

2021 Formula SAE Japan – Monozukuri Design Competition – 2021 FSAEJ Participation Rules

Issued: December 21, 2020

Updated: June 1, 2021

2021 Formula SAE Japan (FSAEJ) is hosted by the Society of Automotive Engineers of Japan (JSAE) in accordance with the rules described below, the Formula SAE® Rules 2021, the 2021 FSAEJ Participation Rules, and the 2021 FSAEJ 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 SAE Japan - Monozukuri Design Competition -
Abbreviation Code: FSAEJ

Article 2 General Policy

2021 FSAEJ will operate All Static events (Presentation, Cost and Manufacturing, Design event) as virtual. Technical Inspections and Dynamic events are to be held on-site.
The details of the virtual event will be released in 2021 FSAEJ Local Rules No.2.
2021 FSAEJ accepts Japanese teams ONLY.

Article 3 Date

Virtual Events: August 2021
Onsite Events: from Tuesday, September 7 to Saturday, September 11, 2021
* Unless specified, all dates adopt Japan Standard Time (JST).

Article 4 Venue/Onsite Event

ECOPA (Ogasayama Sports Park), Shizuoka Prefecture, URL: <https://www.ecopa.jp/english/>

Article 5 Organizer

Society of Automotive Engineers of Japan, Inc. (JSAE)

Article 6 Formula SAE Japan Office

Society of Automotive Engineers of Japan, Inc. (JSAE)
Address: 10-2 Gobancho, Chiyoda-ku, Tokyo 102-0076 Japan
Tel.: +81-3-3262-8214, email: formula@jsae.or.jp, URL: <https://www.jsae.or.jp/formula/en/>

Article 7 Competition Officers

Board of Formula SAE Japan

Chairperson: Yoshiaki Matsuzono

Vice Chairpersons: Seigo Kuzumaki

Yuichi Azuma

Rules Committee

Chairperson: Takuya Saito

Vice Chairperson: Natsuo Tsuji

Executive Committee

Chairperson: Hiroaki Mizutani

Vice Chairpersons: Yuu Oowada

Naoto Sunako

Technical Inspection Leader: Hideyuki Nishi

EV Leader: Kazunari Shirai

Presentation Event Leader: Takahiko Masuda

Cost & Manufacturing Event Leader: Ken Suzuki

Design Event Leader: Junichi Hasegawa

Dynamic Events Leader: Hirotaka Nakazawa

Secretariat: Shinichiro Doi, Hideyuki Iijima, Toru Kodaka

Article 8 Official Languages

Japanese or English

Article 9 Competition Classes

1. ICV Class

2. EV Class

Up to a total of 70 teams may participate.

Note for ICV teams: Gasoline will be the only fuel provided. No E85 will be provided.

Article 10 Vehicle Production Regulations

The vehicles must be fabricated in compliance with the Formula SAE® Rules 2021 and 2021 FSAEJ Local Rules.

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 the competition date are also eligible. There is no age limit.
Team members 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 non-competition 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 throughout the year.

Article 12 Team Participation Application

1. **Application:** From 12:30, Tuesday, January 19, 2021

2. **Application Deadline:** 14:00, Monday, January 25, 2021

3. How to Apply

Please apply online via the following website.

<https://tech.jsae.or.jp/formula/2021team/registration.aspx>

4. **Number of Registered Teams:** The upper limit is **70 teams**.

The registered teams are determined by the following priority order.

First priority: The 20 teams with the highest overall score at the 2019 Formula SAE Japan and 2018 Student Formula Japan.

Aichi Institute of Technology, Ibaraki University, Osaka University, Kyoto Institute of Technology, Kyoto University, Kobe University, Saitama University, Shizuoka University, Shizuoka Institute of Science and Technology, Shibaura Institute of Technology, Sophia University, Tokai University, Tokyo City University, Tokyo University of Agriculture and Technology, Tokyo University of Science, Nagoya Institute of Technology, Nagoya University EV, Nippon Institute of Technology, Nihon Automobile College, University of Fukui, Meijo University, Yokohama National University, Ritsumeikan University, Waseda University,

Second priority: EV Class Teams

Third priority: Teams that the JSAE have approved as a special case.

Fourth priority: In order of application arrival

5. Finalizing the Registration

The first **Pending List** will be released on Friday, January 29, 2021 on the FSAEJ official website (<https://www.jsae.or.jp/formula/en/>).

The deadline for payment of the registration fee is Friday, February 5 2021.

Note: The Pending List contains the teams that can register for 2021 FSAEJ by paying the registration fee.

The Waiting List contains the teams waiting to be moved to the Pending List.

