

1	IMPORTANT DATES	3
1.1	Competition Dates and Location	3
1.2	Registration	3
1.2.1	Registration FSG	3
1.2.2	Early Registration	3
1.3	Structural Equivalency Form	3
1.4	Impact Attenuator Data	4
1.5	Engineering Design Report and Design Spec Sheet	4
1.6	Cost Report	4
1.7	Business Plan Executive Summary	4
1.8	Fuel Type Order	5
1.9	Team Member Designation	5
1.10	Health Insurance Certificate	5
2	GENERAL	6
2.1	Formula Student Germany 2010 Rules	6
2.2	Official Language	6
2.3	Official Time	6
2.4	FSG Registration	6
2.4.1	FSG Registration Deadline	6
2.4.2	FSG Registration Capacity Limit	6
2.4.3	FSG Early Registration for Formula Student Germany 2009 Top Ten Overall Finishers	6
2.4.4	FSG Early Registration allowed for Formula Student Germany 2009 "BEST NEWCOMER"	7
2.4.5	FSG Early Registration for TOP 10 World Ranking Teams	7
2.4.6	FSG Early Registration for International Teams	7
2.4.7	FSG Registration Fee	7
2.4.8	FSG Registration Required Contact Information	7
2.5	Society Membership	7
2.6	Faculty Advisor	7
2.7	FSG First Year Vehicles	8
3	VEHICLE REQUIREMENTS AND RESTRICTIONS	8
3.1	Impact Attenuator	8
3.1.1	Anti Intrusion Plate (Specific FSG change of Formula SAE® 2010 Rule B 3.20.6)	8
3.2	Securing Fasteners (Specific FSG change of Formula SAE® 2010 Rule B 14.2)	8
3.2.1	Brake System Components mounting	8
3.2.2	Steering System and Suspension System Components mounting (Specific FSG change of Formula SAE® 2010 Rule B 14.2)	8
3.3	Brake System	8
3.3.1	Brake System Master Cylinder Actuation	8
3.4	Engine Lubrication System	8
3.5	Fuel System	8
3.5.1	Refueling	8
3.5.2	Fuel Tank Visible Access	9
3.5.3	Fuel Lines and Connectors (Specific FSG change of Formula SAE® 2010 Rule B 8.8.1)	9
3.5.4	Fuel Rails (Specific FSG change of Formula SAE® 2010 Rule B 8.9.2)	9
3.5.5	Ventilation of Enclosed Structures (Specific FSG change of Formula SAE® 2010 Rule B 9.7.3)	9
3.6	Electrical System	9
3.6.1	Main Switch (Specific FSG change of Formula SAE® 2010 Rule B 11.2.1)	9
3.6.2	Brake Over-Travel Switch (Specific FSG change of Formula SAE® 2010 Rule B 7.3.3)	9
3.7	Drivetrain	10
3.7.1	Drive Train Shields and Guards (Specific FSG change of Formula SAE® 2010 Rule B 8.13)	10
3.8	Driver Egress (Specific FSG change of Formula SAE® 2010 Rule B 4.8)	10

3.9	Fire Extinguishers (Specific FSG change of Formula SAE® 2010 Rule B 17.2.1)	10
3.10	Vehicle Identification	11
3.10.1	School Name (Specific FSG change of Formula SAE® 2010 Rule B 16.2)	11
3.10.2	Technical Inspection Sticker Space (Specific FSG change of Formula SAE® 2010 Rule B 16.4)	11
3.10.3	Transponders (Specific FSG change of Formula SAE® 2010 Rule B 15.2)	11
3.10.4	Driver's Suits and Undergarments (Specific FSG change of Formula SAE® 2010 Rule B 17.1)	11
4	PIT RULES	12
4.1.1	Electrical Power during pushing	12
4.1.2	Push Bar (Specific FSG change of Formula SAE® 2010 Rule D 13.2)	12
4.1.3	Engine running in the pits	12
4.2	Quick Jack	12
5	SEF AND IAD DOCUMENTS	13
5.1	Structural Equivalency and Structural Equivalency Form	13
5.2	Impact Attenuator Data	13
6	TECHNICAL INSPECTION	13
6.1	Inspection & Testing Requirement	13
6.2	Car Weighing	13
7	DYNAMIC EVENTS	14
7.1	Dynamic Events and Maximum score (Specific FSG change of Formula SAE® 2010 Rules Part D Article 1)	14
7.2	Skid Pad Scoring (Specific FSG change of Formula SAE® 2010 Rule D 6.8.2)	14
7.3	Autocross Scoring (Specific FSG change of Formula SAE® 2010 Rule D 7.8.1)	14
7.4	Endurance Scoring (Specific FSG change of Formula SAE® 2010 Rule D 7.8.1)	15
7.5	Fuel Efficiency Scoring (Specific FSG change of Formula SAE® 2010 Rules D 7.8.22 and D 7.8.25)	15
	REVISED Ver1.03	15
8	STATIC EVENTS	16
8.1	Business Plan Presentation (75 Points)	16
8.1.1	Executive Summary	16
8.1.2	Deep Dive Topic	16
8.1.3	Data Projection Equipment	16
8.1.4	Judging Sequence	17
8.1.5	Scoring Formula	17
8.2	Engineering Design Event (150 Points)	17
8.2.1	Judging Sequence	17
8.2.2	Engineering Design Report Files. File Format and Size	17
8.2.3	Engineering Design Spec Sheet. File Format and Units	18
8.2.4	Penalty for late submission	18
8.3	Cost Event (100 Points)	19
8.3.1	Cost Event Scoring (Specific FSG change of Formula SAE® 2010 Rule C 3.7)	19
8.3.2	Late submission of Cost Report (Specific FSG change of Formula SAE® 2010 Rule C 5.15)	19
8.3.3	Addenda (Specific FSG change of Formula SAE® 2010 Rule C 5.15)	19
8.3.4	Cost Report Penalties Process (Specific FSG change of Formula SAE® 2010 Rule C 5.17)	19

