

2019 Formula SAE Japan
– Monozukuri Design Competition –
2019 FSAEJ Participation Rules
(Issued: December 21, 2018)

2019 Formula SAE Japan is hosted by the Society of Automotive Engineers of Japan (JSAE) in accordance with the rules described below, the Formula SAE® Rules 2019, 2019 FSAEJ Participation Rules and 2019 FSAEJ Local Rules. Items described in the Participation Rules and the Local Rules shall take priority over the Formula SAE® Rules 2019.

Article 1 Competition Name

2019 Formula SAE Japan - Monozukuri Design Competition -
(Code)FSAEJ

Article 2 Date

From Tuesday, August 27 to Saturday, August 31, 2019

* All the date is scheduled by Japan Standard Time (JST), if not specified.

* The detailed time schedule of the competition will be announced by Official Announcement later.

Article 3 Venue

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

Article 4 Organizer

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

Article 5 Formula SAE Japan Office

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

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TEL: +81-3-3262-8214 E-MAIL: formula@jsae.or.jp

Article 6 Competition Officers

<Board of Formula SAE Japan>

Chairman:	Seigo Kuzumaki
Vice Chairmen:	Syunichi Toyomasu
	Hiroshi Takemura
	Yuichi Azuma

<Rules Committee>

Chairman:	Takuya Saito
Vice Chairmen:	Natsuo Tsuji

<Execution Committee>

Chairman:	Hiroataka Nakazawa
Vice Chairmen:	Hiroaki Mizutani

Presentation Event Leader:	Takahiko Masuda
Cost & Manufacturing Event Leader:	Ken Suzuki
Design Event Leader:	Junichi Hasegawa
Dynamic Events Leader:	Hiroataka Nakazawa
Secretariat:	Shinichiro Doi, Hideyuki Iijima

Article 7 Official Languages

Japanese or English

Article 8 Competition Classes

1. ICV Class
2. EV Class

Up to 98 teams in total.

[NOTE for ICV]: Fuels provided are expected to be Gasoline Only. NO E85 provided.

Article 9 Vehicle Production Regulations

The vehicles shall be fabricated complying with the Formula SAE® Rules 2019 and 2019 FSAEJ Local Rules.

Article 10 Participation Requirements

The team shall fulfill the following requirements;

1. Team: Each educational institute shall be permitted to register only one team and one vehicle excluding following cases.

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

2. Team Members

- 1) Team members shall be the 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 for this.
- 2) When participating in both ICV and EV classes in one educational institute, team members and drivers can participate in both classes.
- 3) Drivers participating in the competition shall be 18 years old or above complying with the Formula SAE® Rules 2019 AD.3.3.

3. Faculty Advisors (FA)

- 1) During the period of competition, a FA shall be responsible for all team activities even regarding non-competition matters such as safety, health, and the attitudes of team members, and shall also accompany the team throughout the competition.
- 2) The FA shall be responsible for all team activities as a representative of each educational institute and shall register for the competition in the same way as the team members.
- 3) The FA shall be a member of the faculty staff of the educational institute to which the team belongs.
- 4) A team may have plural FAs and it is possible to change it until the onsite reception.

- 5) Teams without the FA shall not be allowed to participate in the competition. If the FA is absent during the competition, the team members shall not be allowed to work on the vehicle and any events during the absence. (Except that FA stay within the event venue and can get the contact in a minute)
- 6) During the period of competition, the FA shall accompany the team when using any facility or the like loaned by other educational institute, and an application shall be made to the manager of those facilities for approval.
- 7) If the educational institute participate in both ICV and EV Class, the FA who is both for ICV and EV Class is acceptable.
- 8) Teams composed by 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 operated or is moved around at the event site.
- 2) It is acceptable for the Faculty Advisor to 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 may be NOT necessary for ESA to be a staff of the educational institute. Teams may have more than one person for ESA to achieve this requirement.

(Refer to Formula SAE® Rules 2019 AD.5.2, AD.5.3)

5. Insurance

All team members and FAs must have an effective insurance to cover injury and medical treatments during the period of the competition.

[NOTE] It is highly recommended that teams get insured covering their Formula Student activities through a year.

Article 11 Team Participating Application

1. Application: From 10am, Tuesday, January 15, 2019

2. Application Deadline: 2pm, Friday, January 25, 2019

3. How to Apply

Please apply online via the following website.

https://tech.jsae.or.jp/formula/2019team_en/registration.aspx

4. The Number of Registered Teams: The upper limit is **98 teams at most**.

The registered teams are determined by following priorities in order:

First Priority: Top 20 Teams at Overall Score in 2018 and 2017 Student Formula Japan.

