

# ***FORMULA STUDENT***

## PORTUGAL



# EVENT HANDBOOK 2024

Bishop's Palace Garden - Castelo Branco

Version - 1.3  
Release - 30/08/2024

## Contents

<b>Changelog</b>	1
<b>Abbreviations</b>	3
<b>Introduction</b>	4
<b>PT 1 General Information</b>	5
PT 1.1 Competition Categories	5
PT 1.2 Applicable Rules	5
PT 1.3 Announcements	5
PT 1.4 Dates and Places	5
PT 1.5 Emergency Information	6
<b>PT 2 Registration</b>	7
PT 2.1 Available Slots	7
PT 2.2 Reserved Slots	7
PT 2.3 Team Registration	7
PT 2.4 Registration Fee	8
PT 2.5 Waiting List	8
PT 2.6 De-registration	9
PT 2.7 No Driverless Events	9
PT 2.8 Team Member and Camping Registration	9
PT 2.9 Visitors	10
<b>PT 3 Important Dates</b>	11
PT 3.1 Team Registration	11
PT 3.2 Deadlines	11
<b>PT 4 During the event</b>	13
PT 4.1 Helpful locations	13
PT 4.2 Upon arrival	13
PT 4.3 Venue Map	15
PT 4.4 Race Control	15
PT 4.5 Dataloggers and Vests	15
PT 4.6 Rules and guidelines	16
PT 4.7 Protest Procedure	17
PT 4.8 Schedule	17
PT 4.9 Event Shop	17
PT 4.10 Team Photo	17

PT 4.11 Event Photo . . . . .	18
PT 4.12 Morning Briefings . . . . .	18
<b>PT 5 Campsite . . . . .</b>	<b>20</b>
PT 5.1 Upon arrival . . . . .	20
PT 5.2 General rules . . . . .	20
PT 5.3 Cooking area . . . . .	21
PT 5.4 Dishwashing . . . . .	22
<b>PT 6 Technical Inspection . . . . .</b>	<b>23</b>
PT 6.1 Technical Inspection Sticker . . . . .	23
PT 6.2 Data Loggers [EV ONLY] . . . . .	23
PT 6.3 Accumulator Inspection [EV ONLY] . . . . .	23
PT 6.4 Location . . . . .	23
PT 6.5 Charging [EV ONLY] . . . . .	24
PT 6.6 Fueling [CV ONLY] . . . . .	25
PT 6.7 Driver registration . . . . .	25
PT 6.8 Schedule . . . . .	25
<b>PT 7 Static events . . . . .</b>	<b>26</b>
PT 7.1 Design Scoring . . . . .	26
PT 7.2 BPP Scoring . . . . .	26
PT 7.3 Cost Scoring . . . . .	27
PT 7.4 Design procedure . . . . .	27
PT 7.5 BPP procedure . . . . .	28
PT 7.6 Cost procedure . . . . .	28
PT 7.7 Schedule . . . . .	30
<b>PT 8 Dynamic events . . . . .</b>	<b>31</b>
PT 8.1 Dynamic Events Schedule . . . . .	31
PT 8.2 Behavior Inside Dynamic Area . . . . .	31
PT 8.3 Event Participation Limits and Procedures . . . . .	31
PT 8.4 Track Layout and Characteristics . . . . .	32
PT 8.5 Track Markings and Delimiters . . . . .	32
PT 8.6 Endurance Running Order . . . . .	33
PT 8.7 Trackdrive running order . . . . .	33
<b>PT 9 Class 2 . . . . .</b>	<b>34</b>
PT 9.1 Overview . . . . .	34
<b>PT 10 Senior Cup . . . . .</b>	<b>35</b>

PT 10.1 Introduction . . . . .	35
PT 10.2 General Info . . . . .	35
PT 10.3 Registration . . . . .	35
PT 10.4 Event . . . . .	36
PT 10.5 Technical Inspection . . . . .	36
PT 10.6 Static events . . . . .	37
PT 10.7 Dynamic events . . . . .	37
PT 10.8 Special Awards . . . . .	37
<b>PT 11 Special Awards . . . . .</b>	<b>38</b>
PT 11.1 Hydrogen Concept Challenge . . . . .	38
PT 11.2 The Business Plan Catalyst Award . . . . .	38
PT 11.3 Plascore IAD Special Award . . . . .	38
<b>PT 12 Officials . . . . .</b>	<b>40</b>
PT 12.1 Color-Code . . . . .	40
PT 12.2 Core organization . . . . .	40
<b>PT 13 Overall Event Schedule . . . . .</b>	<b>41</b>



## Changelog

Rule	Version	Date	Change
All	1.00	07/01/2024	First release.
SC chapter	1.1	29/02/2024	Added Senior Cup chapter
PT 6.4.3	1.1	29/02/2024	Clarified rule on what happens if a team is late for a scrutineering slot
PT 6.6.2	1.1	29/02/2024	Clarified rule on fuel tank being empty on arrival
PT 2.9.2	1.1	29/02/2024	Updated visitor tickets
PT 11.3	1.1	29/02/2024	Added Plascore Special Award
PT 4.6.5	1.2	10/07/2024	Clarified Guidelines and Requirements inside Welding Area
PT 4.2.5	1.2	13/07/2024	Clarified payment rules of clean venue deposit.
PT 5.1.3	1.2	13/07/2024	Clarified payment rules of clean campsite deposit.
PT 4.4.2	1.2	13/07/2024	Introduced the usage of a token within the datalogger pick up procedure.
PT 4.6.5 PT 4.6.6	1.2	13/07/2024	Updated welding area schedule.
PT 4.4.3	1.2	13/07/2024	Added mandatory team captain presence at the Race Control for competition related subjects.
PT 4.6.7	1.2	13/07/2024	Added Venue parking rules.
PT 5.2.1	1.2	30/07/2024	Removed out of redundancy with PT 5.1.1
PT 6.2.2 PT 6.2.3	1.2	30/07/2024	Corrected typos
PT 4.5.8	1.2	30/07/2024	Corrected typo
PT 1.1.1	1.2	30/07/2024	Added Senior Cup as a class

Rule	Version	Date	Change
PT 6.5.4	1.2	30/07/2024	Corrected typos
PT 6	1.2	30/07/2024	Changed naming to "pre-inspection"
PT 6.2.1	1.2	30/07/2024	Changed link and made clickable more visible
PT 6.4.1	1.2	30/07/2024	Updated technical inspection map
PT 4.7	1.2	31/07/2024	Added a Protest Procedure
PT 4.1.1	1.2	31/07/2024	Added local shopping mall location
PT 4.3	1.2	31/07/2024	Added section about the venue layout
PT 4.9	1.2	31/07/2024	Added section about the venue Shop
PT 4.10	1.2	31/07/2024	Added section about the Team Photo
PT 4.11	1.2	31/07/2024	Added section about the Event Photo
PT 8.1.1, PT 7.7, PT 6.8	1.2	31/07/2024	Added Dynamics, Technical Inspection and Statics Schedule
PT 2.8.9	1.2	31/07/2024	Clarified the number of allowed Team-Captains
PT 4.11.1	1.3	28/08/2024	Changed Event Photo time
PT 8.3.3	1.3	28/08/2024	Added maximum number of drivers
PT 4.8.1	1.3	28/08/2024	Added open hours on the 8 <sup>th</sup> of September
PT 4.2.4, PT 5.1.2	1.3	28/08/2024	Reworded rules
PT 4.12	1.3	28/08/2024	Added morning briefing section
PT 4.3, PT 6.4.1	1.3	29/08/2024	Updated maps
PT 8.1.10	1.3	29/08/2024	Added coursewalk time
PT 4.10.1 , PT 6.8, PT 7.7	1.3	29/08/2024	Updated schedule
PT 11.1	1.3	29/08/2024	Added Hydrogen Challenge schedule
PT 13	1.3	29/08/2024	Added overall Event schedule

## Abbreviations


<b>ASF</b>	Autonomous System Form.
<b>ASR</b>	Autonomous System Responsible.
<b>ASRQ</b>	ASR Qualification.
<b>BPPV</b>	Business Plan Pitch Video.
<b>CET</b>	Central European Time.
<b>CRD</b>	Cost Report Documents.
<b>CV</b>	Internal Combustion Engine Vehicle.
<b>DCPI</b>	Driverless Cup Participation Intention.
<b>DLDS</b>	Data Logger Download Station.
<b>DOO</b>	Down Or Out.
<b>DSS</b>	Design Spec Sheet.
<b>EBS</b>	Emergency Brake System.
<b>EDR</b>	Engineering Design Report.
<b>ESF</b>	Electrical System Form.
<b>ESO</b>	Electrical System Officer.
<b>ESOQ</b>	Electrical System Officer Qualification.
<b>EV</b>	Electric Vehicle.
<b>FSG</b>	Formula Student Germany.
<b>FSPT</b>	Formula Student Portugal.
<b>GMT</b>	Greenwich Mean Time.
<b>IAD</b>	Impact Attenuator Data.
<b>SC</b>	Senior Cup.
<b>SE3D</b>	Structural Equivalency 3D Model.
<b>SES</b>	Structural Equivalency Spreadsheet.
<b>SESA</b>	SES Approval.
<b>VSV</b>	Vehicle Status Video.

