

INTERNATIONAL DESIGN COMPETITION **FORMULA STUDENT** **NETHERLANDS 2020**

COMPETITION HANDBOOK 2020



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Changelog:

- V1.0 Release for publication
- V1.1 NL2.1 Updated document deadlines to match FSG
- V1.1 NL2.2 Added maximum document size, added explanation about uploading documents to FSG
- V1.1 NL2.2.1 Removed ETC from submissions list, replaced it with description of EAIR
- V1.1 NL2.2.8 Added important note about DSS and FSN magazine
- V1.1 NL2.2.15 Added DBOM and CBOM specification

NL1 General Information

NL1.1 Competition Format

Formula Student Netherlands 2020 (FSN2020) 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
- 35 EV Class teams

NL1.2 Competition Dates and Place

FSN2020 will be held from 4th until 10th of July 2020, at the TT Circuit in Assen, The Netherlands. Please refer to the time schedule for detailed timing.

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

The official competition website is: www.formula-student.nl

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 2nd and 5th and must be removed from the event site on July 10th before 17:00 CEST. Contact the FSN Team on info@formula-student.nl

NL1.4 Registration Fee & Campsite Fee

The registration fee for FSN2020 is different per class. As costs for accommodating EV Class teams are significantly higher than CV Class teams, a differentiation is made for 2020 in our quest to have a fair price level for everyone. The registration fee includes an unlimited amount of team members.

From this year, your team will also be required to book the first pitch on the official FSN Campsite, accommodating the first 15 team members. Additional campsite pitches may be booked through the competition website.

For CV Class, the 2020 registration fee is €1750, including 9% VAT + the campsite fee of €675,-, including 9% VAT.

For EV Class, the 2020 registration fee is €1850, including 9% VAT + the campsite fee of €675,-, 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](#). A 0% reverse charge is legally not possible.

The registration fee is not refundable for any reason. Campsite fees are 100% refundable until May 1st 2020. After that date, campsite fees are not refundable for any reason.

NL1.5

Registration Procedure

To be able to participate in FSN2020, all teams must create an FSN MyTeam account on the competition website before January 24th 2020 23:59 CET.

All teams must also have a valid FSG account for uploading files. It is mandatory to participate in the FSG2020 registration quiz to obtain a valid account. The result of the FSG quiz is not of importance. See NL2 for more details.

Registration for FSN2020 commences in two phases, a pre-registration procedure and a regular registration procedure.

In the pre-registration procedure, starting on December 1st 2019, the top-3 finisher from both classes are invited to participate in FSN2020. Afterwards, all teams from the Netherlands, Belgium and Luxemburg (BeNeLux) are invited to the competition. Teams eligible for a position via the pre-registration procedure have until December 31st 2019 to confirm their entry by paying the registration fee and first campsite fee.

Teams eligible for this pre-registration procedure are:

Registration Slots: Top-3 EV

TU Delft - FS Team Delft

UAS Sankt Augustin – BRS Motorsport

TU Eindhoven – University Racing Eindhoven

Registration Slots: Top-3 CV

PT Milano – Dynamis PRC

U Lund – Lund Formula Student

TU Brno – TU Brno Racing

Registration Slots: BeNeLux EV

KU Leuven & Thomas More – Formula Electric Belgium
VU Brussels – VUB Racing
UAS Groningen – Hanze Racing Division
UAS Heerlen – FUZE
UAS The Hague – The Formula Cruisers

Registration Slots: BeNeLux CV

UAS Arnhem – HAN Formula Student
UAS Rotterdam – Racing Team Rotterdam

New for 2020: A single wildcard slot for each class will be reserved in the regular registration procedure. All teams may apply for a wild card, by uploading a motivation of max 600 words through their MyTeam account. The file name must state the word 'Wildcard' and the University. The file must be submitted before January 24th 23:59 CET.

Teams that have confirmed their entry through the pre-registration procedure are not required to take part in the regular registration procedure. Scrutineering/Static event queues/orders are not determined based on quiz results.

Regular Registration Procedure

All remaining places in the competition will be available through the regular registration procedure.

The regular registration procedure consists of a quiz, to be held on January 31st 2020 at 17:00 CET. A button to enter the quiz will be displayed on the website on this date.

Note, in the unlikely case that the amount of team looking to compete in a class of the competition is smaller than the amount of available spots in that class, all places will be directly assigned without a quiz.

FAQ for the Registration Quiz:

- There will be separate quizzes for CV and EV Class, a quiz may contain class-specific questions.
- All questions will be multiple-choice, though only one answer is the best.
- Questions may be asked about the FS Rules 2020, as well as general engineering practices and knowledge.
- The quiz may consist of 8-20 questions. The maximum time will be two hours.

- The amount of correct answers is considered first, before the time elapsed to complete the quiz.
- Time will be counted from 17:00 CET, regardless of the actual time a team starts the quiz.

NL1.6 **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 may perform random checks to ensure an individual has a valid health insurance.

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

NL1.7 **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 & 101 are reserved for the victors of each class from FSN2019.