Ibaraki University, Osaka University, Okayama University, Kyoto Institute of Technology, Kyoto University, Kobe University, Shizuoka University, Shibaura Institute of Technology, Chiba University, Tokai University, Tokyo City University, Tokyo University of Agriculture and Technology, Tokyo University of Science, Toyohashi University of Technology, Nagoya Institute of Technology, Nagoya University EV, Nippon Institute of Technology, Nihon Automobile College, University of Fukui, Meijo University, Yokohama National University, Kasetsart University, Liaoning University of Technology EV, Tongji University, Tongji

[NOTE] The first priority of the team (EV or ICV) is the same class (EV or ICV) described in Overall.

Except that teams converts from ICV Class to EV Class.

Second Priority: The nationality of a team which countries are not listed in the First Priority in order of application arrival. (One country is only one count for Second Priority)

Third Priority: The team that JSAE approved as a special case.

Fourth Priority: In order of application arrival

5. Settling the Registration

The first **Pending List** and **Waiting List** will be released on Wednesday, January 30, 2019 on the official website. The deadline for payment of registration fee is at *11:59 pm on Friday, February 8, 2019 on the official website (<http://www.jsae.or.jp/formula/en/>). *At the local time of each teams.

[NOTE] The Pending List has teams which may register 2019 Formula SAE Japan if they pay the registration fee. The Waiting List has teams which are possible to be moved to the Pending List.

- After the Application, Teams on the Pending List and Waiting List are screened in the above priority orders. Teams above the 98th are on the Pending List and below 99th are on the Waiting List.
- Teams shall complete their registration by paying the registration fee only after they are placed on the Pending List.
- Teams must submit their payment certification image to FSAEJ Office by email: [formula@jsae.or.jp]
- If teams don't submit their payment certification image by the payment deadline, they are regarded as withdrawals and removed from the Pending List.
- If the number of teams that complete their registration doesn't reach 98 teams at the time of February 8, some teams on the Waiting List are added to the Pending List in priority orders.
- After Monday, February 18, 2019, the pending list is going to be updated every Monday until the 98th team is added and its deadline for payment of registration fee is *11:59 pm on Friday at the same week.
- Teams on the Waiting List **MUST NOT** pay the registration fee. The registration fee once paid will never be refunded under any circumstances.

6. Additional Application

If the number of Registered Teams doesn't reach the upper limit (98 teams), there is a possibility of additional application after January 28, 2019.

7. Registration Fee: There are two class of the registration fee.

- 1) If all team members (including Faculty Advisors (FA)) are members of one of the following societies: (1) SAE International (2) SAE Australasia (3) SAE Brazil (4) ANFIA (5) IMechE (6) VDI or (7) JSAE ----- ¥108,000 per team (tax included)

Notice: ALL members must be qualified as a member of one of (1)-(7) societies and input their Membership Number at their registration.

- 2) In all other cases: ----- ¥216,000 per team (tax included)

[NOTE] The consumption tax is including. It's charged to not only domestic participants but also overseas participants in accordance with the law. All bank charges must be paid by each team.

8. Payment: Bank Transfer ONLY as follows

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: 4-8-20 Kudan-minami, Chiyoda-ku, Tokyo, 102-0074 Japan

Article 12 Submission for Documents

The Submission for documents which are for the registration and competition events is as follows.

1. Registration Documents

The information for registration documents will be released on team page.

Documents to be Submitted	Submission Deadline	Submission Methods <Form/Capacity>	Important Notes (penalties, etc.)
Copies of student IDs with pictures	2pm, Fri, August 2	Upload to the Team Page	It doesn't need if ALL team members are the membership of listed societies on Article 11.
Copies of driver's license			ALL drivers are required to submit copies of Driver's License.
Certificate of Insurance Coverage			

[NOTE] Team Page Login: https://tech.jsae.or.jp/formula/2019team_en/login.aspx

2. Documents of Events

If teams don't submit the documents as follows, there is a possibility that they shall be prohibited from taking part in each Event or Technical Inspection.

