



## COMPETITION HANDBOOK 2019



# FORMULA STUDENT **NETHERLANDS** INTERNATIONAL DESIGN COMPETITION

08 - 11 JULY 2019  
TT CIRCUIT ASSEN

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## NL1 General Information

### NL1.1 Competition Format

Formula Student Netherlands 2019 (FSN2019) will consist of two classes: Internal Combustion Vehicle (CV) Class and Electric Vehicle (EV) Class. Both classes can be identified as separate competitions with separated classifications.

The competition will be open to 40 CV Class teams and 28 EV Class teams.

### NL1.2 Competition Dates and Place

FSN2019 will be held from 6<sup>th</sup> until 11<sup>th</sup> of July 2019, at the TT Circuit in Assen, The Netherlands

Venue address:  
TT Circuit  
De Haar 9  
9405 TE  
Assen  
The Netherlands

### NL1.3 Vehicle Shipping

All teams using an (external) shipping company or freight forwarder must coordinate the transport with the FSN Organization. Vehicles must arrive between July 5<sup>th</sup> and 7<sup>th</sup> and must be removed from the event site on July 12<sup>th</sup> before 17:00 CEST. The FSN Organization can not provide a place to store the vehicle during the arrival and departure days.

### NL1.4 Registration Fee

The registration fee for FSN2019 is €1750,- including 9% VAT. The FSN organization is legally required to invoice VAT to all teams, regardless of the origin of the team. Teams with a valid EU VAT number may reclaim their VAT at the Dutch IRS [via this link](#). The entry fee includes an unlimited amount of team members.

The registration fee is not refundable for any reason

### NL1.5 Team Members

Every team must fill out a Team Member Registration Form (TMRF) prior to the competition. A format will be available on the competition website.

All individuals are responsible for their own Health Insurance, the FSN organization will not perform a check on these documents.

If your team or team members require an invitational letter to obtain a VISA, please send an e-mail to [info@formula-student.nl](mailto:info@formula-student.nl)

## NL1.6 **Vehicle Numbers**

All confirmed teams will be invited to choose a car number for the competition via their MyTeam account.

EV Class: 01-99, with an E added in front of the number.

CV Class: 101-999

Numbers E01, E02, E03, 101, 102 and 103 are reserved for the top-3 teams from FSN2018.

## NL2 **Documents & Deadlines**

### NL2.1 **Deadlines**

<u>Date</u>	<u>Deadline</u>	<u>Class</u>
2019-03-15 13:00 CET	Electronic Throttle Control (ETC)	CV
2019-03-15 13:00 CET	Impact Attenuator Data (IAD)	ALL
2019-03-15 13:00 CET	Structural Equivalency 3D Model (SE3D)	ALL
2019-03-15 13:00 CET	Structural Equivalency Spreadsheet (SES)	ALL
2019-04-12 13:00 CEST	Electrical System Form (ESF)	EV
2019-04-12 13:00 CEST	SES Approval (SESA)	ALL
2019-05-31 13:00 CEST	Business Plan Executive Summary (BPES)	ALL
2019-05-31 13:00 CEST	Design Spec Sheet (DSS)	ALL
2019-05-31 13:00 CEST	Engineering Design Report (EDR)	ALL
2019-05-31 13:00 CEST	Magazine Uploads (MU)	ALL
2019-06-14 13:00 CEST	Electrical System Officer Qualification (ESOQ)	EV
2019-06-14 13:00 CEST	Fuel Type Order (FTO)	CV
2019-06-14 13:00 CEST*	Team Member Registration Form (TMRF)	ALL
2019-06-21 13:00 CEST*	Vehicle Status Video (VSV)	ALL
2019-06-21 13:00 CEST*	Cost Report Documents (CRD)	ALL

\*different from FSG

NL2.2

## **Documents**

All teams must submit the documents mentioned in NL2.1 before the mentioned deadlines. A specific instruction on each document and how to submit is given in the following articles of the FSN2019 Competition Handbook. All documents and deadlines are subject to section A5 of the 2019 Rules.