## Introduction

Formula Student is the biggest international competition for university students, where they are challenged to design, build and compete with a formula-style race car.

This is the handbook for Formula Student Portugal 2024. Whenever in conflict, it supersedes Formula Student Rules 2024 v1.1 (a.k.a. FS Rules).

The Handbook presents general information about the event, the registration details, important dates, rules and guidelines to follow during the event, campsite information, details regarding technical inspection, static events and dynamic events, an overview of class 2 and the officials organizing the event.

Throughout this handbook, whenever you see this symbol  you can use it to quickly jump to its location in Google Maps.



## **PT 1 General Information**

### **PT 1.1 Competition Categories**

**PT 1.1.1** FSPT 2024 will host three classes: Class 1 (C1), where teams are expected to compete in both Static and Dynamic events; Class 2 (C2), where teams only compete in the Static events; and Senior Cup, where teams will only compete in Dynamic Events.

**PT 1.1.2** Class 1 is further split into two categories: Electric Vehicles (EV) and Combustion Vehicles (CV).

**PT 1.1.3** An additional Driverless Cup (DC) will be hosted for all C1 teams with driverless cars.

### **PT 1.2 Applicable Rules**

**PT 1.2.1** FSPT 2024 will follow the latest version of the Formula Student Rules 2024. Whenever in conflict, the rules in this Handbook supersede it. The Formula Student Portugal Competition Handbook is to be considered part of the rules.

### **PT 1.3 Announcements**

**PT 1.3.1** Official announcements will be made through FSPT website [formulastudent.pt](http://formulastudent.pt) and directly to the team's e-mail, supplied by the team during the registration process.

**PT 1.3.2** During the event all announcements will also be published in the Race Control. These include: preliminary results, penalties, finalists, schedule changes and others.

### **PT 1.4 Dates and Places**

**PT 1.4.1** FSPT 2024 will be held from the 3<sup>rd</sup> to the 7<sup>th</sup> of September 2024 in Kartódromo de Castelo Branco, Castelo Branco, Portugal. Throughout this handbook this location will be known as the "Event Site".



**PT 1.4.2** Teams participating in FSPT 2024 will be staying at Parque de Campismo Municipal de Castelo Branco. Throughout this handbook this location will be known as the "Camping Site".



**PT 1.4.3** From the camping to the event site takes roughly 8 minutes by car. It is strongly discouraged to walk this distance. Teams are advised to bring cars or vans.

## **PT 1.5 Emergency Information**

**PT 1.5.1** In case of a minor injury (shallow cut, small bruising, etc) please contact one of the Staff members. A First-Aid medical post is readily available during the working hours of the event site.

**PT 1.5.2** If someone is severely injured and requires urgent help please do not hesitate and immediately call the emergency services: **112**. If you have proper first aid training, help to the best of your ability. Contact an organization member as soon as possible.

**PT 1.5.3** In case of need:

- **Hospital Amato Lusitano (Hospital)**

Address: Av. Pedro Alvares Cabral 3, Castelo Branco

Phone: +351 272 000 180 (Urgency)



- **Bombeiros Voluntários de Castelo Branco (Firefighters)**

Address: R. Cmte. Lucio Pereira, Castelo Branco

Phone: +351 272 342 122



- **GNR - Comando Territorial de Castelo Branco (Police)**

Address: Av. Cidade de Zhuhai 167RC, 6000-077, Castelo Branco

Phone: +351 272 340 900



## **PT 2 Registration**

### **PT 2.1 Available Slots**

**PT 2.1.1** In FSPT 2024 there will be a total of 30 C1 slots and 10 C2 slots.

**PT 2.1.2** Of the total C1 slots, 10 will be dedicated to CV teams and 20 to EV teams. If the number of registered teams does not fill the available slots and the corresponding waiting list is exhausted then the waiting list of the other category is used instead. A minimum of 3 teams per category is required for the competition to take place.

**PT 2.1.3** The number of DC slots is equal to the number of C1 teams registered.

### **PT 2.2 Reserved Slots**

**PT 2.2.1** The reserved slots define a set of teams that, after the registration, are placed at the top of the list independently of the Quiz results.

**PT 2.2.2** Table 1 presents the reserved slots for the different classes. The FSPT 2023 results can be found on the official website.

Classes	Types	Number of slots
C1	TOP 3 2023 EV	3
	TOP 3 2023 CV	3
	TOP 3 2023 DV Cup	3
	Winner Class 2 2023	1
	PT teams	5
C2	PT teams	5

Table 1: Reserved slots.

**PT 2.2.3** The reserved slots are cumulative, which means that if a team fits within 2, or more, types of reserved slots then it fills that many reserved slots (e.g. If a portuguese team is also a TOP 3 2023 CV and it wishes to register for FSPT then there are only 2 more TOP 3 2023 CV and 4 more PT team slots available).

### **PT 2.3 Team Registration**

**PT 2.3.1** For FSPT 2024 the registration process will be based on a quiz, which will cover all fields related to formula student.

**PT 2.3.2** The teams will be sorted by the number of correct answers.

**PT 2.3.3** In case of a tie between two teams that have the same number of correct answers, the quiz time will be deciding factor. Quiz time is counted from 9:00 CET until the team finishes.

**PT 2.3.4** In order to register, teams must follow the steps below:

1. Create a team account on FSG website - formulastudent.de - at least 24h before the quiz. This is where teams will submit some of the required technical documents.
2. Create a team account on FSCH website - fsswitzerland.ch.
3. Complete the FSPT/FSCH quiz which will be available on this link on the 26<sup>th</sup> of January at 9:00 CET.
4. At the end of the quiz, select whether your team wants to go to FSPT, FSCH or both.
5. Complete the FSG quiz which will be available on the FSG website on the 26<sup>th</sup> of January at 13:00 CET. The actual results from this quiz are irrelevant for the registration in either FSPT or FSCH but it is required in order to submit technical documents. CV and C2 teams will have a separate option to register without going through the quiz.

**PT 2.3.5** The quiz solution will be published on the 27<sup>th</sup> of January at 13:00 CET on the official website.

**PT 2.3.6** Teams have 4h to send their protests to geral@formulastudent.pt.

**PT 2.3.7** Final quiz results will be published on the 29<sup>th</sup> of January at 13:00 CET on the official website. Simultaneously, registered teams will receive a proforma by e-mail with the registration fee and payment information.

## **PT 2.4 Registration Fee**

**PT 2.4.1** Upon registration in C1, a fee of 1700€ (+VAT, if applicable) must be paid within the deadline.

**PT 2.4.2** Upon registration in C2, a fee of 750€ (+VAT, if applicable) must be paid within the deadline.

**PT 2.4.3** Teams will have 3 days to pay the registration fee from the moment they receive a proforma. Proof of payment is enough to comply with this deadline and should be sent to geral@formulastudent.pt. If a team fails to pay the registration fee within the deadline then it will be de-registered.

## **PT 2.5 Waiting List**

**PT 2.5.1** If there are more team registrations than open slots then a waiting list is created.

**PT 2.5.2** Whenever a slot opens either due to a team failing to pay the registration fee or due to a de-registration then the team at the top of the waiting list is contacted with the payment details.

**PT 2.5.3** To remain on the waiting list teams must continue to submit the required



documents according to section PT 3.

**PT 2.5.4** The waiting list will be dissolved either when no teams are left or upmost on the 27<sup>th</sup> of August 2024.

## **PT 2.6 De-registration**

**PT 2.6.1** If a team fails to submit the required documents by the dates specified in section PT 3 and continuously ignores e-mails sent by the FSPT organization then it will be de-registered.

**PT 2.6.2** If a team is de-registered before May 1<sup>st</sup> then a refund of 50% will be issued. After this date there is no refund.

## **PT 2.7 No Driverless Events**

**PT 2.7.1** Teams that do not intend to run in autonomous mode at the competition must send an e-mail to [geral@formulastudent.pt](mailto:geral@formulastudent.pt) stating they do not intend to participate in the driverless events before the deadline shown in table 2. This cannot be undone. All driverless events will be scored with 0 points. The team will not be allowed to run in autonomous mode.

**PT 2.7.2** Teams with the status "No Driverless Events" are not required to upload the ASF, ASRQ and the DBC file. Therefore, if these deadlines are missed, the team will not be de-registered from the competition. All correction requests for these deadlines become invalid immediately. Existing penalties remain if the status "No Driverless Events" is handed in after a deadline already expired.

## **PT 2.8 Team Member and Camping Registration**

**PT 2.8.1** After the team successfully registered, team members are also required to register. To enter the event-site, one has to be registered as team member.

**PT 2.8.2** Team member registration fee is 60€ (+VAT, if applicable) per team member.

**PT 2.8.3** A camping site will be available, only for registered Team Members. More information on this in PT 5. The Camping Fee is 40€ (+VAT, if applicable) per team member, for the whole event.

**PT 2.8.4** A Google Forms will be made available by e-mail to registered teams on the 1<sup>st</sup> of June. This Forms must be completed by all team members attending the event. If a Team member is staying at the Campsite, the respective checkbox should be selected.