1 Important Dates

1.1 Competition Dates and Location

August 04, 2010 to August 08, 2010

Formula Student Germany (FSG) will take place in Hockenheim/Germany.

1.2 Registration

1.2.1 Registration FSG

January 11, 2010 at 1200 CET

Registration forms will be accepted in the order in which they are received, starting January 11, 2010 at 1200 CET and ending on April 30, 2010 1200 CEST or when the 78 cars registration limit is reached. Registration will be online at the FSG Website.

1.2.2 Early Registration

January 6, 2010 at 1200 CET

Early registrations will be accepted in the order in which they are received, starting January 6, 2010 at 1200 CET and ending on January 10, 2010 at 1200 CET, or when 36 teams have registered, whichever occurs first. The registration fee must be paid on-line by PayPal within 72 hours of registration. Registration fees may not be paid by any other means. Registration fees are not refundable for any reason. There is no late registration and there are no exceptions to this registration policy.

If all Early Registration Slots are full for one region, additional teams from the same region can register when Official Registration opens on January 11, 2010. All remaining slots that are not used during early registration will then become available for all teams when Official Registration opens on January 11, 2010.

1.3 Structural Equivalency Form

May 03, 2010 at 1200 CEST

IMPORTANT: ALL TEAMS MUST SUBMIT A STRUCTURAL EQUIVALENCY FORM.
A blank copy of this form is supplied in FSG Rules Appendix A-A.

The Structural Equivalency Form must be uploaded to the 'My Team' area on the FSG website no later than May 03, 2010 at **1200 CEST**.

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.

Teams, which missed the SEF deadline by more than 7 days will be removed from the FSG 2010 competition.

In the event that the FSG Technical Committee requests additional information or calculations, teams have 14 days from the date of the request to submit the requested information. Late submissions will be penalized with -5 (minus five) points per day, up to a maximum of -50 points, which will be deducted from the team's Total Score.

1.4 Impact Attenuator Data

May 03, 2010 at 1200 CEST

IMPORTANT: ALL TEAMS MUST SUBMIT AN FSG IMPACT ATTENUATOR DATA FORM. A blank copy of this form is supplied in FSG Rules, Appendix A-B.

Impact Attenuator Data must be uploaded to the 'My Team' area on the FSG website no later than May 03, 2010 at **1200 CEST**.

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

Teams, which miss the IAD deadlines by more than 7 days will be removed from the FSG 2010 competition.

In the event that the FSG Technical Committee requests additional information or calculations, teams have 14 days from the date of the request to submit the requested information. Late submissions will be penalized with -5 (minus five) points per day, up to a maximum of -50 points, which will be deducted from the team's Total Score.

1.5 Engineering Design Report and Design Spec Sheet

June 11, 2010 at 1200 CEST

The FSG Engineering Design Report and the FSG Engineering Design Spec Sheet must be uploaded to the 'My Team' area on the FSG website no later than June 11, 2010 at **1200 CEST**.

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 Engineering Design Event.

1.6 Cost Report

June 11, 2010 at 1200 CEST

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 submitted as a Microsoft Excel® file. The file must be uploaded to the 'My Team' Area on the FSG Website no later than June 11, 2010 at **1200 CEST**.

The written Report must be present at the competition during the Cost Event.

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.

1.7 Business Plan Executive Summary

June 11, 2010 at 1200 CEST

The Business Plan Executive Summary must be uploaded to the 'My Team' area on the FSG website no later than June 11, 2010 at **1200 CEST**.

Late submission or non submission will be penalized at the discretion of the judges up to -5 (minus five) points. These penalty points will be deducted from the Presentation Judging Score.

1.8 Fuel Type Order

July 01, 2010 at 1200 CEST

You must inform FSG which type of fuel you will use no later than July 15, 2010 at 1200 CEST.

1.9 Team Member Designation

July 01, 2010 at 1200 CEST

Participating team members must be designated prior to the event. To designate a team member, please visit “My team area” on the FSG Website.