NL2.2.1

### **Electronic Throttle Control (ETC)**

ETC is allowed under section CV1.6 of the 2019 Rules.

Format: See FSG website

Method of submission: Upload file in MyTeam

NL2.2.2

### **Impact Attenuator Data (IAD)**

IAD must be submitted in accordance to section T3.18 and T3.19 of the 2019 Rules

Format: See FSG website

Method of submission: Upload file in MyTeam

NL2.2.3

### **Structural Equivalency 3D Model (SE3D)**

SE3D must be submitted in accordance to section T3.6 of the 2019 Rules

Format: IGES File (may be zipped)

Method of submission: Upload file in MyTeam

NL2.2.4

### **Structural Equivalency Spreadsheet (SES)**

SES must be submitted in accordance to section T3.6 of the 2019 Rules

Format: See FSG Website (The new FSAE-style SES is not allowed)

Method of submission: Upload file in MyTeam

NL2.2.5

### **Electrical System Form (ESF)**

ESF must be submitted in accordance to section EV9 of the 2019 Rules. All EV Class teams must have a valid FSG account and use the FSG online form to submit the ESF. It is not required to be registered for FSG2019.

Format: Online FSG Form

Method of submission: Fill out form on FSG Website

NL2.2.6

### **SES Approval (SESA)**

Teams using a monocoque structure must submit a SESA in accordance to section A5.7 of the 2019 Rules

Format: PDF, see FSG website for template

Method of submission: Upload file in MyTeam

NL2.2.7 **Business Plan Executive Summary (BPES)**

BPES must be submitted in accordance to section S1.3 of the 2019 Rules

Format: PDF

Method of submission: Upload file in MyTeam

NL2.2.8 **Design Spec Sheet (DSS)**

DSS must be submitted in accordance to section S3.3 of the 2019 Rules. For FSN, an online template will be available on the competition website

Format: Online form

Method of submission: Online FSN Form via MyTeam

NL2.2.9 **Engineering Design Report (EDR)**

EDR must be submitted in accordance to section S3.2 of the 2019 Rules

Format: PDF

Method of submission: Upload file in MyTeam

NL2.2.10 **Magazine Uploads**

FSN2019 will feature a magazine for the first time. All teams are invited to write a description of their team (max 100 words). An isometric render or image of their 2019 vehicle must be added to the file.

All DSS data may be used to publish in the magazine.

Format: DOC(X)

Method of submission: Upload file in MyTeam

NL2.2.11 **Electrical System Officer Qualification (ESOQ)**

ESOQ must be submitted in accordance to section A4.8 of the 2019 Rules. An example of appropriate training is NEN 9140

Format: PDF(s)

Method of submission: Upload file(s) in MyTeam

NL2.2.12 **Fuel Type Order**

CV Class teams will be invited to select a Fuel: RON98 or E85.

Format: Online form

Method of submission: Online FSN Form via MyTeam

NL2.2.13 **Team Member Registration Form (TMRF)**

A TMRF must be submitted, including all participating team members. Faculty Advisors are not considered team members.

A format will be provided on the competition website.

Format: XLSX

Method of submission: Upload file in MyTeam

NL2.2.14 **Vehicle Status Video (VSV)**

VSV must be submitted in accordance to section A5.6 of the 2019 Rules. The scrutineering order for FSN2019 will be based upon the order of approved VSVs.

Format: Any video format

Method of submission: Upload file in MyTeam, or send a link to info@formula-student.nl

NL2.2.15 **Cost Report Documents**

CRD must be submitted in accordance to section S2.3 of the 2019 Rules.

Teams must use the FSG online form to fill out the BOM, DBOM and CBOM and use the export function. The exported file must be uploaded via MyTeam to FSN.

For FSN2019 a DBOM (see S2.5) for the “Brake System” and “Steering System” must be submitted.

For FSN2019 a CBOM (see S2.6) for the “Engine and Drivetrain” must be submitted.

Format: Exported FSG Online Form

Method of submission: Upload file in MyTeam

## NL3 Technical Inspection

### NL3.1 **Technical Inspection Order**

The Technical Inspection Order (TIO), or scrutineering queue is based on the order of submission of VSV as mentioned in NL2.2.14. A complete schedule will be published prior to the event or after all VSVs have been submitted.

