

# **2021 Formula Student Taiwan -Design Competition- 2021 TSF Participation Rules (Issued:2021/4/14)**

2021 Formula Student Taiwan(FST) is hosted by the FST in accordance with the rules described below, the Formula SAE® Rules 2020, the Formula SAE® Rules 2021, the 2021 FST Participation Rules, and the 2021 FST Local Rules. Items described in the Participation Rules and the Local Rules must take priority over the Formula SAE® Rules 2021.

## **Article 1 Competition Name**

2021 Formula Student Taiwan -Design Competition-  
Abbreviation Code: FST

## **Article 2 General Policy**

ALL events (Presentation, Cost and Manufacturing, Design event) are to be held on-site..

## **Article 3 Date**

Onsite Events: from Tuesday, August 24 to Friday, August 27

\* Unless specified, all dates adopt Taiwan Standard Time(GMT+08:00).

## **Article 4 Venue/Onsite Event**

Lihpao Racing Park, Taichung, <http://www.lihpaoracing.com.tw/tw/>

## **Article 5 Organizer/Co-Organizer**

**Organizer:** NCKU formula racing  
NCTU Vulpes Racing

**Co-Organizer:** NCTU Rewards Crowdfunding Club

## Article 6 Formula Student Taiwan Office

Formula Student Taiwan

Address:

-Department of mechanical engineering, National Cheng Kung University, No.1 University Road, Tainan City 701401 , Taiwan, (R.O.C)

-To NCKU formula racing

-Room 437, Engineering building E, National Yang Ming Chiao Tung University, No. 1001, Dasyue Rd., East Dist., Hsinchu City 300093 , Taiwan (R.O.C.)

-To NCTU Vulpes Racing(room 119)

Email:[formulastudenttaiwan@gmail.com](mailto:formulastudenttaiwan@gmail.com)

## Article 7 Competition Officers

Board of Taiwan Student Formula

Chairperson:	To be determined
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Vice Chairpersons:	To be determined
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Rules Committee

Chairperson:	To be determined
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Vice Chairpersons:	To be determined
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Advisor	Claude Rouelle
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Executive Committee

Chief design judge	Claude Rouelle
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Chairperson:	To be determined
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Vice Chairpersons:	To be determined
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Technical Inspection Leader:	Claude Rouelle
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EV Leader:	To be determined
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Presentation Event Leader:	To be determined
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Cost & Manufacturing Event Leader:	To be determined
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Design Events Leader:	To be determined
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Dynamic Events Leader:	To be determined
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Secretariat:	To be determined
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## Article 8 Official Languages

Chinese or English

## **Article 9 Competition Classes**

1.ICV Class

2.EV Class

Up to a total of 10

## **Article 10 Vehicle Production Regulations**

The vehicles must be fabricated in compliance with

-Formula SAE® Rules 2020

-Formula SAE® Rules 2021

(If there should be any discrepancy or contradiction in between, take the 2020 FSAE rule as the criterion)

## **Article 11 Participation Requirements**

The teams must fulfill the following requirements.

**1. Educational institutes must be permitted to register only one team and one vehicle, excluding the following cases**

- 1) An institute has multiple campuses and each campus has one team.
- 2) An institute has one team in the ICV class and one team in the EV class.
- 3) A team is composed of members from two or more educational institutes.

### **2. Team members**

- 1) Team members must be students of national colleges of technology, junior colleges, universities, graduate schools, or similar education / training institutes. Individuals who have graduated within seven months prior to competition date are also eligible. There is no age limit.  
Team member who have graduated during a year and seven months period prior to the competition remain eligible to participate.
- 2) There may be some limitations about the number of members allowed into the team pit at the site.
- 3) When one educational institute participates in both ICV and EV classes, team members and drivers may participate in both classes.
- 4) Drivers participating in the competition must be 18 years old or above complying with rule AD.3.3 of the Formula SAE® Rules 2021.

### **3. Faculty Advisors(FA)**

- 1) During the period of competition, a FA must be responsible for all team activities including noncompetition matters related to safety, health, and the attitudes of team members, and must also accompany the team throughout the competition.
- 2) The FA must be responsible for all team activities as a representative of the educational institute and must register for the competition in the same way as the team members.
- 3) The FA must be a member of the faculty staff of the educational institute to which the team belongs.
- 4) A team may have multiple FAs and FAs may be changes until the team registers on-site.
- 5) Teams without an FA must not be allowed to participate in the competition. If the FA is absent during the onsite events, the team members must not be allowed to work on the vehicle or participate in any events during the absence. (The FA must stay within the event venue and remain in contact with the team.)
- 6) If the educational institute participates in both the ICV and EV class, the FA may be responsible for both ICV and EV entries.
- 7) Teams composed of members from two or more educational institutes must have at least one FA from each institute.