**PT 2.8.5** On the 21<sup>st</sup> of June 2024 the Forms will be closed and a pro-forma will be generated and sent to the team's e-mail according to the number of team members registered thus far. Teams must show proof of payment by the 28<sup>th</sup> of June 2024.

**PT 2.8.6** After the deadline in PT 2.8.5, team members can only be registered on

site, at the Race Control. The registration can only be performed by the team captain or the team member accompanied by the team captain. Please see payment options at the PT 4.4 section.

**PT 2.8.7** The team member registration fee after the deadline in PT 2.8.5 is 100 € (+VAT, if applicable).

**PT 2.8.8** The camping fee after the deadline in PT 2.8.5 is 60 € (+VAT, if applicable).

**PT 2.8.9** Each team must have one, and only one, team-captain.

## **PT 2.9 Visitors**

**PT 2.9.1** Visitors will be allowed on the event site on all days of the event as long as they acquire a ticket at the reception.

**PT 2.9.2** Visitor tickets can be purchased at the event reception. The day pass costs 5€ and the week pass costs 15 €. Both passes provide a one-time 5€ discount on kart renting. The payments must be made in cash.

## PT 3 Important Dates

### PT 3.1 Team Registration

**PT 3.1.1** Team registration for all teams starts on 26-01-2024 09:00 CET with the registration quiz and ends after the registration quiz has been closed on 26-01-2024 11:00 CET.

### PT 3.2 Deadlines

**PT 3.2.1** Teams will receive access to a private Google Drive folder on the 1<sup>st</sup> of May.

**PT 3.2.2** The required documents and information must be uploaded to the FSG competition website, sent by e-mail to geral@formulastudent.pt or uploaded to the team's drive by the team captain and/or their deputies according to Table 2 for Class 1 teams and Table 3 for Class 2 teams.

**PT 3.2.3** Deadlines are specified such that documents need to have been submitted and received by the website, drive or e-mail before the time specified by the respective deadline.

**PT 3.2.4** All documents must comply with a maximum size of 40 MB.

**PT 3.2.5** Change of FS Rules - A5.1.1 - SESA is not required for FSPT 2024. Accordingly, FS Rules - A5.7 does not apply.

Date	Document	Category	Submission
29-02-2024-13:00 CET	DCPI	EV, CV	E-mail
15-03-2024-13:00 CET	IAD	EV, CV	FSG
15-03-2024-13:00 CET	SE3D	EV, CV	FSG
15-03-2024-13:00 CET	SES	EV, CV	FSG
29-03-2024-13:00 CET	ASF	DV	FSG
29-03-2024-13:00 CET	ESF	EV	FSG
31-05-2024-13:00 CEST	BPPV	EV, CV	Drive folder
31-05-2024-13:00 CEST	DSS	EV, CV	Drive folder
31-05-2024-13:00 CEST	EDR	EV, CV	Drive folder
21-06-2024-13:00 CEST	ASRQ	DV	Drive folder
21-06-2024-13:00 CEST	ESOQ	EV	Drive folder
05-07-2024-13:00 CEST	VSV	EV, CV	Drive folder
26-07-2024-13:00 CEST	CRD	EV, CV	Drive folder
26-07-2024-13:00 CEST	Final DBC file	DV	FSG
16-08-2024-13:00 CEST	"No DV Events", PT 2.7	EV, CV	E-mail

Table 2: Class 1 document deadlines

**PT 3.2.6** The IAD, SES, SE3D and ESF documents are not mandatory for Class 2 teams and there are no extra points awarded or penalties. Regardless, C2 teams are

strongly encouraged to upload these documents which will be reviewed by the same experts as C1 teams and feedback will be given.

Date	Document	Category	Submission
30-06-2024-13:00 CEST	BPPV	EV, CV	Drive folder
30-06-2024-13:00 CEST	DSS	EV, CV	Drive folder
30-06-2024-13:00 CEST	EDR	EV, CV	Drive folder
01-08-2024-13:00 CEST	IAD	EV, CV	FSG
01-08-2024-13:00 CEST	SE3D	EV, CV	FSG
01-08-2024-13:00 CEST	SES	EV, CV	FSG
01-08-2024-13:00 CEST	ESF	EV	FSG
18-08-2024-13:00 CEST	CRD	EV, CV	Drive folder

Table 3: Class 2 document deadlines



## PT 4 During the event

### PT 4.1 Helpful locations

**PT 4.1.1** Here is a list of places you might find useful during the event:

- **Shopping Mall - Fórum Castelo Branco**

Address: Av. Prof. Dr. Egas Moniz, 6000-459 Castelo Branco

Schedule: 9AM-10PM



- **Groceries - Continente (also has 2 ATMs)**

Address: Av. da Europa Quinta da Taipa, 6000-145 Castelo Branco

Schedule: 8AM-10PM



- **Cheapest gas station - Auchan**

Address: Zona Industrial de Castelo Branco, 6000-459 Castelo Branco

Schedule: Open 24h



- **General workshop supplies - Leroy Merlin**

Address: Estrada Nacional 18 Apartado 1131, 6000-050 Castelo Branco

Schedule: 9AM-9PM



- **Specialized workshop supplies - BeiraTools**

Address: Zona industrial, Rua D, 6000-459 Castelo Branco

Schedule: Mon.-Fri.: 9AM-1PM, 2:30PM-6:30PM, Sat.: 9AM-12:30PM



- **Camping supplies - Decathlon**

Address: R. Cunha e Castro 14, 6000-060 Castelo Branco

Schedule: 9AM-9PM



- **Pharmacy - Farmácia Tanara Fórum**

Address: Av. Prof. Dr. Egas Moniz 901, 6000-901, Castelo Branco

Schedule: 9AM-10PM



### PT 4.2 Upon arrival

**PT 4.2.1** To enter the event site each team member must be identified with an official competition badge and at least one bracelet.

**PT 4.2.2** Only registered team members (according to PT 2.8) will be assigned a badge and a bracelet. Extra bracelets will also be provided to team members with

specific roles (Team Captain, ESOs, ASRs and Drivers), upon their registration. See PT 6.2.3 and PT 6.7.1.

**PT 4.2.3** The identification badges can be retrieved at the event reception by the team member itself or by the team captain. In order to facilitate the logistics it is advised that the team captain collects the badges and bracelets for all the team members upon arrival.

**PT 4.2.4** All teams are required to pay a clean venue deposit of 100€. This will be refunded at the end of the event, after an inspection to the conditions of the team's pit after disassembling. This deposit shall not be returned to teams that fail to keep the whole venue clean or to follow the paddock schedule.

**PT 4.2.5** Each team must pay the clean venue deposit at Race Control within the first 24 hours of arriving at the event. Teams that fail to meet this deadline will be de-registered. See section PT 4.4 for more details regarding payment options.

**PT 4.2.6** During pit assembling, a maximum of 5 teams are allowed to unload their vans or trucks at the paddock entrance at any given time. The unload order will be defined through a first-come-first-serve basis. A staff member will be keeping track of the order. Each team has 45 min to unload the vans/trucks. If the team is not done at the end of their time slot, they must leave and will be assigned a new slot.

**PT 4.2.7** During pit disassembling, a maximum of 5 teams are allowed to load their vans or trucks at the paddock entrance at any given time. The load order will be defined through a first-come-first-serve basis. A staff member will be keeping track of the order. Each team has 45 min to load the vans/trucks. If the team is not done at the end of their time slot, they must leave and will be assigned a new slot.

**PT 4.2.8** The detailed schedule for all the procedures described in this section can be found in PT 4.8.

## PT 4.3 Venue Map

**PT 4.3.1** The venue will be organized as depicted in Figure 1. The final venue layout may be subject to changes.

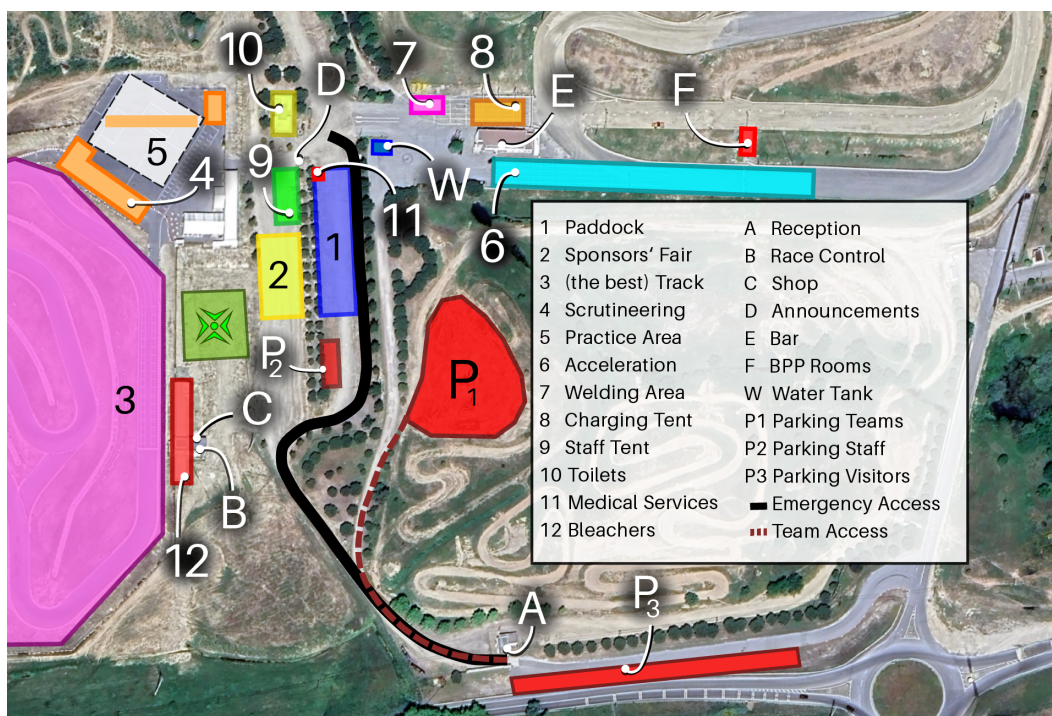


Figure 1: Venue Map

## PT 4.4 Race Control

**PT 4.4.1** Only cash payments are accepted at the race control. This is also valid for the payment of deposits.

**PT 4.4.2** If an invoice is required for payments performed on site, a request must be placed at the race control. The invoices will be sent to the team through the provided email up until 10 business days after the competition has ended.