- After application, teams will be allocated to the Pending List or Waiting List in the above priority order. Teams at or above 70th place in this order will be placed on the Pending List and teams at or below 71st place will be allocated to the Waiting List.
- Teams must complete their registration by paying the registration fee only after being placed on the Pending List.
- Teams must submit an image of their payment certification to the FSAEJ Office by email (formula@jsae.or.jp).
- Teams that fail to submit this payment certification image by the payment deadline will be regarded as withdrawn and removed from the Pending List.
- If 70 teams have not completed registration by February 8, 2021, teams on the Waiting List will be added to the Pending List following the priority order.
- After Monday, February 15, 2021, the pending list will be updated every Monday until the 70th team is added, and the deadline for payment of the registration fee will be Friday of the same week.
- Teams on the Waiting List **MUST NOT** pay the registration fee. Once paid, the registration fee will not be refunded under any circumstances.
- The last update to the Pending list and Waiting list is scheduled for Monday, July 12, 2021.
- All schedules of the Team Participation Application may be changed due to unavoidable

circumstances.

6. Additional Application

If the number of Registered Teams does not reach the upper limit (70 teams), an additional application may be opened after January 25, 2021.

7. Registration Fee: There are two classes of registration fee.

- 1) If all team members (including FAs) are members of one of the following societies except ESA:
**(1) SAE International (2) SAE Australasia (3) SAE Brazil (4) IMechE (5) VDI or (6) JSAE:
¥110,000 per team (tax included)**

Note: All members must be qualified as a member of one of societies (1) - (6) and input their membership number upon registration.

- 2) **In all other cases: ¥220,000 per team (tax included)**

Note: This fee includes consumption tax. This tax is charged to both Japanese and non-Japanese participants in accordance with the law. **All bank charges must be paid by the team.**

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

- 1) Bank Details:

Bank Name: MUFG Bank, Ltd., Ichigaya Branch
(Bank No.: 0005-014)

Account Holder: SOCIETY OF AUTOMOTIVE ENGINEERS OF JAPAN, INC.

Account No.: 1299678 (Ordinary)

SWIFT BIC: BOTKJPJT

SWIFT code: BOTKJPJTXXX

Bank Address: 4-1, Kojimachi, Chiyoda-ku, Tokyo, 102-0083 Japan

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, July 20	Team Page	Not required if ALL team members are 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.

[NOTE] Team Page Login: <https://tech.jsae.or.jp/formula/2021team/login.aspx>

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	Delay Deadline	
EV (EV Class only)	ESO/ESA form	dedicated format for FSAEJ/10MB	Team page	If it changes after the deadline, email to formula@jsae.or.jp	14:00, February 26.	14:00, March 3	
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 FSAEJ/20MB		Re-submission may be requested several times depending on degree of completion. (Article 15)	Initial Submission Deadline	14:00, May 10	14:00, May 15
EV (EV Class only)	Electrical Systems Form (ESF)	dedicated format for FSAEJ/40MB			Resubmission Deadline	14:00, July 1	
	Failure Modes and Effects Analysis (FMEA)	dedicated format for FSAEJ/20MB			Final Resubmission Deadline	14:00, July 26	
Technical Inspection	Structural Equivalency Spreadsheet (SES)	Excel/20MB		No-submission Team is disqualified from FSAEJ (Article 14)	Initial Submission Deadline	14:00, March 12	
					1st Resubmission Deadline	14:00, May 10	
			2nd Resubmission Deadline		14:00, June 11		
Shakedown Certificate		MPG, WMV/20MB		—	14:00, August 27		
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 FSAEJ
ETC				Use of ETC prohibited
Technical Inspection				Disqualified from FSAEJ
Cost and Manufacturing Event	Refer to the Local Rules No. 2			
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.fsaonline.com/>) must

be used.

2. Submission deadlines

-Initial submission deadline: 14:00, Friday, March 12, 2021. This deadline will not be extended and any delays will be regarded as “not submitted.”

The result of the initially submitted document will be returned to the team by Friday, April 23, 2021. In some cases, teams may be asked to resubmit the SES.

This is same as the teams on the Pending and Waiting Lists. If the teams intend to participate in the competition, they must submit the SES in time above initially.*

-1st resubmission deadline: 14:00, Monday, May 10, 2021. This deadline will not be extended and any delays will be regarded as “not submitted.”

The result of the resubmitted document will be notified to the team by Friday, May 28, 2021. In some cases, teams may be asked to resubmit the SES again.

-2nd resubmission deadline: 14:00, Friday, June 11, 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 2nd resubmission will ~~be disqualified from the competition.~~ **NOT be permitted to participate in the Technical Inspections.**

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.

*After the initial deadline, the resubmission deadlines are indicated to the teams on the Pending and Waiting Lists independently. In this case, teams can resubmit SES twice same as above and the team whose SES is regarded as unsuitable at the 2nd resubmission try will ~~be disqualified from the competition.~~ **NOT be permitted to participate in the Technical Inspections.**

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.

4. Criteria for regarding documents as “not submitted” at the initial deadline

The documents will be regarded as “not submitted” if roughly one-third or more of the document items are not completed.

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 FSAEJ templates for ESF and FMEA (posted on the team page at the end of March 2021). Please note that additional items may be requested at a later date to supplement the contents of these templates.

2. Submission deadlines

-Initial submission deadline: 14:00, Monday, May 10, 2021. 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.”