Team members can only be designated as FSG participants if they have entered the following personal information in their user profiles:

- Personal Address (required for insurance purposes)
- ZIP code (required for insurance purposes)
- City (required for insurance purposes)
- Clothing size (required for Event T-Shirts)
- Emergency contact person (parents e.g.)
- Emergency contact phone (parents e.g.)
- FISITA organisation you belong to
- FISITA organisation member number

1.10 Health Insurance Certificate

July 01, 2010 at 1200 CEST

Collect and scan all health insurance certificates of the event participants and upload them as a multiple page Adobe Acrobat® file (*.pdf). This file must be submitted no later than July 01, 2010 at 1200 CEST.

2 General

2.1 Formula Student Germany 2010 Rules

The Formula Student Germany (FSG) competition will comply with the Formula SAE® 2010 rules, located here:

<http://students.sae.org/competitions/formulaseries/rules/>

Formula Student Germany does have some specific rule changes and additions. Those changes and additions are located within this document, which supersede the specific sections of the published Formula SAE® rules for 2010.

Any questions or ambiguities concerning the rules for Formula Student Germany will be resolved by the Formula Student Germany Rules Committee. You may contact the FSG Rules Committee, here: rules@formulastudent.de

2.2 Official Language

The Formula Student Germany Official Language is **English**.

2.3 Official Time

The Formula Student Germany Official Time

From	Till	Time
25.10.2009	27.03.2010	CET
28.03.2010	31.10.2010	CEST

To convert CET or CEST to your local time you may use following website:

<http://www.timeanddate.com/worldclock/converter.html>

2.4 FSG Registration

2.4.1 FSG Registration Deadline

The registration deadline for Formula Student Germany is listed in the Important Dates section of this document. (Please refer to FSG Rules, section 1.2)

2.4.2 FSG Registration Capacity Limit

Registrations will be given out, in the order in which they are received. The 2010 Formula Student Germany competition will be limited to a total of 78 competing teams.

2.4.3 FSG Early Registration for Formula Student Germany 2009 Top Ten Overall Finishers

10 registration slots will be available for the FSG 2009 Top Ten overall finisher teams. A list of the Top Ten finishers can be found in FSG Rules, Appendix C.

2.4.4 FSG Early Registration allowed for Formula Student Germany 2009 “BEST NEWCOMER”

1 (one) registration slot will be available for the Team which won the FSG 2009 Best Newcomer Award.

2.4.5 FSG Early Registration for TOP 10 World Ranking Teams

10 (ten) registration slots will be available for the World Ranking Top 10 (Ten) teams. The Top 10 ranking which is valid on the day when early registration starts will count. The World Ranking can be found here: <http://www.fs-world.org> .

2.4.6 FSG Early Registration for International Teams

16 registration slots will be available for Overseas Teams and non-German, European teams before Official Registration starts. These 15 slots are split into 4 regions as follows:

Region (For Definition of Regions see Appendix B)	Number of Slots
Australasia and Japan	3
Europe (beside Germany)	5
North America	4
Rest of the world beside Europe	3

Definition of the regions can be found in the FSG Rules, Appendix B.

2.4.7 FSG Registration Fee

The registration fee of 750 Euros is for one 20-person team. More team members can be registered for 20 Euros per each additional team member. There is no limit to team size.

2.4.8 FSG Registration Required Contact Information

Once the team has officially been registered for FSG, each team member and faculty advisor is required to add his/her identifying information online. All participants must provide their name and individual emergency contact information.

Participants may only be added (registered) by the team’s official contact person (the person who registered the team for the event) until July 1, 2010 at 1200 CEST.

2.5 Society Membership

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

2.6 Faculty Advisor

FSG strongly recommends that all participating teams 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.

2.7 FSG First Year Vehicles

FSG 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 FSG judges or organizers.

3 Vehicle Requirements and Restrictions

3.1 Impact Attenuator

3.1.1 Anti Intrusion Plate (Specific FSG change of Formula SAE® 2010 Rule B 3.20.6)

On all cars, a 1.5 mm (0.060 in) solid steel or 4.0 mm (0.157 in) solid aluminium “anti-intrusion-plate” must be integrated into the Impact Attenuator. Alternative materials are prohibited.

3.2 Securing Fasteners (Specific FSG change of Formula SAE® 2010 Rule B 14.2)

3.2.1 Brake System Components mounting

Nylon lock nuts are not allowed for mounting Brake callipers or Brake discs. All critical bolts, nuts, and other fasteners on the brake system, must be secured from unintentional loosening by the use of FSG approved positive locking mechanisms.

3.2.2 Steering System and Suspension System Components mounting (Specific FSG change of Formula SAE® 2010 Rule B 14.2)

Pins and lock plates or snap rings are not acceptable for use as positive locking mechanisms on any Steering or Suspension System component.