**PT 4.4.3** All competition related procedures conducted at the Race Control, like extra team member registration or payment of deposits, must be performed by the Team Captain.

## PT 4.5 Dataloggers and Vests

**PT 4.5.1** Each team will receive 4 dynamic area vests and 1 media vest upon registration at the Race Control. EV teams will also receive an official FSG datalogger.

**PT 4.5.2** The datalogger requires a deposit of 150€, which will be refunded once the datalogger is returned. The deposit shall be paid at the race control. After

deposit payment, the team receives a token that can be exchanged by the datalogger, according with PT 6.2.2. See PT 4.4 for more details on payment methods.

**PT 4.5.3** The dynamic area and media vests require a deposit of 30€ each, which will be refunded once the vests are returned. The deposit shall be paid at the race control. See PT 4.4 for more details on payment methods.

## **PT 4.6 Rules and guidelines**

**PT 4.6.1** As per FS Rules - A6.6, alcohol, illegal drugs, weapons, or other illegal material are prohibited at the event site during the competition. In addition, at the event site if any team member is tested with an alcohol level higher than 0.0%, he or she will be immediately disqualified for the rest of the competition. If a second team member is found to have an alcohol level higher than 0.0% will result in the entire team being disqualified.

**PT 4.6.2** Alcohol is allowed at the camping site.

**PT 4.6.3** Use of motorcycles, quads, bicycles, skateboards, or rollerblades in the event site is prohibited.

**PT 4.6.4** Working on the vehicle or any hardware systems required for its safe operation is strictly forbidden in the camping site. Doing so is considered a violation of FS Rules - A6.4.3 and may result in the entire team being disqualified immediately.

**PT 4.6.5** Work that requires the use of any tools that use high heat or result in sparks (grinding, cutting, welding, etc) must be done in the dedicated Welding Area. Safety equipment must be used when performing the work or when other people are working within the area (gloves, safety glasses, welding helmets, etc). Always be aware of your surroundings and perform the necessary work in the safest way possible for you and the other team members. Always use clamps or fixtures to adequately hold the part/material you'll be working on. Do not hesitate to contact the Staff if you have any safety-related questions.

**PT 4.6.6** Only people identified with the competition badge can enter the venue.

**PT 4.6.7** The venue has one parking lot reserved for teams. Only vehicles identified with the correct badge can enter this location. Upon arrival each team will receive 2 parking badges that they can use in any cars or vans. No trucks are allowed at the reserved parking lot. Although the organization does not take responsibility for the availability of more than 2 parking spaces per team, around the venue there is parking space that can be used.

**PT 4.6.8** No cars or vans are allowed outside the venue parking lots except for loading and unloading the pit material, only at the designated time slots as per PT 4.8.

**PT 4.6.9** Keep the venue clean. Throughout the venue there are several trash bins and recycling bins, please use them.

**PT 4.6.10** No cleaning will be performed in the teams pits during the event.

**PT 4.6.11** Smoking is forbidden around the campsite. If you wish to smoke please do so in the designated smoke area. Please use the designated ash trays.



## **PT 4.7 Protest Procedure**

**PT 4.7.1** To initiate the protest procedure according to A 3.7.2, a request for clarification must be submitted via e-mail to geral@formulastudent.pt before the announced protest deadline. The request for clarification must follow the template available here.

**PT 4.7.2** After submitting the request for clarification, the team captain is going to be contacted by an official for an informal preliminary review. Within 2h after the review, the team can choose to continue the procedure by submitting a formal protest to geral@formulastudent.pt binding 25 points to it. If no formal protest is received within 2h, the protest procedure is cancelled permanently.

## **PT 4.8 Schedule**

**PT 4.8.1** The Race Control will open on the 2<sup>nd</sup> of September from 14:00 to 20:00. Between the 3<sup>rd</sup> and 7<sup>th</sup> of September from 8:00 to 20:00. And on the 8<sup>th</sup> of September from 8:00 to 13:00.

**PT 4.8.2** The shop will be open every day of the event, from 8:00 to 20:00.

**PT 4.8.3** The bar will close everyday at 20:00.

**PT 4.8.4** The reception will open on the 2<sup>nd</sup> of September from 13:00 to 20:00 and on the remaining days from 8:00 to 20:00.

**PT 4.8.5** Campsite will open on the 2<sup>nd</sup> of September from 14:00 and stay open until the 8<sup>th</sup> of September at 12:00.

**PT 4.8.6** The campsite cooking areas will open on the 2<sup>nd</sup> of September at 16:00. On all other days of the event these areas are opened from 9:00 to 23:00. The cooking areas will not open on the 8<sup>th</sup>.

**PT 4.8.7** Paddock and Charging Area powered by Vestas will open on the 2<sup>nd</sup> of September at 14:00. On all other days of the event the Paddock and Charging Area open at 7:30 and close at 22:00. The paddock closes on the 8<sup>th</sup> at 11:00.

**PT 4.8.8** Welding Area will open on the 2<sup>nd</sup> of September at 14:00. On all other days of the event the Welding area opens at 7:30 and closes at 21:00.

## **PT 4.9 Event Shop**

**PT 4.9.1** There will be a shop on the venue dedicated to selling FSPT merchandising, electrical and mechanical components, and other supplies.

**PT 4.9.2** The shop will be located on the Race Control.

## **PT 4.10 Team Photo**

**PT 4.10.1** Each team will have a dedicated slot on their schedule to perform a team photo.

#	Team	Team Photo Slot
373	MAD Formula Team	4Sep 15:20
214	UJI Motorsport	4Sep 15:40
296	Ü Motorsport	4Sep 16:00
207	NOVA Formula Student	4Sep 16:20
95	FSUMinho	4Sep 09:00
04	ISEL Formula Student	4Sep 14:00
65	PHISEC Racing	4Sep 11:20
67	Team Bath Racing Electric	4Sep 11:40
42	LART	4Sep 11:00
50	FST Lisboa	4Sep 09:20
03	UWB eRacing Team Pilsen	4Sep 10:00
05	Polimarche Racing Team	4Sep 14:40
73	TecnoCampus MotorSports	4Sep 15:00
12	SigmaRacing	4Sep 10:20
452	Formula Student ISEP	3Sep 17:00
420	Formula Student FEUP	3Sep 17:10
422	Engenius UA Formula Student	3Sep 17:20
510	ISEL Formula Student [Senior]	3Sep 18:00

**PT 4.10.2** The team photos will be performed in a special area of the paddock tent.

**PT 4.10.3** Teams must show up with their car (class 2 teams can bring any sort of models that represent their car), their team members and are encouraged to bring materials with their logos and branding.

**PT 4.10.4** After the team photo, each team can have a quick photoshoot session with their car, performed by FSPT's Media team. Teams that bring a car to this session must also bring a helmet and a driver's outfit.

**PT 4.10.5** Teams which fail to show at the right time slot might be asked to take the photo on an unscheduled time slot.

## **PT 4.11 Event Photo**

**PT 4.11.1** There will be an Event Photo, with all teams, on September 3<sup>rd</sup> at 18:30, this event photo is mandatory for every team.

**PT 4.11.2** Teams must show up with their car, their team members and are encouraged to bring materials with their logos and branding.

**PT 4.11.3** Teams that fail to participate on the event photo are penalized with 50 points.

## **PT 4.12 Morning Briefings**

**PT 4.12.1** All ESOs and ASRs must attend the morning briefing. Additionally all drivers that want to drive on a given day must attend that day's briefing. Drivers,

ESOs and ASRs that fail to attend a given day's briefing will be treated as a regular team member.

**PT 4.12.2** Morning briefing will take place in the Sponsor's tent from the 3<sup>rd</sup> to the 7<sup>th</sup> of September between 8:00 and 8:30.

## **PT 5 Campsite**

### **PT 5.1 Upon arrival**

**PT 5.1.1** Only registered team members can enter the campsite, so they will need to have competition badges before getting in.

**PT 5.1.2** All teams are required to pay a clean campsite deposit of 100€, which will be refunded at the end of the event, after an inspection to the conditions of the team's camping zone after disassembling. The deposit will not be returned to teams that do not keep the campsite clean or that fail to follow the campsite schedule. Cooking areas (PT 5.3) and dishwashing areas (PT 5.4) will also be inspected.