### **4. Electrical System Officer (ESO) and Electric System Advisor (ESA) – EV Class Only**

- 1) An ESO must accompany the car whenever it is operated or moved around the event site.
- 2) The FA may be the ESA if the requirements are met.
- 3) The ESA must have significant experience of the technology that is being developed and its implementation into vehicles or other safety critical systems, such that they are adequately qualified to advise the team on their proposed electrical and control system designs. Note: It is not necessary for the ESA to be a staff member of the educational institute. Teams may have more than one person acting as ESA to achieve this requirement. (Refer to rules AD.5.2 and AD.5.3 of the Formula SAE® Rules 2021.)

### **5. Insurance**

All team members and FAs must have effective insurance to cover injury and medical treatment during the period of the onsite events.

Note: It is highly recommended that teams obtain insurance that covers their Formula Student activities 4 throughout the year.

## Article 12 Team Participation Application

1. **Application:** From 00:00(GMT+08:00), Tuesday, March 30, 2021

2. **Application Deadline:** 12:00(GMT+08:00), Wednesday, April 14, 2021

3. **How to Apply**

Teams would have to sign up the affidavit letter and send an email to the official email address before Wednesday, 17:00(GMT+8:00), April 21.

In addition, team would have to submit the signed affidavit letter to the address stated below.

Address:

Room 437, Engineering building E, National Yang Ming Chiao Tung University, No. 1001, Dasyue Rd., East Dist., Hsinchu City 300093 , Taiwan (R.O.C.)

To:YOU-CHENG SYU

4. **Registration Fee:**

20,000 NTD per team (tax included)

Teams would have to transfer registration fee to designated account, and send an email to the official email address.

**The content in email must include bank receipt and Remitter's account, and send before Monday, 17:00(GMT+08:00), May 31.**

5. **Payment: Bank Transfer (only the following details are valid)**

1) Bank Details:

Bank Name: CTBC BANK

Account No.: 822-613540-570283

## Article 13 Submission of Documents

Documents for registration and the competition events must be submitted as follows.

1. **Registration documents**

**Information about the registration documents will be released on the team page.**

Documents to be submitted	Submission Deadline	Submit to	Note
Copies of student IDs with pictures	14:00 (GMT+08:00) July 20	Team Page	Not required if ALL team members of the societies listed in Article 12.
Copies of driver's license			All drivers are required to submit a copy of their driver's license
Certificate of insurance coverage			Check the Information of the registration documents on the team page

## 2. Documents for Events

If a team fails to submit (or is regarded as failing to submit) the required documents, that team may be disqualified from the competition.

Category	Items to be submitted	Submission format(file format/ maximum size)	Submit to	Note	Deadline		
EV (EV Class only)	ESO ESA form	Dedicated format for FSAE/ 10MB	Team page	If it changes after the deadline, send the changed version to <a href="mailto:formulastudenttaiwan@gmail.com">formulastudenttaiwan@gmail.com</a>	12:00(GMT+08:00) April 22		
ETC (ICV using ETC only)	Electronic Throttle Control(ETC) Notice of intent	Word/10MB		Also submit the ESF for ETC			
	Electrical Systems Form(ESF)	Dedicated format for FSAE/ 20MB		Re-submission may be requested several times depending on degree of completion. (Article 15)	Start Submission	12:00 (GMT+08: 00), May 10	
EV (EV Class only)	Electrical Systems Form(ESF)	Dedicated format for FSAE/ 20MB			Deadline	12:00 (GMT+08: 00), July 26	
	Failure Modes and Effects Analysis(FMEA)	Dedicated format for FSAE/ 20MB		No-submission Team is disqualified from FSAEJ (Article 14)		Start Submission	12:00 (GMT+08: 00), April 15
Technical Inspection	Structural Equivalency Spreadsheet	Excel/20MB			Deadline	12:00 (GMT+08: 00), June 25	
				12:00, August 14			
Shakedown Certificate		MPG, WMV,20MB					
Cost and Manufacturing	Refer to the Local Rules NO.2				Beginning of June		
Design Event	Refer to the Local Rules NO.2				Middle of June		
Presentation Event	Refer to the Local Rules NO.2				End of June		

The following penalty will be counted on the Overall Score

Category	Submission past deadline	Re-submission	Required level not achieved	Non-submission
EV	10-point penalty for each day past the deadline		Regarded as “not submitted”	Disqualified from FST
ETC				Use of ETC prohibited
Technical Inspection				Disqualified from FST
Cost and Manufacturing Event	Design Event will be on-site form. (Presentation, Cost and Manufacturing Event would be optional to hand in)			
Design Event				
Presentation Event				
Shakedown Certification				Disqualified for the Technical Inspection

## Article 14 Submission of SES

### 1. Aim of submission

Early completion of SES is required as the most effective means of incorporating its details and regulations into the vehicle design, and enabling all cars participating in the competition to proceed to the dynamic events.