3.3 Brake System

3.3.1 Brake System Master Cylinder Actuation

The Brake System Master Cylinder must be directly actuated by a mechanical connection. The use of Bowden cables or Push Pull Bowden cables is not allowed.

3.4 Engine Lubrication System

The lowest point of the engine lubrication system must be no lower than the lowest frame rail. If the engine oil sump or any other part of the lubrication system is lower than the lowest frame rail, it must be protected by an FSG approved skid plate, or frame tubes installed longitudinally under affected part of the engine lubrication system.

The engine lubrication system must be protected from surface contact in any situation while in operation on track, especially in the event of a suspension failure.

3.5 Fuel System

3.5.1 Refueling

Re-fueling must be able to be accomplished without the removal of any body parts of the car.

3.5.2 Fuel Tank Visible Access

All fuel lines and electrical connections, which are connected to the fuel tank or parts in the fuel tank, such as (but not limited to) fuel pumps or sensors, must be clearly visible to the technical inspectors without using instruments such as endoscopes or mirrors. Visible access can be provided by removing body panels or by providing removable access panels.

3.5.3 Fuel Lines and Connectors (Specific FSG change of Formula SAE® 2010 Rule B 8.8.1)

Fuel lines and hoses made from PTFE (Polytetrafluoroethylene) are prohibited. The use of plastic quick release connectors and plastic fittings located between the fuel tank and the engine (supply and return) are not permitted.

3.5.4 Fuel Rails (Specific FSG change of Formula SAE® 2010 Rule B 8.9.2)

The use of fuel rails made from plastic, carbon fibre or rapid prototyping flammable materials is prohibited.

3.5.5 Ventilation of Enclosed Structures (Specific FSG change of Formula SAE® 2010 Rule B 9.7.3)

Enclosed monocoque structures, undertrays or skid plates designed to protect the engine or tanks carrying liquids; must have at least 2 (two) holes (each a minimum of 50 mm in diameter). These holes must be positioned in the lowest part of the structure in such a way as to positively prevent accumulation of volatile liquids and/or vapours.

3.6 Electrical System

3.6.1 Main Switch (Specific FSG change of Formula SAE® 2010 Rule B 11.2.1)

Additional to the requested specifications by Formula SAE® 2010 Part B Rule 11.2.1, the Main Switch must cut the feed from the generator / rectifier to the battery.

3.6.2 Brake Over-Travel Switch (Specific FSG change of Formula SAE® 2010 Rule B 7.3.3)

The Brake Over-Travel switch must be a mechanical single pole, single throw (commonly known as a two-position) switch (push-pull or flip type) as shown in figure 1.

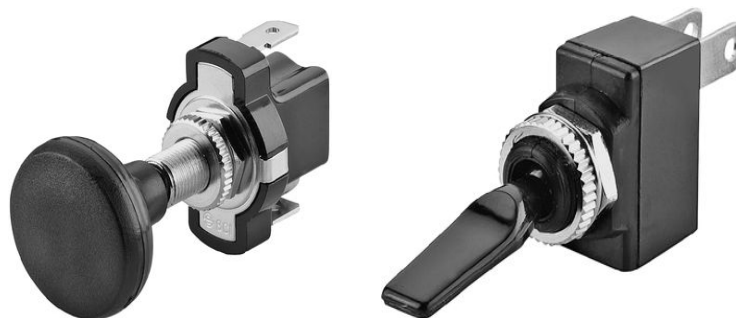


Figure 1 – example of allowed switch types for the brake over-travel switch

3.7 Drivetrain

3.7.1 Drive Train Shields and Guards (Specific FSG change of Formula SAE® 2010 Rule B 8.13)

All cars must be equipped with a final drive train shield. The final drive train shield must cover the chain or belt from the drive sprocket to the driven sprocket/chainwheel/belt or pulley, and completely surround the driven sprocket/chainwheel/belt or pulley. The final drive train shield may end parallel to the lowest point of the chainwheel/belt pulley. (see figure 2). The required final drive train shield must be constructed with materials in accordance with Formula SAE® 2010 Rule B 8.13.4 & B 8.13.5.

Note: Even if the final drive chain or belt, pulley, sprocket, etc. is covered up by body panels, or some other cover, a final drive train shield is required.

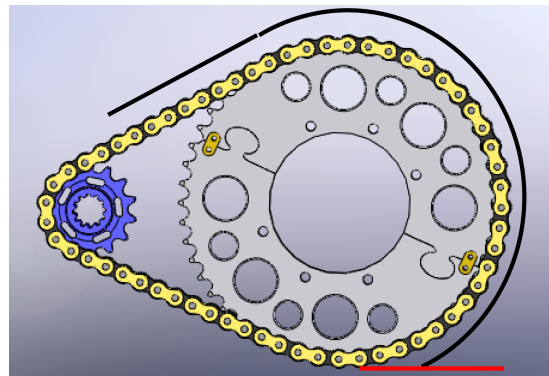


Figure 2 – Example for final drive train shield

3.8 Driver Egress (Specific FSG change of Formula SAE® 2010 Rule B 4.8)

The driver egress, required by Formula SAE® 2010 Rule B 4.8 must be possible in all steering wheel positions.

