of twelve (12). Please note the additional regulations for electric cars detailed in this document.

1.4.4. **Registration fee**

Registration fee for Formula Student Austria is 1.000,- (one thousand) Euros.

This fee includes the registration of 20 team members. Payment is accepted only by bank transfer. Bank details will be sent to every successfully registered team by E-mail. Every team has to send a confirmation of the money transfer to info@fsaustria.at. Payment is due within 10 days of successful registration. Failure to do so will result in the loss of your slot and your team being placed on the waiting list. Registration fees are non-refundable.

1.4.5. **Additional Team members**

Additional team members can be registered for 20 Euros each. There is no limit to team size.

1.5. **Official Language**

The Formula Student Austria official language is English.

1.6. **Official Time**

The Formula Student Austria Official Time:

| From | Till | Time |
|------------|------------|------|
| 30.10.2011 | 24.03.2012 | CET |
| 25.03.2012 | 28.10.2012 | CEST |

Please be aware that all times (especially deadlines!) are to be interpreted according to this table.

1.7. **Society Membership**

Every participating team member must be a member of one of the FISITA (www.fisita.org) engineering societies.

1.8. **Faculty Advisor**

All participating teams are strongly encouraged to have a Faculty Advisor present with them at all times during the competition. In the case of having no Faculty Advisor present during competition, the Team Captain will take over all responsibilities as the acting Faculty Advisor.

1.9. **First Year Vehicles**

FSA only accepts first year vehicles. A “first year vehicle” must have at least a completely new frame, which shows significant design changes compared to the vehicle used the year before. It will be the team’s responsibility to produce evidence of significant design changes in case of a request by any FSA judges or organizers.

2. Documents

2.1. Submission Dates Summary:

Provided for your convenience only.

| | |
|-------------------------|-----------|
| FMEA * | 3/5/2012 |
| SEF | 4/2/2012 |
| IAD | 4/2/2012 |
| ESF * | 5/7/2012 |
| EDR & DSS | 6/11/2012 |
| Cost report | 6/11/2012 |
| Team Member Designation | 6/25/2012 |
| HIC | 6/25/2012 |
| Drivers License | 6/25/2012 |

*¹⁾ only for electric cars

2.2. Deadlines and grace periods

Failure to submit documents on the dates provided in this section will result in penalties detailed in the according sections. If a deadline is exceeded more than ten (10) days, we reserve the right to un-register the corresponding team from the event.

If a document is not accepted or we formally request additional information from you, you have ten (10) days to reply which you will also be penalized for exceeding.

Note 1: You do not need to submit your documents on the deadline - a week or month before is totally acceptable.

Note 2: Please be aware of possible issues with time zones, bounced mail, size limits, file formats etc. - make sure to have a little time to spare before the deadline to deal with those things!

2.3. Failure to adhere to file formats and nomenclature

Failure to submit your file correctly named (e.g. Car# missing or wrong) or in the correct format (e.g. MS Word docx when PDF is required) will be penalized with -5 (minus five) points, which will be taken off the team's total score. If the file cannot be opened due to an exotic or unsafe format being used, it will be counted as "not submitted" and the according penalty applied.

2.4. Structural Equivalency Form

April 2nd, 2012 at 12:00

The Structural Equivalency Form must be uploaded to the team account on the FSA website no later than April 2nd, 2012 at 12:00. A blank copy of this form will be supplied in the 'important documents' area of FSA website.

Late submissions will be penalized with -10 (minus ten) points per day, up to a maximum of -70 points, which will be taken off the team's Total Score.

Filename nomenclature: CAR#_SEF.pdf (e.g. 01_SEF.pdf)

2.5. Impact Attenuator Data

April 2nd, 2012 at 12:00

The Impact Attenuator Data Form must be uploaded to the team account on the FSA website no later than April 2nd, 2012 at 12:00. A blank copy of this form will be supplied in the „important documents“ area of FSA website.

Late submissions will be penalized with -10 (minus ten) points per day, up to a maximum of -70 points, which will be taken off the team's Total Score.

Filename nomenclature: CAR#_IAF.pdf (e.g. 01_IAF.pdf)

2.6. Engineering Design Report and Design Spec Sheet

June 11th, 2012 at 12:00

The Engineering Design Report and the Design Spec Sheet must be uploaded to the team account on the FSA website no later than June 11th, 2012 at 12:00.

Late submissions will be penalized with -10 (minus ten) points per day, up to a maximum of -100 points, which will be deducted from the team's Engineering Design Event score. No report submitted will result in a score of zero for the Design Event.

Filename nomenclature: CAR#_DSS.pdf and CAR#_EDR.pdf (e.g. 01_DSS.pdf and 01_EDR.pdf)

2.7. **Cost Report**

June 11th, 2012 at 12:00

The Cost Report consists of 2 parts, the written report and the Electronic Copy of the Bill of Materials (BOM). The electronic BOM must be uploaded to the team account on the FSA website no later than June 11th, 2012 at 12:00.