The SES Templates that can be downloaded from FSAE Online.com (<http://www.fsaeonline.com/>) must be used.

### 2. Submission deadlines

-Start submission: 12:00(GMT+08:00), Thursday April 15, 2021

If the teams intend to participate in the competition, they must submit the SES in time before Deadline below.

-Deadline: 12:00(GMT+08:00), Friday, June 25, 2021.

This deadline will not be extended and any delays will be regarded as “not submitted.”

The team whose SES is regarded as unsuitable at the Deadline will be disqualified from the competition.

**Regardless of the result of SES, teams will not be permitted to pass the Technical Inspection if the vehicle is regarded as unsuitable at the Technical Inspection.**

### 3. Screening score

The acceptable level at the initial SES is scored by the number of its passed items. This score will not be disclosed. However, the order of the Technical Inspection schedule will be determined using this SES screening scores. This schedule will be released on the team page before the competition.

## Article 15 Submission of ESF and FMEA

### 1. Aim of submission

The screening of electrical system design documents is emphasized as the most effective means of ensuring the safety of EV design, and enabling to proceed to Dynamic Events.

Resubmission may be requested several times depending on the degree of completion.

Teams should use the dedicated FSAE templates for ESF and FMEA . Please note that additional items may be requested at a later date to supplement the contents of these templates.

### 2. Submission deadlines

-Start submission: 12:00(GMT+08:00), Monday, May 10, 2021.

-Deadline: 12:00(GMT+08:00), Monday, July 26,2021.

This deadline will not be extended and any delays will be regarded as “not submitted”.

Teams that fail to meet this deadline will be penalized and documents that are not received by the extended deadline will be regarded as “not submitted.”

**Regardless of the result of ESF/FMEA, teams will not be permitted to pass the EV Technical Inspection if the vehicle is regarded as unsuitable at the EV Technical Inspection.**

In order to receive more feedback rally, it is recommended to resubmit the ESF or FMEA without waiting for the resubmission deadline. The feedback method for SES is different from ESF/ FMEA.

ESF feedback will not be provided for teams that are excluded from team entry, including those disqualified by SES.

### 3. Screening score

The acceptable level at each submissions is scored by the number of its passed items. This score will not be disclosed. However, an “ESF Certificate” will be issued on the team page if the team passes all ESF items. The order of the EV Technical Inspection schedule will be determined using the documents screening scores. This schedule will be released on the team page before the competition.

The ESF of the unpassed teams will be re-checked before the EV Inspection. They must bring their finalized ESF at the venue. This re-checking schedule will be released on the team page before the competition.



## **Article 16 Submission of Charging Plug Spec Form**

The Cable would be prepared by the host.

If needed, teams need to prepare plug adapter by themselves.

## **Article 17 Business plan presentation Event (optional)**

Teams who have submitted the SPD is eligible for Business plan presentation event.

The business concept would be released in FST local rules.

## **Article 18 Cost and Manufacturing Event (optional)**

Teams who have submitted the Cost-report is eligible for Business plan presentation event.

The business concept would be released in FST local rules.

## **Article 19 Design Event**

Since the time allocated to the Design event in the FST is limited, pre-screening of the design documents is emphasized to ensure that the event is productive. The relevant documents must be read thoroughly to ensure submission of design documents with a high degree of completion. The relevant documents are scheduled to be posted on the official Competition homepage or on [FSAEOnline.com](http://www.fsaonline.com/) (<http://www.fsaonline.com/>) during January 2019. These documents include:

- Guidelines for creating excellent three-view drawings (Three View Drawing Excellence),
- Details of how the Design Event is scored (Formula SAE Design Judging Score Sheet)
- Guidance related to the design judging procedure (FSAE Design Judging: A Student Guide for Understanding the Process)

If different interpretations can be obtained from similar materials, the information on the official Competition homepage shall take precedence.

Teams that are unclear about decisions made during the Design Event should submit a formal Q&A.

The detail would be released in FST local rules.

## **Article 20 Shakedown Certificate**

Teams must submit a **Shakedown Certificate\*** by 12:00(GMT+08:00), Saturday, August 14, 2021.