3.9 Fire Extinguishers (Specific FSG change of Formula SAE® 2010 Rule B 17.2.1)

Aqueous Film Forming Foam (AFFF) fire extinguishers are prohibited.

3.10 Vehicle Identification

3.10.1 School Name (Specific FSG change of Formula SAE® 2010 Rule B 16.2)

The following school type abbreviations are accepted. The city name must be written fully.

Technical University - TU + City

University of Applied Sciences – UaS + City

University - Uni + City

Berufsakademie - BA + City

If the university uses a shortcut in their proper name, this shortcut is acceptable + city.

Example:

Real name: Rheinisch-Westfälische Technische Hochschule Aachen -

Acceptable shortcut name: RWTH Aachen

3.10.2 Technical Inspection Sticker Space (Specific FSG change of Formula SAE® 2010 Rule B 16.4)

The technical inspection sticker will be placed on the nose of the car directly in front of the cockpit opening. A space 75 mm tall x 150 mm wide (3" tall x 6" wide) must be made available for this sticker.

3.10.3 Transponders (Specific FSG change of Formula SAE® 2010 Rule B 15.2)

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

3.10.4 Driver's Suits and Undergarments (Specific FSG change of Formula SAE® 2010 Rule B 17.1)

Each driver must wear a fire resistant suit that covers the body from the neck down to the ankles and the wrists. The suit must be in good condition, i.e. it must be clean, and have no tears or open seams, or oil stains that could compromise its fire resistant capability. The suit must be certified to one of the following standards and be labelled as such:

- SFI 3-2A/10 (or higher)

- FIA Standard 1986

- FIA Standard 8856-2000

Approved long underwear made of fire resistant material must be worn with all suits except those carrying a rating of SFI 3.2A/10, 3.2A/15, 3.2A/20 or FIA Standard 8856-2000.

Underwear certified to SFI 3.3 or FIA 8856-2000 is strongly recommended in all cases.

Socks, shirts, and other undergarments made of synthetic material (including Nylon, Orlon, Rayon, Spandex, etc.) which can melt into the skin in a fire are strictly forbidden. Nomex undergarments, socks, head sock (balaclava), gloves and driving shoes are very strongly encouraged. These items will become a requirement for all drivers at FSG 2011.

4 Pit Rules

4.1.1 Electrical Power during pushing

The car must be able to be pushed around with the Primary Master Switch in the OFF position.

4.1.2 Push Bar (Specific FSG change of Formula SAE® 2010 Rule D 13.2)

The push bar must be a separate, detachable device. Rear wings will not be accepted as a push bar. The push bar must be located behind the rear axle when the car is moved. One fire extinguisher has to be attached to the push bar by a quick release mechanism in an easily accessible position.

4.1.3 Engine running in the pits

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 2000 to 0800.

4.2 Quick Jack

Each team must present a quick jack to lift up the car by using the jacking point during Technical Inspection. The quick jack must be able to lift up the rear end of the car, so that the drive wheels are at least 10.2 cm (4 in) off the ground.

5 SEF and IAD Documents

5.1 Structural Equivalency and Structural Equivalency Form

All teams must submit the FSG Structural Equivalency Form, supplied in FSG Rules Appendix A-A.

The use of alternative materials or tubing sizes to those specified in Formula SAE® 2010 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® 2010 Rule B 3.3.1 “Baseline Steel Material”.

Structural equivalency must be demonstrated by providing calculations and/or tests results. All calculations must compare the alternative material with S235Jr (Material number 1.0037). Tensile strength and yield stress properties (at a minimum) of the alternative material must be compared with the same attributes of S235Jr.

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

5.2 Impact Attenuator Data

All teams must submit the FSG Impact Attenuator Data Form, supplied in FSG Rules Appendix A-B, 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.

6 Technical Inspection

6.1 Inspection & Testing Requirement

Tech Inspectors will mark or seal various different approved parts (i.e. air restrictor, tires, rims etc.). The car can be disqualified from any dynamic event by using, or substituting unmarked parts. Parts with broken seals are equivalent to being unmarked.

6.2 Car Weighing

All cars will be weighed prior to Engineering Design Judging. All cars are to be weighed in ready to race condition. The fuel tank must be filled to the fuel level line. All lubricants and coolants must be in the car. This weight will be the car’s Official Technical Inspection weight. There will be a penalty if the car weight changes during Dynamic Competition. The allowable weight tolerance is ± 5.0 kg. In the case of overweight or underweight in comparison to the Technical Inspection weight, the team will be penalized -20 (twenty) points for each kg (or portion of a kg) of additional or missing weight. This point penalty will be deducted from the Engineering Design Event score. (Each 0.1 to 1.0 kg = -20 points)

Example:

If the car is 5.3 kg underweight: 5.3 kg minus the 5.0 kg tolerance = 0.3 kg equals -20 Points

If the car is 7.8 kg overweight: 7.8 kg minus the 5.0 kg tolerance = 2.8 kg equals -60 Points

If the car weight changes due to replacement of broken parts, the car must be presented for tech inspection and then re-weighed. It is the team's responsibility to have the car re-weighed before entering a dynamic event after changing parts.

