

INTERNATIONAL DESIGN COMPETITION FORMULA STUDENT NETHERLANDS

COMPETITION HANDBOOK 2021



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Changelog:

V1.0 Release for publication

NL1 General Information

NL1.1 Competition Format

Formula Student Netherlands 2021 (FSN21) 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:

- 35 CV Class teams
- 35 EV Class teams

NL1.2 Competition Dates and Place

FSN21 will be held from 4th until 8th of July 2021, 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 4th and must be removed from the event site on July 8th before 18:00 CEST.

In regards to Brexit, additional logistic support for teams from the UK is available. This also applies for teams outside of the European Union.

Contact the FSN Team on info@formula-student.nl

NL1.4 Registration Fee & Campsite Fee

For FSN21, the registration fee includes 15 team members. Additional team members may be added for €20,- each until May 1st 2021. After this date, additional team members may be added for €50,- each. Team sizes may be limited by the event organization, in that case all fees for additional team members will be 100% refunded.

For CV Class, the 2021 registration fee is €1750, including 9% VAT

For EV Class, the 2021 registration fee is €1850, including 9% VAT

The campsite fee is €675,- , including 9% VAT. Each team is required to reserve at least one campsite pitch with their registration which accommodates the first 15 team members. Additional pitches on the campsite may be booked for €675,- ,including 9% VAT. Spaces may be limited by the event organization.

Considering the volatile COVID-19 situation, all invoices for registration fees and campsite fees will be dated April 1st 2021 and due seven days later on April 8th 2021.

Payments for registration fees and campsite fees can only be made via bank transfer. In exceptional cases, credit card payments are accepted at a surcharge.

To confirm a team registration after the registration procedure as mentioned in NL1.5, a deposit of €200,- must be made via PayPal. The deposit will be returned after the event if the team returns their transponder and leaves their pit garage and campsite spot at the set times and in clean condition.

Refund Policy

In case the organizer cancels the event at any date, registration fees, campsite fees and deposits are 100% refundable.

In case a team cancels their participation for any reason, at any date, registration fees ,campsite fees and deposits are not refundable.

Important information regarding 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 direct 0% reverse charge is legally not possible.

NL1.5

Registration Procedure

To be able to participate in FSN21, all teams must create an FSN MyTeam account on the competition website before February 1st 2021 23:59 CET.

All teams must also have a valid FSG account for uploading files. It is mandatory to participate in the FSG2021 registration quiz to obtain a valid account. The result of the FSG quiz is not of importance. See NL2 for more details.

Registration for FSN21 commences in two phases, a pre-registration procedure and a regular registration procedure.

In the pre-registration procedure, starting on January 1st 2021, the top-3 finishers from FSN2019 from both classes are invited to participate in FSN21. Afterwards, all teams from the Netherlands, Belgium and Luxemburg (BeNeLux) are invited to the competition. Furthermore the top 1/3 teams from either class in Formula Student Online are pre-registered. Teams eligible for a position via the pre-registration procedure have until February 1st 2021 to confirm their entry by making the deposit as mentioned in NL1.4 via PayPal.

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: Formula Student Online EV

TU Munich – TUfast e-technology
RWTH Aachen – Ecurie Aix Formula Student Team RWTH Aachen
PT Milano – Dynamis PRC
UFSC – Ampere Racing
DHBW Stuttgart – DHBW Engineering
U Zagreb – FSB Racing Team
TU Freiberg – Racetech Racing Team

Registration Slots: Formula Student Online CV

HAW Hamburg – HAWKS Racing
TU Valencia – FSUPV Team
UAS Esslingen – Rennstall Esslingen
CTU Prague – CTU CarTech
U Bath – Team Bath Racing
U Paderborn – UPBracing Team

Registration Slots: BeNeLux EV

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

Registration Slots: BeNeLux CV

UAS Arnhem – HAN Formula Student

Wildcards

There will be no wildcards for FSN21.

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 February 5th 2021 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 correct.
- Questions may be asked about the FS Rules 2020/2021, the FSN grey area clarification document, as well as general engineering practices and knowledge.
- The quiz may consist of 10-20 questions. The maximum time will be 120 minutes.
- 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 <small>(yyyy/mm/dd)</small>	Deadline	Class
TBD	ESF Add Item Request	EV
TBD	Electrical System Form (ESF)	EV
TBD	Impact Attenuator Data (IAD)	ALL
TBD	Structural Equivalency 3D Model (SE3D)	ALL
TBD	Structural Equivalency Spreadsheet (SES)	ALL
2021-04-01 13:00 CEST*	Fuel Type Order (FTO)	CV
TBD	SES Approval (SESA)	ALL
2021-05-01 13:00 CEST*	Magazine Uploads (MU)	ALL
2021-05-01 13:00 CEST*	Design Spec Sheet (DSS)	ALL
2021-05-01 13:00 CEST*	Team Member Registration Form (TMRF)	ALL
TBD	Business Plan Pitch Video (BPPV)	ALL
TBD	Engineering Design Report (EDR)	ALL
2021-06-18 13:00 CEST*	Cost Report Documents (CRD)	ALL
2021-06-18 13:00 CEST	Electrical System Officer Qualification (ESOQ)	EV
2021-06-25 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 FSN21 Competition Handbook. All documents and deadlines are subject to section A5 of the 2020/2021 Rules.

To improve document control and response times, in 2021 more documents must be uploaded through your FSG account. A joint European team of scrutineers will check documents through their system.

All documents must comply with a maximum of 40 MB. In any case, if a document upload fails. Please contact the FSN Team via info@formula-student.nl

- 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 2020/2021 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 2020/2021 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 2020/2021 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 2020/2021 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 2020/2021 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 2020/2021 Rules.

Format: Any common video format (preferably .mp4)

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 2020/2021 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 FSN21 a DBOM for the 'Suspension System' must be submitted*

For FSN21 a CBOM for the 'Electrical System' must be submitted*

*to be confirmed

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. The top-5 finishers from Formula Student Online have scrutineering priority over the other teams for the first try as specified per class below:

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, including pre-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 2020/2021 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 2020/2021 FS 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 2020/2021 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 2020/2021'

All partaking drivers must attend the mandatory driver briefings. An online briefing may substitute the driver briefings.

NL5.1 Skid Pad Event

The Skid Pad Event will be held according to section D4 of the 'Rules 2020/2021'.

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 2020/2021'. There is no "Top X Shoot-out".

NL5.3 Autocross Event

The Autocross Event will be held according to section D6 of the 'Rules 2020/2021'.

NL5.4 Endurance & Efficiency Event

The Endurance Event will be held according to section D7 of the 'Rules 2020/2021'.

A track map will be released prior to the competition