**PT 5.1.3** Each team must pay the clean campsite deposit at the Race Control, within the first 24 hours of arriving at the campsite. Teams that fail to meet this deadline will be de-registered. See section PT 4.4 for more details regarding payment options.

**PT 5.1.4** The camping zone assigned to the team will be provided to the team captain at the time of onsite registration.

**PT 5.1.5** Each team will be assigned a clearly marked camping zone in which to assemble their sleeping and social areas. The dimension of each zone takes into account the amount of team members registered before the deadline in PT 2.8.4. No adjustments will be made to account for team members registered on site.

**PT 5.1.6** If the team finds the space of their zone insufficient, please inform a staff member.

**PT 5.1.7** At time of campsite assembly, there will be staff members to help you find your location.

### **PT 5.2 General rules**

**PT 5.2.1** No cars or vans are allowed inside the campsite, except to unload or load camping equipment.

**PT 5.2.2** It is possible to park cars and small vans at the front entrance of the campsite (Park P1, see figure 2). No trucks are allowed to park here. Please keep your larger vehicles at the Venue parking lots.

**PT 5.2.3** Alternative Parking Lot: Park P2, see figure 2, will serve as an alternative for cars or vans. This is a private parking and there is a gate at the entrance. You will need an access code to enter or exit, which will be provided to you at the Welcome Ceremony.

**PT 5.2.4** No noise is allowed in the campsite after 2am every day except for the 7<sup>th</sup> of September.

**PT 5.2.5** Keep the campsite clean. Throughout the campsite there are several trash bins and recycling bins, please use them. Please do not put trash on the ash collection

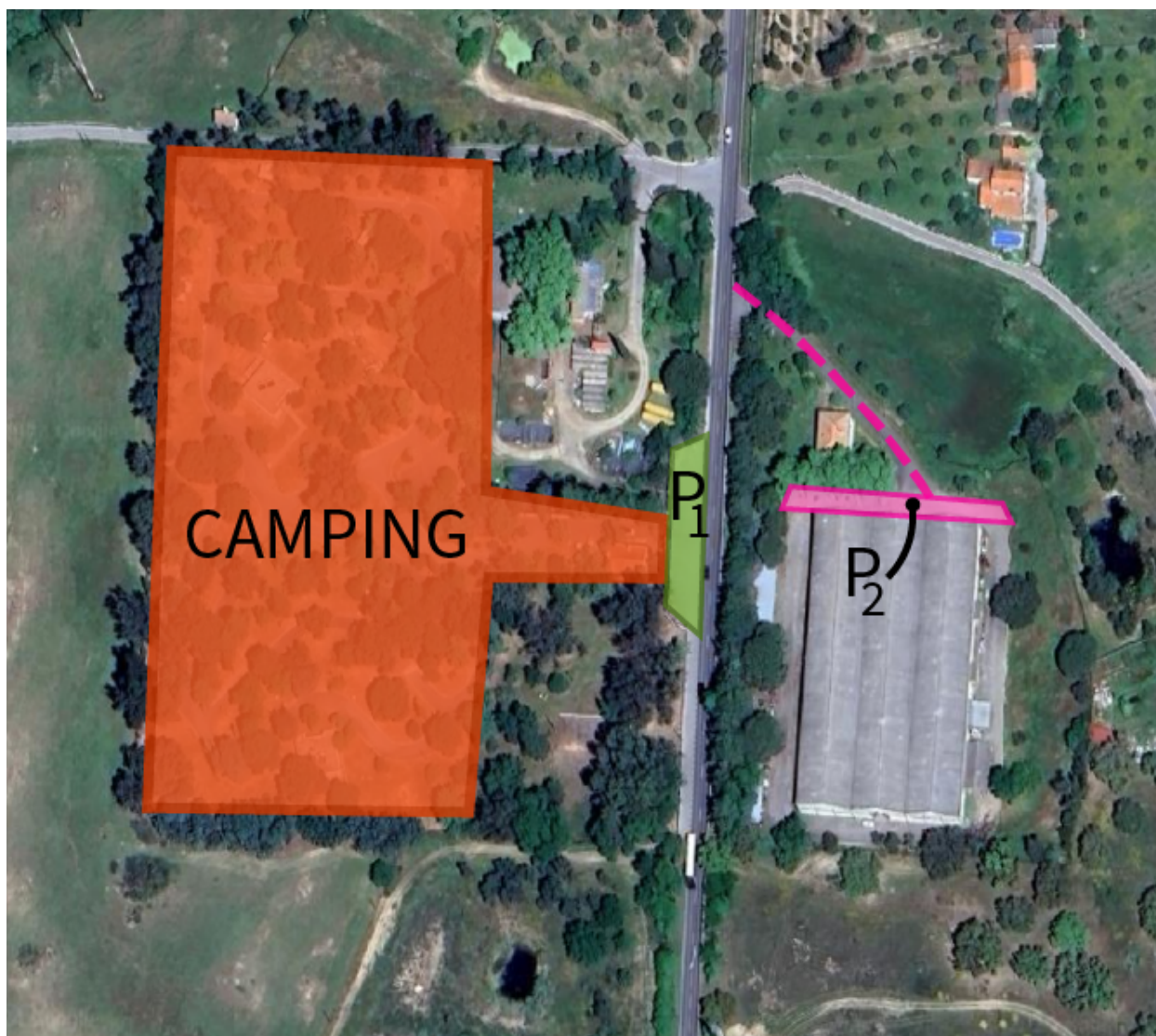


Figure 2: Parking at the Campsite.

bins at the cooking areas. These are placed there to reduce fire hazard.

**PT 5.2.6** No cleaning will be performed in the teams zones during the entire event.

**PT 5.2.7** No open fires are allowed outside the cooking area (PT 5.3). If you wish to cook at your team's camping zone please do so using electric stoves.

**PT 5.2.8** Smoking of regular (combustible) cigarettes is forbidden around the campsite. If you wish to smoke please do so at the front entrance. Please use the designated ash trays.

### **PT 5.3 Cooking area**

**PT 5.3.1** The campsite has 2 cooking areas designed for teams to cook at. Their opening hours are depicted in PT 4.8.

**PT 5.3.2** Only gas bottles with a maximum capacity less or equal to 30 Kg are

allowed in the cooking areas.

**PT 5.3.3** After cooking, it must be ensured that there is no way gas can exit the bottles and that the connections to the stoves are completely closed.

**PT 5.3.4** After cooking, all ashes shall be disposed in the designated container.

**PT 5.3.5** No fires can be left unattended.

**PT 5.3.6** At most 3 members of each team can be at the cooking area at any given time. If the area is too crowded this limit may be shortened by any staff member.

PS: You are only allowed to EA(S)T within a 50km radius of the cooking area. Because, you know, after that the food gets cold.

## **PT 5.4 Dishwashing**

**PT 5.4.1** The campsite is equipped with 2 dishwashing areas. These are not equipped with soap or sponges so teams need to bring their own.

**PT 5.4.2** Keep the sinks clean and unclogged.

## **PT 6 Technical Inspection**

### **PT 6.1 Technical Inspection Sticker**

**PT 6.1.1** The sticker will be 175x55 mm (WxH). A suitable spot shall be reserved on the upward-facing bodywork between the front bulkhead and the front roll hoop.

### **PT 6.2 Data Loggers [EV ONLY]**

**PT 6.2.1** Formula Student Portugal will use the official data loggers from FSG. Ensuring that the Data Logger is working properly is the sole responsibility of the team. The technical specifications and mounting instructions can be found in this [link](#). Two DLDS stations will be available in the paddock tent.

**PT 6.2.2** The team must pick up their data logger at one of the DLDS stations at the paddock during the schedule presented in PT 4.8.7. To do so, they have to show proof of data logger deposit payment, as per PT 4.5.2.

**PT 6.2.3** ESO and ASR registration will take place during the data logger pick-up. All ESOs and ASRs must have a ESOQ, ASRQ (ASRs only) and a national ID card as well as their student ID ready for inspection.

### **PT 6.3 Accumulator Inspection [EV ONLY]**

**PT 6.3.1** The initial accumulator inspection will take place in the technical inspection tent. Any required re-inspection from Wednesday 04-09-2024 and later will take place in the accumulator tent.

**PT 6.3.2** All teams that are allowed to enter on Monday 02-09-2024 must bring their accumulators to the accumulator tent by 20 :00 GMT (local time) that day. All teams that have their accumulator inspection on the same day of entering bring their accumulators directly to the accumulator inspection.

**PT 6.3.3** If a team misses the aforementioned deadline, a penalty of 10 points is deducted of its overall score for every commenced 12 hours up to a maximum total of 30 penalty points.

**PT 6.3.4** The team has to register the accumulator delivery at the accumulator tent.

### **PT 6.4 Location**

**PT 6.4.1** Technical inspection will take place in all locations as seen in figure 3. The layout will change depending on the events taking place at a given day.

- **03-09-2024, 04-09-2024 and 06-09-2024:** as seen on figure 3. Brake 1 will be the only designated brake test area. It shall be a part of the practice area. Vehicles queueing for the Brake Test will be given priority with regards



to vehicles queueing for a practice run. The Tech. Inspection tent will run at reduced capacity during 06-09-2024 due to on-going dynamic events.