Filename nomenclature: CAR#_BOM.xls (e.g. 01_BOM.xls)

Late submissions will be penalized with -10 (minus ten) points per day, up to a maximum of -80 points, which will be deducted from the team's Cost Event Score. No report submitted will result in a score of zero for the Cost Event.

2.7.1. **EBOM formatting**

The EBOM template available from fsaonline.com has to be used. Especially important are

- Correctness of the eight sections
- team name, car#, and event name
- Sums and formulae used are correct
- BOM complete (Material, Process, etc. filled out and correctly multiplied)
- Detail Page numbers present

Incorrect entries and non-adherence to the template will result in points deducted from the "written report" score in the cost event.

2.7.2. **Written report handover**

The written report and the cost addendum must be handed over during the team registration at the event site. Team registration will not be possible without handing in the team's cost report and cost addendum.

Please note that, although team registration will also be possible on the second day of the competition, it is required to hand over the cost report on the first day due to organizational issues. (Effective deadline: July 17th 2012, 18:00)

Failure to do so will result in a score of zero for the written report and the deduction of 10 (ten) points from the team's cost event score.

2.7.3. **Add Item Requests**

AIRs to be considered for the Cost Event 2012 have to be submitted by June 11th, 2012 at 12:00.

2.8. **Fuel/Charging Type Order**

You must inform FSA which type of fuel you will use as part of the registration process. Available fuel types:

- RON/ROZ 100 Gasoline
- E85
- electricity (externally charged)
- electricity (charged inside car)

2.9. **Team Member Designation**

June 25th, 2012 at 12:00

Participating team members must be designated prior to the event. Team members can only be designated as FSA participants at the team's account on FSA website, providing all requested data.

2.10. **Health Insurance Certificate**

June 25th, 2012 at 12:00

Collect and scan all health insurance certificates of the event participants and upload them as Adobe Acrobat® file (*.pdf) to the team account on FSA website.

Filename: CAR#_HIC.pdf (e.g. 01_HIC.pdf). This file must be submitted no later than June 25th, 2012 at 12:00.

2.11. **Driver licenses**

June 25th, 2012 at 12:00

Collect and scan all driving licenses of the drivers participating in the event and upload them as Adobe Acrobat® file (*.pdf) to the team account on FSA website.

Filename: CAR#_Vorname_Nachname_DL.pdf (e.g. 01_John_Doe_DL.pdf). This file must be submitted no later than June 25th, 2012 at 12:00.

2.12. **Electrical Safety Form**

May 7th, 2012 at 12:00

IMPORTANT: ALL TEAMS MUST SUBMIT AN ELECTRICAL SAFETY FORM. A TEMPLATE WILL BE PROVIDED ON THE WEBSITE AND HAS TO BE USED.

The Electrical Safety Form must be uploaded to the team account on the FSA website

Filename: CARNUMBER_eSEF.pdf (e.g. 01_eSEF.pdf) no later than May 7th, 2012 at 12:00.

Late submissions will be penalized with -10 (ten) points per day, up to a maximum of -70 points, which will be taken off the team's Total Score.

2.13. **Failure Modes and Effects Analysis**

March 5th, 2012 at 12:00

IMPORTANT: ALL TEAMS RUNNING AN ELECTRIC CAR MUST SUBMIT A FAILURE MODES AND EFFECTS ANALYSIS. A TEMPLATE WILL BE PROVIDED ON THE WEBSITE AND HAS TO BE USED.

The Failure Modes and Effects Analysis must be uploaded to the team account on the FSA website no later than March 5th, 2012 at 12:00. Mail subject and Filename: CARNUMBER_FMEA.xls (e.g. 01_FMEA.xls)

Late submissions will be penalized with -10 (ten) points per day, up to a maximum of -70 points, which will be taken off the team's Total Score.

2.14. **Student Activity Disclosure (specific FSA change of Formula SAE® 2012 rule C5.7)**

The „Student Activity Disclosure Form“ is not required for FSA.

3. **FSA specific changes**

3.1. **Transponders (specific FSA change of Formula SAE ® 2012 rule B 15.2)**

Transponders will be provided by FSA. Only FSA provided Transponders will be acceptable for use at FSA.

3.2. **Unofficial timing and telemetry equipment**

No unofficial timing and telemetry equipment (e.g. IR Transmitters, radio extenders, etc.) is allowed inside the dynamic area. Exempt from this rule is the driver change/preparation area, where team members with dynamic passes are allowed to remain during the course of the dynamic events, if the equipment does not interfere with the conduct of the event.

3.3. **Technical Inspection Sticker (specific FSA change of Formula SAE ® 2012 rule B 16.4)**

Technical inspection stickers will be placed on the upper nose of the vehicle (i.e. somewhere on the surface between the cockpit opening and the nose of the vehicle). Cars must have a clear and unobstructed area of at least 15x10 cm on this surface.

3.4. **Alternate Frame Rules (specific FSA change of FSC and FSE 2012 rule 4.1)**

Alternative Frame Rules are not allowed for FSA 2012.