CV Class:

TIO is only valid for the first attempt at mechanical scrutineering. If the order is in conflict with the static event schedule you may redeem your place in the queue at a later moment of your choice.

EV Class:

The TIO will be the basis for the assigning of the timeslots for Accumulator Inspection and Electrical Inspection.

### NL3.2 **Technical Inspection Procedure**

The technical inspection procedure will take place in the (new) scrutineering area. Apart from the rain test, which is located next to the fuel station, all technical inspection will be located here.

Apart from Accumulator Inspection and Electrical Inspection, which use a system of timeslots, with rescrutineering timeslots, all inspection are based on a line-system without timeslots.

CV Class:

1. Mechanical Inspection, including pre-inspection
2. Driver Egress
  - Fuel
3. Tilt Test & Vehicle Weighing
4. Noise Test
5. Brake Test

EV Class:

1. Accumulator Inspection
2. Electrical Inspection
3. Mechanical Inspection
4. Driver Egress
5. Tilt Test & Vehicle Weighing
6. Rain Test
7. Brake Test



## NL4 Static Events

### NL4.1 Business Plan Presentation Event

The BPP event will be held according to section S1 of the 2019 FSG Rules. A TV screen is available in each BPP room to use. Connection via HDMI cable.

Locations:

BPP Room A: 'Press Conference Room' . 1<sup>st</sup> floor above pit garage 1.

BPP Room B: Conference Room 2A/2B. 2<sup>nd</sup> floor TT Office Tower.

#### NL4.1.1 Deep dive topic & Evaluation

For FSN2019, there is no deep dive topic. The evaluation model will therefore be:

<u>Category</u>	<u>Points</u>
Executive Summary	10
Novelty	10
Content	20
Finances	10
Demonstration and Structure	15
Delivery	10
Questions	10
<u>General Impression</u>	<u>5</u>
Total	90

#### NL4.1.2 BPP Finals

The top 2-5 teams from each class will be invited for the BPP Finals

### NL4.2 Cost & Manufacturing Event

The C&M event will be held according to section S2 of the 2019 FSG Rules. Each team will have a back-to-back session for the Cost & Manufacturing and Engineering Design Event, with a 5 minute break in between to switch team members and equipment.

Both the C&M and ED Event take place in the Static Event Area, which is located near the scrutineering area. A 5m x 5m tent is provided for the team to present in. All walls are flexible material. A team should bring their own tape if they want to use the walls to hang any material.

NL4.2.1 **C&M Finals**

The top 2-5 teams from each class will be invited for the C&M Finals

**NL4.3 Engineering Design Event**

The ED event will be held according to section S3 of the 2019 FSG Rules. Each team will have a back-to-back session for the Cost & Manufacturing and Engineering Design Event, with a 5 minute break in between to switch team members and equipment. A 5m x 5m tent is provided for the team to present in. All walls are flexible material. A team should bring their own tape if they want to use the walls to hang any material.

NL4.2.1 **ED Finals**

The top 2-5 teams from each class will be invited for the ED Finals

**NL5 Dynamic Events**

Please refer to section D of the 'Rules 2019'

All partaking drivers must attend the mandatory driver briefings.

All drivers must register themselves as drivers at the Welcome Centre where they will receive a special bracelet.

**NL5.1 Skid Pad Event**

The Skid Pad Event will be held according to section D4 of the 'Rules 2019'.

The Skid Pad will be made wet regardless of the weather conditions.

**NL5.2 Acceleration Event**

The Acceleration Event will be held according to section D5 of the 'Rules 2019'. There is no "Top X Shoot-out".

**NL5.3 Autocross Event**

The Autocross Event will be held according to section D6 of the 'Rules 2019'.

**NL5.4****Endurance & Efficiency Event**

The Endurance Event will be held according to section D7 of the 'Rules 2019'. Additional passing zones will be added to the endurance lay-out in comparison to 2018.

A track map will be released prior to the competition