- **05-09-2024:** During the Skidpad event, the Brake Test will move to the Brake 2 area. It shall be re-opened in the Brake 1 area during the Acceleration Event.
- **07-09-2024:** Day of the Endurance event. There is no planned technical inspection. Any requests shall be evaluated on a case-by-case basis.



Figure 3: Technical Inspection Map

**PT 6.4.2** Access to technical inspection shall be enforced as per FS Rules - D1.2.

**PT 6.4.3** If a team does not arrive within 10 minutes of the start of the assigned scrutineering slot, this slot shall be converted into a re-scrutineering slot.

## **PT 6.5 Charging [EV ONLY]**

**PT 6.5.1** The charging area is a separated dynamic area including separate entrance restrictions.

**PT 6.5.2** Only three members per team may enter the charging area at the same time. One of them must be a Electrical System Officer (ESO) or Autonomous System Responsible (ASR), respectively.

**PT 6.5.3** Inside the charging area, team members must not wear any conductive jewelry and must not wear any conductive objects of any kind which could come into contact with any part of the accumulator.

**PT 6.5.4** 400 V, 50 Hz, 3-phase CEE charging connectors (3L+N+PE 6h) with 16A and 32A as well as 230V, 50Hz, single-phase CEE 7/3 "Schuko" are available in the charging area.



## PT 6.6 Fueling [CV ONLY]

**PT 6.6.1** 98RON and E85 will be made available during the event. Teams may request officials to fill up their tank at any time. Safety precautions must be taken during this procedure.

**PT 6.6.2** Teams should arrive to the FSPT 2024 Event with an empty fuel tank. It will not be possible to empty the fuel tank in the FSPT pits.

## PT 6.7 Driver registration

**PT 6.7.1** Driver registration will take place during the pre-inspection at the technical inspection tent. All drivers must have their government issued driver's license and national ID card as well as their student ID ready for inspection.

## PT 6.8 Schedule

#	Team	Mechanical	Accumulator	Electrical	Pre-Inspection
373	MAD Formula Team	3Sep 10:10-11:40	-	-	3Sep 12:50-13:20
214	UJI Motorsport	3Sep 08:30-10:00	-	-	3Sep 15:30-16:00
296	Ü Motorsport	3Sep 08:30-10:00	-	-	3Sep 10:40-11:10
207	NOVA Formula Student	3Sep 11:50-13:20	-	-	3Sep 14:30-15:00
95	FSUMinho	3Sep 10:10-11:40	3Sep 08:30-10:00	3Sep 14:30-16:00	4Sep 08:30-09:00
04	ISEL Formula Student	3Sep 11:50-13:20	3Sep 10:10-11:40	3Sep 16:10-17:40	3Sep 09:00-09:30
67	Team Bath Racing Electric	3Sep 11:50-13:20	3Sep 08:30-10:00	3Sep 14:30-16:00	3Sep 11:10-11:40
42	LART	3Sep 08:30-10:00	3Sep 10:10-11:40	3Sep 11:50-13:20	3Sep 17:10-17:40
50	FST Lisboa	3Sep 10:10-11:40	3Sep 08:30-10:00	3Sep 14:30-16:00	4Sep 09:00-09:30
03	UWB eRacing Team Pilsen	3Sep 08:30-10:00	3Sep 10:10-11:40	3Sep 11:50-13:20	3Sep 16:10-16:40
05	Polimarche Racing Team	3Sep 14:30-16:00	3Sep 11:50-13:20	3Sep 16:10-17:40	3Sep 10:10-10:40
73	TecnoCampus MotorSports	3Sep 11:50-13:20	3Sep 10:10-11:40	3Sep 16:10-17:40	3Sep 08:30-09:00
12	SigmaRacing	3Sep 10:10-11:40	3Sep 08:30-10:00	3Sep 11:50-13:20	3Sep 16:40-17:10
510	ISEL Formula Student [Senior]	3Sep 14:30-16:00	-	-	3Sep 12:20-12:50

## PT 7 Static events

### PT 7.1 Design Scoring

**PT 7.1.1** The Engineering Design event will be scored according to the following distribution:

Expertise	Points EV/CV	Points DC
Autonomous Systems	10	50
Aerodynamics and Cooling	20/10*	15/5*
Electronics	20	15
Powertrain	20/25*	15/20*
Mechanical/Structural	25	15
Technical Management	20	15
Vehicle Dynamics and Suspension	25/30*	15/20*
Engineering Design Report	10	10
<b>TOTAL</b>	150	150

Table 4: Engineering Design event scoring distribution (\*Team's with no downforce producing aerodynamic devices)

### PT 7.2 BPP Scoring

**PT 7.2.1** The Business Plan Presentation event will be scored according to the following distribution:

Expertise	Points
Pitch Video	10
Novelty+Content	30
Finances	10
Deep Dive Topic*	10
Demonstration and Structure	15
Delivery	10
Questions	10
General Impressions	5
<b>TOTAL</b>	100

Table 5: Business Plan Presentation scoring distribution. \*Deep Dive Topic will be released on the 15th of August.

## **PT 7.3 Cost Scoring**

**PT 7.3.1** The Cost and Manufacturing event will be scored according to the following distribution:

<b>Expertise</b>	<b>Points</b>
BOM	3
DBOM	12
CBOM	20
Cost Understanding	35
Real Case	20
Documents Format and Quality	5
Overall Vehicle Cost Knowledge	5
<b>TOTAL</b>	<b>100</b>

Table 6: Cost and Manufacturing scoring distribution

## **PT 7.4 Design procedure**

**PT 7.4.1** All topics not specifically covered in this document or other official Formula Student Portugal document default to the Formula Student Germany rules.

**PT 7.4.2** The duration of the Engineering Design Event will be 50 min divided in the following manner:

- Introduction of the team, team members and goals for the season (3-5 min)
- Q&A session divided by areas of expertise as per PT 7.1.1 (40-42 min)
- Brief overall feedback (5 min)

**PT 7.4.3** Teams may bring any material (including digital) that they believe helps to support their design presentation.

**PT 7.4.4** At each instant no more than 12 team members (15 for teams enrolled as DV) can be in the delimited “Judging Area”

**PT 7.4.5** An unlimited number of top teams may be chosen by the head of the Engineering Design event to participate in the Engineering Design finals to determine the Engineering Design event winner.

**PT 7.4.6** The Engineering Design finals will be held separately from the initial judging. Teams will be informed about their participation during the event.

**PT 7.4.7** Information about the Engineering Design Event documents submission will be sent to the teams at a later date.

## **PT 7.5 BPP procedure**

**PT 7.5.1** All topics not specifically covered in this document or other official Formula Student Portugal document default to the Formula Student Germany rules.

**PT 7.5.2** The duration of the Business Plan Presentation will be 15 min divided in the following manner:

- BP Presentation (10 min)
- Q&A Session (5 min)

**PT 7.5.3** All team members participating in the BPP should be presented to the Judges.

**PT 7.5.4** Any team member participating in the BPP can answer questions during the Q&A session even if they did not present.

**PT 7.5.5** An unlimited number of top teams may be chosen by the head of the BPP event to participate in the BPP finals to determine the BPP event winner.

**PT 7.5.6** The BPP finals will be held separately from the initial judging. Teams will be informed about their participation during the event.

**PT 7.5.7** BPP finals sessions will be hosted in public sessions.

**PT 7.5.8** Information about the Business Plan Presentation event documents submission will be sent to the teams at a later date.

## **PT 7.6 Cost procedure**

**PT 7.6.1** All topics not specifically covered in this document or other official Formula Student Portugal document default to the Formula Student Germany rules.

**PT 7.6.2** The duration of the Cost and Manufacturing Event will be 50 min divided in the following manner:

- Introduction of the team, team members and goals for the season (3 min)
- BOM Discussion (15 min)
- Cost Understanding (15 min)
- Real Case (15 min)
- Brief overall feedback (2 min)

**PT 7.6.3** Teams may bring any material (including digital) that they believe helps to support their cost presentation.

**PT 7.6.4** An unlimited number of top teams may be chosen by the head of cost event to participate in the cost and manufacturing finals to determine the cost and

manufacturing event winner.

**PT 7.6.5** The cost and manufacturing finals will be held separately from the initial judging. Teams will be informed about their participation during the event.

**PT 7.6.6** The BOM, DBOM and CBOM is to be created using the FSG Cost Report tool. The whole Cost Report is then to be exported using the corresponding “PDF Export” function in the Cost Report tool. The exported PDF should be zipped together with the Cost Report Explanation file (CREF) and Supporting Material File (SMF).

**PT 7.6.7** The use of excel or other programmes to create BOM, DBOM and CBOM is prohibited. The FSAE format is also not permitted.

**PT 7.6.8** There are no rules regarding the style of the CREF other than it should be a comprehensive explanation of the assumptions and calculations that were used to derive for example the material costs or labour costs used in the CBOM. It should also contain which specific cost figures were used, e.g. the cost of one machine operation hour.