7 Dynamic Events

7.1 Dynamic Events and Maximum score (Specific FSG change of Formula SAE® 2010 Rules Part D Article 1)

Skid Pad	75
Acceleration	75
Autocross	100
Fuel Efficiency	100
Endurance	325
Total	675

7.2 Skid Pad Scoring (Specific FSG change of Formula SAE® 2010 Rule D 6.8.2)

The following equation is used to determine the scores for the skid-pad event:

$$\text{Skid Pad Score} = 71,5x \frac{(6.184/T_{\text{your}})^2 - 1}{(6.184/T_{\text{min}})^2 - 1} + 3,5$$

Where:

T_{your} is the average of the left and the right timed laps on your best run including penalties.

T_{min} is the elapsed time of the fastest car

7.3 Autocross Scoring (Specific FSG change of Formula SAE® 2010 Rule D 7.8.1)

The following equation is used to determine the scores for the autocross event:

$$\text{Autocross Score} = 95,5x \frac{(T_{\text{max}}/T_{\text{your}}) - 1}{(T_{\text{max}}/T_{\text{min}}) - 1} + 4,5$$

Where:

T_{min} is the lowest corrected elapsed time recorded for any competitor in either heat

T_{max} is 125% of T_{min}

T_{your} is the lowest corrected elapsed time in either heat for the team being scored.

7.4 Endurance Scoring (Specific FSG change of Formula SAE® 2010 Rule D 7.8.1)

The following equation is used to determine the scores for the endurance event:

$$\text{Endurance Score} = 275 \times \frac{(T_{\max} / T_{\text{your}}) - 1}{(T_{\max} / T_{\min}) - 1} + 50$$

Where:

T_{min} will be the lowest corrected time of the fastest team of the event.

T_{your} will be the combined corrected times of both of your team's drivers in the heat.

T_{max} will be 1.333 times T_{min}.

The Minimum Endurance Score is 25 (twenty five) Points, even if the corrected time of the team (t_{your}) is higher than 133% of the fastest corrected time (t_{min})

7.5 Fuel Efficiency Scoring (Specific FSG change of Formula SAE® 2010 Rules D 7.8.22 and D 7.8.25) *REVISED Ver1.03*

$$\text{Fuel Efficiency Score} = 100 \times \frac{(Fuel\ Efficiency\ Factor_{\min} / Fuel\ Efficiency\ Factor_{\text{your}}) - 1}{(Fuel\ Efficiency\ Factor_{\min} / Fuel\ Efficiency\ Factor_{\max}) - 1}$$

$$\text{Fuel Efficiency Factor} = \left(\frac{T_{\min} / \text{lap}_{\text{total}}}{T_{\text{your}} / \text{lap}_{\text{yours}}} \right) \times \left(\frac{V_{\min} / \text{lap}_{\text{total}}}{V_{\text{your}} / \text{lap}_{\text{yours}}} \right)$$

Where:

V_{min} is the smallest volume of fuel used by any competitor, whose fulfil T_{your} < 1.333 x T_{min}

V_{your} is the volume of fuel used by the team being scored. Vehicles whose fuel volume exceeds 26 liter/100km, will receive zero (0) points for fuel efficiency.

T_{min} will be the lowest corrected time of the fastest team of the event, whose fuel volume will not exceeds 26 liter/100km.

T_{your} will be the combined corrected times of the drivers in your heat. Vehicles whose corrected time exceeds 1.333 times the corrected time of the fastest team, will receive zero (0) points for fuel efficiency.

Lap_{yours} will be the number of driven laps, at least 50% of the total endurance distance.

Lap_{total} will be the number of the full endurance distance.

8 Static Events

8.1 Business Plan Presentation (75 Points)

8.1.1 Executive Summary

Judging will start with an Executive Summary before the FSG Competition. The principal document submitted prior to the Business Plan Presentation is an Executive Summary. The Executive Summary must not exceed one (1) page, team name and car number must be written on the Executive Summary. The Executive Summary should contain a brief description of the team's Business Plan. In the Summary the two most outstanding technical features of the car should be listed. The Summary has to include the anticipated production cost, per vehicle, in a production run of 1000 cars per year (value from Cost Report).

The Executive Summary must relate to the specific prototype car entered in the FSG competition. The costs of the prototype car entered will not be considered as part of the Business Plan judging.

Even though the Executive Summary is only judged by the presentation judges, all Engineering Design and Cost judges will have access to the file and may refer to it.