NL2 Documents & Deadlines

NL2.1

Deadlines

Date (yyyy/mm/dd)	Deadline	Class
2020-02-28 13:00 CET	ESF Add Item Request	EV
2020-03-13 13:00 CET	Electrical System Form (ESF)	EV
2020-03-20 13:00 CET	Impact Attenuator Data (IAD)	ALL
2020-03-20 13:00 CET	Structural Equivalency 3D Model (SE3D)	ALL
2020-03-20 13:00 CET	Structural Equivalency Spreadsheet (SES)	ALL
2020-04-01 13:00 CEST*	Fuel Type Order (FTO)	CV
2020-04-17 13:00 CEST	SES Approval (SESA)	ALL
2020-05-01 13:00 CEST*	Magazine Uploads (MU)	ALL
2020-05-01 13:00 CEST*	Design Spec Sheet (DSS)	ALL
2020-06-05 13:00 CEST*	Team Member Registration Form (TMRF)	ALL
2020-06-05 13:00 CEST	Business Plan Pitch Video (BPPV)	ALL
2020-06-05 13:00 CEST	Engineering Design Report (EDR)	ALL
2020-06-19 13:00 CEST*	Cost Report Documents (CRD)	ALL
2020-06-26 13:00 CEST	Electrical System Officer Qualification (ESOQ)	EV
2020-06-26 13:00 CEST*	Vehicle Status Video (VSV)	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 FSN2020 Competition Handbook. All documents and deadlines are subject to section A5 of the 2020 Rules.

To improve document control and response times, in 2020 more documents must be uploaded through your FSG account. A joint European force of scrutineers will check documents through their system.

All documents must comply with a maximum of 40 MB.

NL2.2.1 **ESF Add Item Request (EAIR)**

Any item, required to complete the ESF that is not in the database must be submitted on the FSG website before this deadline.

NL2.2.2 **Impact Attenuator Data (IAD)**

IAD must be submitted in accordance to section T3.18 and T3.19 of the 2020 Rules

Format: See FSG website, PDF

Method of submission: Upload file in FSN MyTeam

NL2.2.3 **Structural Equivalency 3D Model (SE3D)**

SE3D must be submitted in accordance to section T3.6 of the 2020 Rules

Format: IGES File (may be zipped)

Method of submission: Upload file in FSG Account

NL2.2.4 **Structural Equivalency Spreadsheet (SES)**

SES must be submitted in accordance to section T3.6 of the 2020 Rules

Format: See FSG Website (The FSAE-style SES is not allowed), xls(x)

Method of submission: Upload file in FSG Account

NL2.2.5 **Electrical System Form (ESF)**

ESF must be submitted in accordance to section EV9 of the 2020 Rules. All EV Class teams must have a valid FSG account and use the FSG online form to submit the ESF. It is required to be at least on the waiting list for FSG2020.

Format: Online FSG Form

Method of submission: Fill out form in FSG Account

NL2.2.6 **SES Approval (SESA)**

Teams using a monocoque structure must submit a SESA in accordance to section A5.7 of the 2020 Rules

Format: PDF, see FSG website for template

Method of submission: Upload file in FSN MyTeam

NL2.2.7 **Business Plan Pitch Video (BPPV)**

BPPV must be submitted in accordance to section S1.3 of the 2020 Rules. If the file is too large, please send a link to info@formula-student.nl

Format: common video format (avi, mpg, mp4, wmv)

Method of submission: Upload file in FSN MyTeam

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

DSS must be submitted in accordance to section S3.3 of the 2020 Rules. For FSN, a template will be available on the competition website

Important note: the DSS deadline is expedited to include DSS details in the FSN2020 magazine. You are allowed to make changes to the DSS until the FSG deadline on 2020-06-05 13:00 CEST without obtaining penalties. These changes will not be included in the magazine.

Format: xls(x)

Method of submission: Upload file in FSN MyTeam

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

EDR must be submitted in accordance to section S3.2 of the 2020 Rules

Format: PDF

Method of submission: Upload file in FSN MyTeam

NL2.2.10 **Magazine Uploads**

All teams are invited to write a description of their team (max 100 words). An isometric render or image of their 2020 vehicle must be added to the file.

All DSS data may be used to publish in the magazine. If a team fails to submit MU, the FSN organization may base a text on other available resources.

Format: DOC(X)

Method of submission: Upload file in FSN MyTeam

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

ESOQ must be submitted in accordance to section A4.8 of the 2020 Rules. An example of appropriate training is NEN 9140

Format: PDF(s)

Method of submission: Upload file(s) in FSN 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 FSN 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: xls(x)

Method of submission: Upload file in FSN MyTeam

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

VSV must be submitted in accordance to section A5.6 of the 2020 Rules. **The scrutineering order for FSN2020 will be based upon the order of approved VSVs. Because of the timing of FSN in the season, non-approval of the VSV does not lead to deregistration.**

Format: Any common 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 2020 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 FSN2020 a DBOM for the 'Suspension System' must be submitted

For FSN2020 a CBOM for the 'Electrical System' must be submitted

Format: Exported FSG Online Form

Method of submission: Upload file in FSN 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 scrutineering area.

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 2020 FS Rules. A TV screen is available in each BPP room to use. Connection via HDMI cable.

Locations:

To be announced

NL4.1.1 Deep dive topic & Evaluation

To be announced

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 2020 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 2020 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 2020'

All partaking drivers must attend the mandatory driver briefings.

NL5.1 Skid Pad Event

The Skid Pad Event will be held according to section D4 of the 'Rules 2020'.

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 2020'. There is no "Top X Shoot-out".

NL5.3 Autocross Event

The Autocross Event will be held according to section D6 of the 'Rules 2020'.

NL5.4 Endurance & Efficiency Event

The Endurance Event will be held according to section D7 of the 'Rules 2020'.

A track map will be released prior to the competition