In order to prove the completion level of the car. Teams that fail to submit this certificate or if the certificate is not satisfactory must not be permitted to participate in the Technical Inspections.

## **Shakedown Certificate\***

This certificate must consist of video images of the car moving forward, accelerating, and stopping. A team plate with the following information must be included in the video

- Name of the University
- car number
- location information
- date
- name of team FA

Note: A sample movie is provided on the team page.

When making the movie, teams must use the driver equipment and impact attenuator, and ensure that driving takes place in a safe location.

**Submission method:** Upload to the team page.

### **The document must conclude:**

- Car engine being started from the cockpit (no student pushing the cars to start it)
- Car accelerate
- Car being able to take an hairpin tight radius of 4.5 meters outside radius and 1 meter inside radius, The team must be recreating this hairpin with cones.
- Braking and lock up all 4 wheels.
- Once the car is stopped driver being able to get out of the cockpit in less than 5 seconds

**File format/size:** mpg, wmv (For Windows Media Player)/maximum 20 MB

### **- EV Class Only –**

Teams must submit moving images of the shutdown button operating properly. The images must show that the shutdown complies with the following: “the voltage in the tractive system drops to under 60V DC or 25V AC RMS in less than five seconds after opening the shutdown circuit”.

## **Article 21    Dynamic Events**

Teams must pass the Technical Inspections to proceed to the Dynamic Events. It will be conducted in accordance with Formula SAE® Rules 2021.

## Article 22 Schedule of 2021 Taiwan Student Formula

Tuesday, March 30

Beginning of Participating Application



Wednesday, April 14

Deadline of Participating Application

Beginning to Submit the Documents on the team page



Saturday, April 15

Electrical Systems Officer(ESO) and Advisor(ESA) Form [For EV]

Start submission for Structural Equivalency Sheet(SES)



Thursday, April 15

Delayed Deadline for Electrical Systems Officer(ESO) and Advisor(ESA) Form [For EV]

Deadline for Electronic Throttle Control [For ICV using ETC].

Deadline for Electrical System Form (ESF) [For ICV using ETC].



Monday, May 10

– EV Class Only –

Deadline for **Electrical System Form (ESF) and Failure Modes and Effects Analysis (FMEA)**

– ICV Class using ETC Only –

Deadline for **Electrical System Form (ESF) for ICV Class**



Tuesday, June 15

Deadline for Documents for **Cost and Manufacturing Event**



Sunday, July 4

Deadline for Document for **SPD**



Thursday, July 15

Deadline for Document for **Design Event**



Saturday, August 14

Deadline for Document for **Shakedown Certificate**



Friday, August 20

Deadline for **Cost Addendum Event**



## **Article 23 Official Q&A**

Any questions about these rules, the various other rules, or the Competition in general must be submitted via the official Q&A form on the team page that will be set up after the entry period. The purpose of the official Q&A is to ask questions about the interpretation of the Rules and to make requests to the judges. Any questions should be thoroughly discussed with team members, FAs, and the experienced before posting.

Questions such as [a] - [e] below will NOT to be answered.

[a]: Repetition of the same questions asked by other teams in same year

[b]: Checking the acceptability of individual cases

[c]: The items clearly mentioned in the Rules

[d]: Technically elementary items

[e]: Failure to mention the full name of the questioner (GR.5.2.1).

Failure to understand the above may be to warn the FA and Team Captain.

## **Article 24 Awards**

-1st prize \$150,000 NTD

-2nd prize \$100,000 NTD

-3rd prize \$50,000 NTD

-Morning Star prize \$20,000 NTD

(The prize might be changed to equivalent award)

## **Article 25 Supplements**

1. 2021 Local Rules will be announced on the official website at any time if it needs.
2. On participating in 2021 FST, each team and the members must thoroughly read and comprehend the contents of the Formula SAE® Rules 2020, Formula SAE® Rules 2021 and 2021 Local Rules.
3. In case teams abandon to participate in the competition after the last update of the team list, please declare to do so (Formula SAE® Rules 2021 AD.6.5) with the least delay. The details would be posted on team page.

4. Teams must comply with Taiwanese laws.
5. When any doubt occurs as to the interpretation of the Rules, the decision of Rule Committee and 2021 Execution Committee has priority over all others.
6. The organizers, sponsors, and supporting institutions must assume no responsibility whatever for any accident or damage that may occur during the competition unexpectedly. The competition may be stopped based on the judgment of the organizers due to poor weather, unforeseen, or unavoidable circumstances. Any onsite events may be cancelled depending on the infection of COVID-19.