3.5. **Engine running (specific FSA change of FSC 2012 rule 5.3)**

Running of engines is not allowed in the pits or the garage areas. There is a designated, supervised, engine running area for this purpose. All engine running is to be conducted in the designated engine running area

only. Engine running is allowed only during the active hours of competition. No engines are to be run under any circumstances between the hours of 1800 to 0800 and during lunchtime.

This rule does not apply to electric vehicles and leaves FSE Rule 5.3 intact.

3.6. Power tools and welding

Welding and usage of tools which are loud and/or pose a fire hazard, for example but not limited to powerful drills, angle grinders and small rotary tools (“Dremels”), is forbidden in the pits. A dedicated power tool and welding area will be provided. (Note that the equipment will not be provided though).

Usage of noisy tools (i.e. angle grinders) is prohibited during the time from 1800 - 0800 and during the lunch break.

3.7. Cost Report Material Tables (Specific FSA change of Formula SAE® 2012 Rule C 3.10.4)

The following Cost Tables are used

- Materials
- Processes
- Process Multipliers
- Fasteners
- Tooling

Additionally, a materials table for electric vehicle components is provided on the FSA website. See Appendix FSA-C-1 for further details!

3.8. Structural Equivalency and SEF (specific FSA change of FSC and FSE 2012 rule 6.1)

All teams must submit a Structural Equivalency Form. A blank copy of this form is supplied in the rules section on the FSA Website

The use of alternative materials or tubing sizes to those specified in Formula SAE® 2012 Rule B 3.3.1 “Baseline Steel Material” is allowed, provided they have been judged by a technical review to have equal or superior properties to those specified in Formula SAE® 2012 Rule B 3.3.1 “Baseline Steel Material”.

Structural equivalency must be demonstrated by providing calculations and/or tests results

All formula symbols and abbreviations, used in the SEF, must be defined.

3.9. Impact Attenuator Data (specific FSA change of FSC and FSE 2012 rule 6.2)

All teams must submit the Impact Attenuator Data Form, along their test results, description of the test setup, the used test equipment and photo documentation of the IAD before and after the test. The Impact Attenuator Data must be submitted no later than the specified date.

A blank copy of this form is supplied in the rules section on the FSA website.

3.10. Business Plan Judging Sequence (specific FSA change of FSC and FSE 2012 rule 9.1.4 and FSE 2012 rule 10.1.4)

There will be no final judging, all teams will be judged in one go.

3.11. Business Plan Scoring Formula (specific FSA change of FSC 2012 rule 9.1.5 and FSE 2012 rule 10.1.5)

The scoring of the event is based on the average of the two or three presentation judging forms. There is a maximum of seventy-five (75) points from the FSG Presentation Judging Form.

$$\text{PRESENTATION SCORE} = 75 \times (P_{\text{your}}/P_{\text{max}})$$

Where:

“P_{max}” is the highest score awarded to any team

“P_{your}” is the score awarded to your team

3.12. FSE inspection sheet (clarification to FSE 2012 rule 8.1)

FSE rule 8.1 stays intact, it is recommended that you prepare your car for scrutineering according to the FSE inspection sheets.

3.13. **Ready to drive sound (specific FSA change of FSE 2012 rule 7.19)**

The car has to make a characteristic sound, once not continuous for at least 1 second and a maximum of 3 seconds, when it is ready to drive.

The car is ready to drive as soon as the motor(s) will respond to the input of the torque encoder / accelerator pedal.

The sound level has to be a minimum of 70dBA, fast weighing, in a radius of 2m around the car.

3.14. **Combined Scoring**

At FSA, electric and combustion vehicles compete in the same realm, so all events will be combined combustion and electric events. Therefore, there will only be one combine overall scoring and one “Winner over All”.

The reason for this is the mainly positive feedback to the “direct competition” between the two classes at FSA in the past years and also the objective of the event organization to allow a very direct comparison between different powertrain philosophies.

Especially in the static events we consider this to be fair, since the scoring criteria and skills tested are essentially the same for both types of teams and cars. Also, due to the FSA cost table extensions, the cost scores of electric cars should stay reasonable in respect to IC powered cars.

In the dynamic events, the past years have shown that the best of the combustion cars are well able to compete with the top electric cars, so we are expecting a tight competition again.

3.15. **Efficiency scoring (specific FSA change of FSC 2012 rule 8.4.1 and FSE 2012 rule 9.5)**

We are still working on new scoring formulae to improve the balance between electric and combustion cars. The new formulae will be published in a future version of this document.

The new rule will also include a paragraph similar to FSC, where Teams that DNF after more than 50% of the race distance will be awarded partial points.

4. Document history

VersionChanges

| Date | Version | comments/changes |
|------------|---------|--------------------------------------------------------------------------------------------------------------------------|
| 10.01.2012 | 1.0 | Initial Release |
| 11.01.2012 | 1.01 | Fixed minor typos |
| 13.02.2012 | 1.02 | Rule 2.12: FMEA only required for electric cars (hat tip to Bath Racing) Rule 3.5: no engine running during lunchtime |
| 14.02.2012 | 1.1 | Added Rule 2.7.1(EBOM formatting) and 2.3 (file formats & nomenclature) |