-Resubmission deadline: 14:00, Thursday, July 1, 2021. If the unpassed teams fail to resubmit the documents by this deadline, they will get zero points for this item and may descend the order of EV Inspection.

-Final resubmission deadline: 14:00, Monday, July 26, 2021.

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.

4. Criteria for regarding documents as “not submitted” at the initial deadline

The documents will be regarded as “not submitted” if roughly one-third or more of the document items are not completed.

Article 16 Submission of Charging Plug Spec Form

1. Aim of submission

This is the documents for EV Class teams in order to prepare its charging facilities by identifying the specifications for charging accumulator containers at the venue.

Teams must submit the Charging Plug Spec Form. (posted on the team page at the end of March 2021).

2. Submission deadlines

14:00, Saturday, May 15, 2021.

3. No Submission

If teams don't submit this form, their charging facilities will not be prepared at the venue.

Article 17 Submission of Self-Checked EV Inspection Sheet

1. Aim of submission

This is the documents for EV Class teams in order to check the safety of their vehicles at an early stage and to proceed all EV teams to Dynamic Events.

Teams must submit the Self-Checked EV Inspection Sheet. (posted on the team page at the end of July 2021).

2. Submission deadlines

14:00, Friday, August 27, 2021.

3. No Submission

If teams don't submit this form, they may be descended the order of EV Inspection and be excluded from some of its exemptions.

4. How to check

According to the sheet, teams check all the items and submit the results of ○× judgment. Items that cannot be measured due to lack of the equipment should be marked with "-". There are some deducted points for dishonest actions such as assigning the scores that deviates from the vehicle brought to the onsite events.

Article 18 Presentation Event

Presentation Event will be held as virtual event before the onsite events. It will be conducted in accordance with 2021 FSAEJ Participation Rules, Local Rules, and Formula SAE® Rules 2021.

Refer to the Local Rules No. 2 issued separately.

Article 19 Cost and Manufacturing Event

Cost and Manufacturing Event will be held as virtual event before the onsite events. It will be conducted in accordance with 2021 FSAEJ Participation Rules, Local Rules, and Formula SAE® Rules 2021.

Refer to the Local Rules No. 2 issued separately.

Article 20 Design Event

Design Event will be held as virtual event before the onsite events. It will be conducted in accordance with 2021 FSAEJ Participation Rules, Local Rules, and Formula SAE® Rules 2021.

Refer to the Local Rules No. 2 issued separately.

Article 21 Shakedown Certificate

Teams must submit a **Shakedown Certificate*** by 14:00, Friday, August 27 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

(1) Name of the University, (2) car number, (3) location information, (4) date, (5) 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.

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 22 Dynamic Events

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

Article 23 Schedule of 2021 Formula SAE Japan

Tuesday, January 19

Beginning of Participating Application



Monday, January 25

Deadline for Participating Application



Friday, January 29

Notification of the Team Lists is on the official website.

Teams on the Pending List may pay the registration fee by the payment deadline.

After Monday, February 8, the Pending List is going to be updated every Monday until the 70th team is added.



Monday, February 15

Beginning to Submit the Documents on the team page



Friday, February 26

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

Notice of Intent for Electronic Throttle Control [For ICV using ETC].



Friday, March 12

Initial Deadline for **Structural Equivalency Sheet(SES)**



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**



Beginning of June

Deadline for **Documents for Cost and Manufacturing Event** (Refer to the Local Rules No.2)



Middle of June

Deadline for **Documents for Design Event** (Refer to the Local Rules No.2)



End of June

Deadline for **Document for Presentation Event** (Refer to the Local Rules No.2)



Monday, July 12

The last update date for the Team Lists



Tuesday, July 20

Deadline for **the Registration Documents**



End of July

Static Document screening result with penalties

(Refer to the Local Rules No. 2)



Friday, August 27

Deadline for **Shakedown Certificate**



September 9 to 11

2021 Formula SAE Japan on-site

Article 24 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.

*Team page: <https://tech.jsae.or.jp/formula/2021team/login.aspx>

Article 25 Awards

Outstanding Performance Awards, Categorized Awards and Special Awards

*The details will be released in **July 2021**.

Article 26 Supplements

- 2021 Local Rules will be announced on the official website at any time if it needs.
 - Local Rule No.1 (Technical Inspection, EV Inspection, etc.) is issued on December 21, 2021.
 - Local Rule No.2 (Static Events, Dynamic Events, etc.) will be issued in the end of January.
- On participating in 2021 FSAEJ, each team and the members must thoroughly read and comprehend the contents of the Formula SAE® Rules 2021 and 2021 Local Rules.
- 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.
- Teams must comply with Japanese laws.
- 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.

Revision Record

March 15, 2021:

Article 13 Submission of Documents 2.Documents for Events (EV Class Only), the ESF file size.

June 1, 2021:

Article 14 Submission of SES, the unsuitable at the 2nd resubmission.

Article 25 Announcement month.