The Executive Summary must be submitted in Adobe Acrobat® format (*.pdf file) online, no later than the specified date. (Please see FSG Rule section 1.7)

Late submission and non submission will be penalized. It is at the discretion of the judges to deduct between -5 (minus five) points from the Presentation Judging score. The penalty points will be deducted from your final Business Plan Presentation Score.

Note: Consider your Executive Summary to be the first impression of your Business Plan to the Executive Board of a major auto manufacturing company.

8.1.2 Deep Dive Topic

After submission of the Executive Summary the teams will receive a specific Deep Dive Topic from the presentation judges prior the competition. The task will be sent via email on the date specified in the Action Deadlines, to the team's responsible person's email address.

Every team has to present this special Deep Dive Topic as a part of the team's business plan presentation to the judges.

NOTE: A team should not describe only this Deep Dive Topic in the business plan presentation. It's important that a team presents a good business plan as well.

8.1.3 Data Projection Equipment

Video projectors / video monitors will be provided by Formula Student Germany. These projectors will have VGA input connectors.

The organizers will not provide any other presentation equipment needed. Teams planning to use other presentation equipment, as a part of their presentation, are responsible for bringing, or otherwise arranging their own equipment.

8.1.4 Judging Sequence

At Formula Student Germany the Business Plan Presentation Judging will consist of two parts:

- I. Initial judging of all teams
- II. Final judging ranking the top 3-5 teams

8.1.5 Scoring Formula

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.

Non finalist:

$$\text{PRESENTATION SCORE} = 70 \times (\text{Pyour}/\text{Pmax})$$

Where:

“Pmax” is the highest score awarded to any team not participating in the finals

“Pyour” is the score awarded to your team

Finalists:

- 1st Place 75 points
- 2nd Place 74 points
- 3rd Place 73 points
- 4th Place 72 points
- 5th Place 71 points

It is intended that the scores will range from near zero (0) to seventy-five (75) to provide good separation. The Presentation Event Captain may at his/her discretion; normalize the scores of different judging teams.

8.2 Engineering Design Event (150 Points)

8.2.1 Judging Sequence

At Formula Student Germany Engineering Design Judging will consist of two parts:

- I. Initial judging of all vehicles
- II. Final judging ranking

8.2.2 Engineering Design Report Files. File Format and Size

The Engineering Design Report must be submitted in Adobe Acrobat® format (*.pdf file) online, no later than the specified date. (Please see FSG Rule, section 1.5) The size of the document must not exceed 5MB. A responsibly sized document will be much smaller than 5MB in file size. Please ensure that photos within the Acrobat file are of an appropriate resolution.

8.2.3 Engineering Design Spec Sheet. File Format and Units

The FSG Engineering Design Spec Sheet must be submitted in Microsoft Excel® format (*.xls file) online, no later than the specified date. (Please see FSG Rule, section 1.5) The Formula Student Germany Engineering Design Spec Sheet template can be found on the FSG website under following link:

<http://www.formulastudent.de/events/event-2010/rules-important-documents/>

The template is for *metric* units only. **DO NOT alter or re-format the template prior to submission. Simply fill in the blanks.**

8.2.4 Penalty for late submission

Penalties for late/non submission of the Engineering Design Reports and/or Engineering Design Spec Sheets is as follows:

Late arrival of one or both documents: -10 (minus ten) points for each day, up to a maximum penalty of -100 points.

Failure to submit one or both documents will automatically result in zero points for the Engineering Design Event.

The penalty points will be deducted from your final Engineering Design Scores. The minimum allowable Engineering Design Score will be 0 Points.

8.3 Cost Event (100 Points)

8.3.1 Cost Event Scoring (Specific FSG change of Formula SAE® 2010 Rule C 3.7)

The points for the Cost and Manufacturing Event will be broken down as follows

$20 \times \frac{(P_{\max} / P_{\text{your}}) - 1}{(P_{\max} / P_{\min}) - 1}$	20 Points	Lowest cost - each of the participating schools will be ranked by total adjusted retail cost from the BOM and given 0-10 points based on the formula on the left. P_{your} is the adjusted cost of your car and P_{\min} is the adjusted cost of the lowest cost car. P_{\max} is the cost of the most expensive car.
	40 Points	Real Case Situation – Teams will receive a task covered a “Real Case in Industry”
	40 Points	Event Day/Visual Inspection - The cars will be reviewed for part content and manufacturing feasibility. The submitted process descriptions will be discussed.
Total	100 Points	

8.3.2 Late submission of Cost Report (Specific FSG change of Formula SAE® 2010 Rule C 5.15)

Teams that submit reports later than the specified date will be penalized -10 (minus ten) points per day, up to a maximum penalty of -80 points. Teams which do not submit a Cost Report will receive 0 (zero) points for the Cost & Manufacturing Analysis score. Minimum Event score is 0 (zero) points.

8.3.3 Addenda (Specific FSG change of Formula SAE® 2010 Rule C 5.15)

For changes in your corrections made after the submission of the cost report please use the FSAE cost addendum form given in FSAE Rules Appendix E. For all new parts, which are manufactured, a drawing must be attached to the addendum form.