**PT 7.6.9** The CBOM must be created for the same “system” as defined in the FSG 2024 competition handbook.

**PT 7.6.10** The DBOM must be created for the same “system” as defined in the FSG 2024 competition handbook.

**PT 7.6.11** FSPT defines "processes" as follows: Processes are the operations necessary to produce the "part" out of the "material", create assemblies out of parts and assemble it to the vehicle.

**PT 7.6.12** Information about the Cost and Manufacturing Event documents submission will be sent to the teams at a latter date.

## PT 7.7 Schedule

#	Team	DESIGN	COST	BPP
373	MAD Formula Team	3Sep 16:40	3Sep 15:10	3Sep 11:50
214	UJI Motorsport	3Sep 14:10	3Sep 12:00	3Sep 11:30
296	Ü Motorsport	3Sep 12:00	3Sep 14:10	3Sep 11:30
207	NOVA Formula Student	3Sep 15:10	3Sep 16:40	3Sep 11:00
95	FSUMinho	3Sep 12:00	3Sep 16:40	3Sep 14:00
04	ISEL Formula Student	4Sep 10:00	4Sep 09:00	3Sep 15:00
67	Team Bath Racing Electric	4Sep 09:00	4Sep 10:00	3Sep 11:00
42	LART	3Sep 17:40	3Sep 15:10	3Sep 14:20
50	FST Lisboa	3Sep 16:40	3Sep 12:00	3Sep 14:00
03	UWB eRacing Team Pilsen	3Sep 17:40	3Sep 14:10	3Sep 15:20
05	Polimarche Racing Team	4Sep 10:00	3Sep 17:40	3Sep 11:00
73	TecnoCampus MotorSports	3Sep 15:10	4Sep 09:00	3Sep 14:20
12	SigmaRacing	3Sep 14:10	3Sep 17:40	3Sep 15:20
452	Formula Student ISEP	4Sep 14:00	4Sep 15:20	3Sep 16:00
420	Formula Student FEUP	4Sep 14:00	4Sep 15:20	3Sep 16:00
422	Engenius UA Formula Student	4Sep 15:20	4Sep 14:00	3Sep 16:20
65	PHISEC Racing	4Sep 15:20	4Sep 14:00	3Sep 16:20

## **PT 8 Dynamic events**

### **PT 8.1 Dynamic Events Schedule**

**PT 8.1.1** The Acceleration event will happen on the 5th of September from 16:30 to 19:30.

**PT 8.1.2** The SkidPad event will happen on the 6th of September from 09:00 to 12:00.

**PT 8.1.3** The AutoX DV event will happen on the 6th of September from 11:30 to 13:00.

**PT 8.1.4** The Trackdrive event will happen on the 6th of September from 14:30 to 16:00.

**PT 8.1.5** The AutoX event will happen on the 6th of September from 16:00 to 19:00.

**PT 8.1.6** The Endurance event will happen on the 7th of September from 09:00 to 12:00.

**PT 8.1.7** An "OPEN" or "CLOSED" sign at the entrance of each Dynamic Event will indicate whether the session is active.

**PT 8.1.8** Teams with a Green Flag or a GO signal before the Closing Time can complete their run. Additional runs are allowed immediately after Closing Time.

**PT 8.1.9** Re-runs are permitted if necessary after Closing Time.

**PT 8.1.10** From 30 min up to 5 min before the starting time of each session, each track will be open for a course walk.

### **PT 8.2 Behavior Inside Dynamic Area**

**PT 8.2.1** Equipment that can't be carried by one team member is allowed only in inspection and preparation areas, not in dynamic event queues.

**PT 8.2.2** Once the vehicle moves under its power, team members in the dynamic area must wait in their designated area until the run concludes.

**PT 8.2.3** After the run, the vehicle must be promptly collected at the exit by two team members using the push bar.

**PT 8.2.4** The ASR designated area will have a raised platform for better track and vehicle visibility.

### **PT 8.3 Event Participation Limits and Procedures**

**PT 8.3.1** Each team is allowed 4 Manual runs and 2 Driverless runs for the Acceleration and Skidpad events.

**PT 8.3.2** For Driverless runs, if the vehicle does not enter "AS Ready" state within 3 min after being staged, the team may be sent back to the preparation area by the

officials. In this case any priority is lost.

**PT 8.3.3** Each team is allowed to register up to 6 drivers.

## **PT 8.4 Track Layout and Characteristics**

**PT 8.4.1** Autocross and Endurance Tracks may have non-straight Slaloms with 7.5m to 15m spacing between cones.

**PT 8.4.2** Each lap of Driverless Autocross and Trackdrive may exceed 500m.

**PT 8.4.3** The total distance of Trackdrive won't exceed 5000m.

## **PT 8.5 Track Markings and Delimiters**

**PT 8.5.1** Laser Timing Gates will be used for all dynamic events.

**PT 8.5.2** Cones mark the track limits, with blue cones on the left, yellow cones on the right, and orange cones for entry, exit and stopping lanes.

**PT 8.5.3** The maximum distance between two consecutive cones is 5m.

**PT 8.5.4** Big orange cones mark start, finish, and timekeeping lines.

**PT 8.5.5** Cones used are specified in Table 7.

**PT 8.5.6** Start and finish lines are marked with white paint.

**PT 8.5.7** There may be track limit lines, except for Acceleration and EBS-test, marked with yellow or white paint.

**PT 8.5.8** The position of each individual cone will be marked on the ground, for reference of DOO.

**PT 8.5.9** Officials may draw lines on the ground, which may not be perfect or continuous.

**PT 8.5.10** Other markings on and around the track, such as those from the Kartodromo de Castelo Branco's infrastructure or previous events, may be present. These markings can have different sizes and colors and cannot be removed or altered by officials.

**PT 8.5.11** Spare cones may be stacked and standing at the trackside at a recognizable distance.

**PT 8.5.12** Timekeeping equipment may be surrounded by cones outside the track boundary.

**PT 8.5.13** No special artificial landmarks are provided by officials. The team must not place additional landmarks on the track or inside the dynamic area. No map data is provided by the officials.







Big Orange Cones	Small Orange Cones	Small Yellow Cones	Small Blue Cones
			
WEMAS 307.610500.00.00	WEMAS 400.000013.00.00	WEMAS 400.000013.01.10	WEMAS 400.000043.00.00
285 x 285 x 505 mm 1.05 Kg		228 x 228 x 325 mm 0.45 Kg	

Table 7: Track delimiting cones.

## PT 8.6 Endurance Running Order

**PT 8.6.1** The running order for Endurance will be published at the end of the day before the event, according to FS Rules - D7.3.

**PT 8.6.2** At least the next three vehicles in the running order must be in the queue during the endurance.

**PT 8.6.3** Vehicles must continuously fill the queue.

**PT 8.6.4** A vehicle is defined as running out of order and penalized according to FS Rules - D9.2.1 if it is missing from the queue, i.e. if there is at least one vehicle within the first 3 positions in the queue that has a later running order place.

**PT 8.6.5** Running out of order is only possible at the end of the session, if still within the Event Slot.

## PT 8.7 Trackdrive running order

**PT 8.7.1** The running order for Trackdrive will be published before the start of the session, according to FS Rules - D8.2.

**PT 8.7.2** At least the next vehicle in the running order must be in the queue during the trackdrive.

**PT 8.7.3** Vehicles must continuously fill the queue.

**PT 8.7.4** A vehicle is defined as running out of order if it is missing from the queue, i.e. if there is at least one vehicle ahead in the queue that has a later running order place.

**PT 8.7.5** Vehicles out of order will be moved to the end of the order and will only run if still within the Event Slot indicated in PT 4.8.

## **PT 9 Class 2**

### **PT 9.1 Overview**

**PT 9.1.1** The inclusion of a Class 2 competition lined with the vision of Formula Student Portugal to both increase the number of Universities competing in Formula Student as well as to fast-track new teams into building a Formula Student car.

**PT 9.1.2** The Class 2 competition is composed of 3 different static events: Engineering Design(150pts); Business Plan Presentation(100pts); Cost and Manufacturing (100pts).

**PT 9.1.3** A rulesbook has been published with all necessary details regarding the Class 2 competition here.

**PT 9.1.4** Class 2 teams will have a dedicated PIT slot.

**PT 9.1.5** As specified in PT 3.2.6, C2 teams are strongly encouraged to produce and upload the IAD, SES, SE3D and ESF documents according to the deadlines specified in table 3 in order to take full advantage of FSPT. No penalty will be given to teams that do not submit these documents.

## **PT 10 Senior Cup**

### **PT 10.1 Introduction**

This section of the handbook shall serve exclusively for Formula Student Portugal 2024 Senior Cup. We already told it to the kids, but the same goes for you: whenever in conflict, it supersedes Formula Student Rules 2024 v1.1 (a.k.a. FS Rules) and, as an added bonus, whatever was written previously in this Handbook.

This section will be the golden ticket for the car you thought would never see a trophy again to return to the track. Tell the new guys to stop using your masterpiece of engineering as a spare parts depot and haul it to Castelo Branco for (possibly) one last shot at the top step. Here you will find specific registration details, important dates, tech inspection information, static events and dynamic events specific to your timepieces.

Formula Student Portugal Senior Cup (hereafter also SC) welcomes both gas guzzlers and electric vehicles. As a reminder, while this section may at times supersede the FS rules and/or the rest of the Formula Student Portugal Handbook, it does not replace them.