8.3.4 Cost Report Penalties Process (Specific FSG change of Formula SAE® 2010 Rule C 5.17)

Only penalty method A will be used for FSG, described in Formula SAE® 2010 Rule C 3.18 “Penalty Method A – Fixed Point Deductions”. The Formula SAE® 2010 Rule C 3.19 “Penalty Method B – Adjusted Cost Deductions” is not valid for the FSG competition.

Formula Student Germany - Appendix A-A

STRUCTURAL EQUIVALENCY FORM



This form must be completed and submitted **no later the date specified** in the Action Deadlines. The FSG Technical Committee will review all submissions which deviate from the FSAE® and FSG rules for Roll-over or Side Impact Structure. **This form must also accompany the vehicle to Technical Inspection.**

Structural Equivalency Forms (SEF) and supporting calculations must be submitted electronically in Adobe Acrobat Format (*.pdf) and must be upload on the FSG-Website.

In the event that the FSG Technical Committee requests additional information or calculations, teams have **14 days** from the date of the request to submit the requested information.

Late submissions will be penalized with -10 (ten) points per day.

Contact Details

Car Number

University Name

Team Contact Person

Last Name, First Name

Telephone Number

E-mail Address

Rule Deviated?

(ALL teams must answer this question.)

- YES, alternative material was used to that specified in Formula SAE® 2010 Rule B 3.3.1
 NO, chassis is compliant to the baseline requirements

Check all that apply:

- | | |
|--|---|
| <input type="checkbox"/> B 3.10 Main Roll Hoop Material | <input type="checkbox"/> B 3.29 Monocoque Front Bulkhead |
| <input type="checkbox"/> B 3.11 Front Roll Hoop Material | <input type="checkbox"/> B 3.30 Monocoque Front Bulkhead Support |
| <input type="checkbox"/> B 3.12 Main Roll Hoop Bracing | <input type="checkbox"/> B 3.31 Monocoque Side Impact |
| <input type="checkbox"/> B 3.13 Front Roll Hoop Bracing | <input type="checkbox"/> B 3.32 Monocoque Main Hoop |
| <input type="checkbox"/> B 3.16 Mech. Attached Roll Hoop Bracing | <input type="checkbox"/> B 3.33 Monocoque Front Hoop |
| <input type="checkbox"/> B 3.18 Front Bulkhead | <input type="checkbox"/> B 3.34 Monocoque Front and Main Hoop Bracing |
| <input type="checkbox"/> B 3.19 Front Bulkhead Support | <input type="checkbox"/> B 3.35 Monocoque Impact Attenuator |
| <input type="checkbox"/> B 3.20 Impact Attenuator Attachment | <input type="checkbox"/> B 5.2.4 Monocoque Safety Harness Attachment |
| <input type="checkbox"/> B 3.24 Tube Frame Side Impact Structure | <input type="checkbox"/> B 5.4.1 Shoulder Harness |

Attachment Checklist (make sure all are included in your report)

- Receipt, letter of donation or proof for non-steel materials (composite, honeycomb, resin, etc).
 Properties for all non-steel materials
 Monocoque laminate testing data and pictures
 Holes drilled in any regulated tubing require a deviation, include area and moment of inertia

Attach Proof of Equivalency

Roll bar documentation should include material type(s), material certification(s), properties, heat treatment, and strength calculations showing equivalency. Side impact documentation should include material type(s), material certification(s), properties, heat treatment, cloth weights, resin type, fiber orientation, number of layers, core material, lay-up technique, and strength calculations showing equivalency.

Formula Student Germany - Appendix A-B

IMPACT ATTENUATOR FORM



This form must be completed and submitted **no later the date specified** in the Action Deadlines. The FSG Technical Committee will review all submissions which deviate from the FSAE® and FSG rules for Impact Attenuator. **This form must also accompany the vehicle to Technical Inspection.**

Impact Attenuator Form (IAF) and supporting calculations must be submitted electronically in Adobe Acrobat Format (*.pdf) and must be upload on the FSG-Website.

In the event that the FSG Technical Committee requests additional information or calculations, teams have **14 days** from the date of the request to submit the requested information.

Late submissions will be penalized with -10 (ten) points per day.

Contact Details

Car Number

University Name

Team Contact Person

Last Name, First Name

Telephone Number

E-mail Address

Attach Proof of Impact Attenuator

Appendix B - Regions and Countries

Australia and Japan	Australia, New Zealand, Japan
Europe	Albania, Andorra, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Moldova, Monaco, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russia, San Marino, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, Vatican City State
North America	Canada, United States of America
Rest of the World	All countries not listed above

Appendix C – TOP 10 FSG 2009

1	Stuttgart U
2	Hatfield UH
3	Perth UWA
4	Munich TU
5	Ann Arbor U
6	Montreal ETS
7	Köln UAS
8	Zürich ETH
9	Graz TU
10	Ravensburg UCE