### **PT 10.2 General Info**

**PT 10.2.1** In FSPT 2024 SC teams are expected to only compete in Dynamic events.

**PT 10.2.2** There will be no split between Electric Vehicles (EV) and Combustion Vehicles (CV) for scoring.

**PT 10.2.3** FSPT 2024 SC will follow the FS rules on a case-by-case basis. Submission of design documents such as the SES, IAD, ESF or similar might be requested following the same principle. Example: if the competing vehicle is from 2015, the 2015 FS rules shall apply. Whenever in conflict with the FS Rules from the year the vehicle was first meant to compete in, this ruleset will supersede it. The FSPT 2024 SC chapter of the handbook is to be considered part of the rules.

**PT 10.2.4** FSPT 2024 SC scoring will be based on the FS Rules in a way that will lead to the same maximum 1000 overall points.

### **PT 10.3 Registration**

**PT 10.3.1** In FSPT 2024 there will be a total of 8 SC slots.

**PT 10.3.2** For FSPT 2024 SC the registration process will be based on a first-come-first-served basis.

**PT 10.3.3** The teams will be sorted according to the age of their vehicle. The older will get precedence in the scrutineering queue.

**PT 10.3.4** Whenever there is a clear relationship between any SC team and any C1

team, the two shall be considered as entirely different teams.

**PT 10.3.5** No SC team member may be an active member of any Formula Student team.

**PT 10.3.6** If the car that shall compete in the SC is a predecessor of another registered for C1 in FSPT 2024, the registration fee for the SC shall be waived.

**PT 10.3.7** In case the SC team is coming on its own, a fee of 875€ (+VAT, if applicable) will apply.

## **PT 10.4 Event**

**PT 10.4.1** SC team members may only work on SC vehicles. In a similar fashion, C1 and C2 team members may only work on C1 and C2 vehicles, respectively. A breach of this rule may lead to penalty and/or disqualification of the member(s) and/or team(s).

## **PT 10.5 Technical Inspection**

**PT 10.5.1** Vehicles shall be submitted to the regular format of scrutineering, i.e. accumulator, electric system, mechanical, noise, tilt, rain and brake tests.

**PT 10.5.2** A modified technical inspection procedure shall apply for all SC vehicles. Checks will be relaxed when compared to the most recent technical inspection standards for accumulator, electrical and mechanical inspections. A special emphasis shall nonetheless be given to the safety critical components and systems.

**PT 10.5.3** Vehicle numbering must be within the range 500-699.

**PT 10.5.4** [EV ONLY] All SC EV teams must follow ruleset A4.3 from the 2024 FS rules. A4.3.4 and A4.3.8 shall be waived for the SC competitors. ESO nomination shall be done during the online team-member registration procedure. Because A4.3.8 is waived, a liability agreement will be presented for signature at the event.

**PT 10.5.5** [EV ONLY] TSAL logic and color scheme will be evaluated according to the year of the respective vehicle. Teams must present a summary of how the operating principle differs from the one described in the 2024 FS Rules section EV4.10.

**PT 10.5.6** [CV ONLY] Vehicles equipped with an Electronic Throttle Control (ETC) shall have it inspected during mechanical inspection. Part of the inspection will be held in the engine test area and shall focus on the electric operation of ETC.

**PT 10.5.7** Vehicles must be equipped with a BSPD compliant with the 2024 FS Rules T11.6. A template circuitry can be found on the FSG website.

**PT 10.5.8** All starting vehicles must submit a VSV according to 2024 FS Rules subsections A5.6.1 and A5.6.3. The deadline shall coincide with the one for C1.

**PT 10.5.9** All used tires must be used according to manufacturers recommendations, i.e. follow minimum tread and maximum age requirements.

## **PT 10.6 Static events**

**PT 10.6.1** There will be no static events for SC teams.

**PT 10.6.2** SC team members may however volunteer for the role of C1 and C2 judge. If a SC team member decides to be a judge, he/she will not be allowed to enter any scrutineering dynamic area for the first three days of the event (starting on the 3rd of September).

## **PT 10.7 Dynamic events**

**PT 10.7.1** Contrary to what was used for the technical part, dynamic area rules shall follow the 2024 FS Rules chapter D.

**PT 10.7.2** Driver equipment may only be changed between team outside of the dynamic area.

**PT 10.7.3** Only drivers which have passed the egress test will be allowed to compete.

**PT 10.7.4 Acceleration & Autocross:** One glory run will be allowed per team, i.e. no power restrictions shall apply. This will only be allowed for the second run of the second driver.

**PT 10.7.5** C1 teams will be given preference in all dynamic events (except endurance), irrespective of which run they are on. Please make sure to queue up with enough time to spare. SC vehicles will be the first to run for the Endurance event.

## **PT 10.8 Special Awards**

**PT 10.8.1** Participation in any Special Awards is compulsory. There is a disadvantage if a team decides not to bring something extra to the table. Formula Student Portugal reserves the right to judge SC teams. The more patina, the better. You are invited to show the new kids on the block who was and still is the boss. Make your presence be felt and show the current generation what is the true meaning of being part of a racing team. Be creative!

## **PT 11 Special Awards**

Participation in Special Awards is voluntary. There is no disadvantage if a team decides not to take part. In some cases, prize money is awarded to the best teams.

### **PT 11.1 Hydrogen Concept Challenge**

**PT 11.1.1** In collaboration with FS Austria, FS Alpe Adria, FS East, FS France and FS Future a Hydrogen Concept Challenge will take place in FSPT 2024.

**PT 11.1.2** The Hydrogen Concept Challenge is intended to introduce students to the topic of hydrogen. The aim is to develop concepts before vehicles with hydrogen fuel cell technology can be fully integrated into the EV and vehicles running on hydrogen can be fully integrated the CV/hybrid class.

**PT 11.1.3** Further information will be published in a separate PDF at a later date. The challenge will be the same for all events offering a Hydrogen Concept Challenge.

**PT 11.1.4** The Hydrogen Concept Challenge will take place on the 4th of September at 13:00 on the Staff Tent.

### **PT 11.2 The Business Plan Catalyst Award**

**PT 11.2.1** Formula Student Portugal introduces the "Business Plan Catalyst Award" in the Class 2 category. This award is designed to recognize and reward the team that delivers the most innovative and strategically sound business plan, with a special focus on the Deep Dive Topic.

**PT 11.2.2** The award serves as a significant motivator for Class 2 teams, propelling them towards their goal of advancing to Class 1. The winning team will receive a gift basket with tools to aid the construction of their prototype.

**PT 11.2.3** Only teams participating in the Class II event are eligible for the award.

**PT 11.2.4** The winning team will be the best performing team in the Deep Dive Topic which will be evaluated during the BPP presentation.

### **PT 11.3 Plascore IAD Special Award**

**PT 11.3.1** Plascore GmbH & Co. KG, based in Waldlaubersheim, Germany, is sponsoring the Special Award for the most meticulously prepared Impact Attenuator Device (IAD) documentation, characterized by precision, innovation, and clarity.

**PT 11.3.2** Participation in FS Portugal and submission of the IAD documentation via the FSG website automatically qualifies each Class 1 team for the Special Award.

**PT 11.3.3** The following criteria dictating the selection process:

1. Minimal Errors: Priority is given to submissions with the fewest errors identified by IAD reviewers.

2. Document Clarity and Structure: The coherence and organization of the documentation.
3. Website Submission Accuracy: The number of fails on the FSG website.
4. Innovative Design: A preference for own designs over standard designs.

**PT 11.3.4** The winning team, which will be announced at FSPT2024, will receive a prize money of 1000 euros.

## PT 12 Officials

### PT 12.1 Color-Code

FSPT officials are easily recognisable through the color of polo shirts used:

- White shirts - Core organization
- Yellow shirts - Logistics team (also known as FSPT minions)
- Blue shirts - Static event team
- Green shirts - Scrutineering team

### PT 12.2 Core organization

The names and roles of the core organization are shown in table 8. Any questions or clarifications should be sent to [geral@formulastudent.pt](mailto:geral@formulastudent.pt).

White shirt	Role
André Santos	Head of Event
António Bento	Head of Scrutineering
Inês Viveiros	Head of Logistics
João Rego	Head of Marketing
Luís Abreu	Head of Dynamics
Pedro Costa	Head of Statics
Pedro Marques	Head of Sponsors
Pedro Oliveira	Head of Finance
Ricardo Ferreira	Minister of Foreign Affairs

Table 8: White shirts and respective roles.



## PT 13 Overall Event Schedule

02 September		03 September		04 September		05 September		06 September		07 September		08 September	
Slot Start	Slot End	Team Briefing		Team Briefing		Team Briefing		Team Briefing		Team Briefing			
	08:30												
	08:30												
	09:00												
	09:30												
	10:00												
	10:30												
	11:00												
	11:30												
	12:00												
	12:30												
	13:00												
	13:30												
	14:00												
	14:30												
	15:00												
	15:30												
	16:00												
	16:30												
	17:00												
	17:30												
	18:00												
	18:30												
	19:00												
	19:30												
	20:00												
	20:30												

Figure 4: Overall Event Schedule