Category	Items to be submitted	Submission format (file format/maximum size)	Submission address	Note	Submission deadline	Extended submission deadline	
EV (EV class only)	ESO/ESA form	Electronic data (dedicated format for FSAEJ, Word/10 MB)	Team page	Re-submission may be requested several times depending on degree of completion. Final deadline for re-submission: 14:00, Jul. 31 (Wed.)	14:00, Feb. 22 (Fri.)	14:00, Feb. 27 (Wed.)	
ETC (ICV class vehicles using ETC only)	Electronic Throttle Control (ETC) application form	Electronic data (Word/10 MB)					
	Electrical Systems Form (ESF)	Electronic data (dedicated format for FSAEJ, Word/20 MB)					
Technical Inspection (EV class only)					Electronic data (PDF/20 MB)		14:00, May 10 (Fri.)
		Failure Modes and Effects Analysis (FMEA)			Electronic data (Excel/10 MB)		
Technical Inspection	Structural Equivalency Spreadsheet (SES)	Electronic data (Excel/15 MB)					14:00, May 13 (Mon.)
	Impact Attenuator Data (IAD) report	Electronic data (Excel/15 MB)					
Cost and Manufacturing Event	Cost Report	CD-R and printed documents		Teams must post both the printed materials and CD-R containing the relevant data in the same envelope.	Postmarked by Jun. 5 (Wed.)	Postmarked by Jun. 7 (Fri.)	
	Bill of Materials (BOM)	Dedicated Excel format for FSAEJ	Print out of materials described on left (A4)				
	Cost calculation data (FCA) for each part	Dedicated Excel format for FSAEJ	Print out of materials described on left (A4)				
	Supporting documentation for cost calculation	PDF	Print out of materials described on left (A4)				
* The electronic data and printed materials must be the same.							

Design Event	Design documents		Team page	The penalty for extending the deadline for the design documents shall be equivalent to the highest score awarded to either the Design Report or Design Specification Sheet.	14:00, Jun. 11 (Tue.)	14:00, Jun. 13 (Thu.)
	Design Report	Electronic data (PDF/10 MB)				
Design Specification Sheet	Electronic data (Excel/3 MB)					
Presentation Event	Sales Presentation Document (SPD)	Electronic data (dedicated format for FSAEJ, PDF/10 MB)				
Shakedown Certificate	Shakedown Certificate	Electronic data (MPG or WMV/20 MB)	-	14:00, Aug. 16 (Fri.)		

The following delay 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			Team excluded from entry list
ETC				Use of ETC prohibited
Technical Inspection	10-point penalty for each day past the deadline			50-point penalty and may not participate in Technical Inspection
Cost and Manufacturing Event		40-point penalty	Regarded as "not submitted"	100-point penalty and may not participate in event
Design Event	Uniform 20-point penalty		May not participate in event	20-point penalty and may not participate in event
Presentation Event				
Shakedown Certificate				May not participate in Technical Inspection

3. Document Screening

The Sales Presentation Document, Cost Report, and design documents shall be subject to screening.

The documents judged as showing insufficient effort to satisfy the requirements shall be regarded as not reaching the required level. The results of document screening are scheduled to be announced on Friday, July 19, 2019, on the official website.

Article 13 Presentation Event

(1) Presentation Concept

The concept of the presentation to be made at this Competition is as follows. The presentation shall describe the business plan for manufacturing and selling the formula car designed by the team as a mass-produced product to the market assumed by the team to an external business operator, and shall ask for cooperation in these plans.

The external business operator may be any stakeholder defined by the team, such as a manufacturing contractor, investor, or the like.

(2) Submission of Sales Presentation Document (SPD)

In order to perform document screening before the Presentation Event, each team shall submit a Sales Presentation Document (SPD). The Sales Presentation Document shall be submitted as electronic data using FSAEJ format that can be downloaded from the team page on the website. Points shall be deducted as appropriate if the contents of the submitted document are judged to be insufficient (including format errors, insufficient studies, or the like).

Article 14 Cost and Manufacturing Event

(1) Cost Report

In accordance with the separately published local rules that apply to this Competition, each team shall create a Cost Report containing: (1) a parts list (i.e., a bill of materials, BOM), (2) cost calculation data for each part (FCA), and (3) supporting documentation. A CD-R containing three items as electronic data and a hard copy of this data shall be submitted by post.

(2) Re-Submission of the Cost Report

In the event that a serious insufficiency is found with the electronic data of the Cost Report submitted by the team, the judges may request the team to re-submit the electronic data of the Cost Report. The method of re-submission shall be instructed when the re-submission request is issued. Re-submission requests are scheduled to be issued in around the middle of June 2019.

Teams that are requested to re-submit the Cost Report must re-submit the electronic data within 48 hours of the request. A request to re-submit the Cost Report will generate a 40-point penalty. Teams that fail to re-submit the Cost Report when requested to do so will be judged as having not submitted the Cost Report.

(3) Non-Submission of the Cost Report

In addition to rule DR.1.2.5 of the Formula SAE® Rules 2019, the Cost Report shall be treated as "not submitted" in the following cases.

- a. If re-submission of the Cost Report is requested but the Cost Report is not re-submitted by the deadline.
- b. If the BOM is incomplete.
- c. If the cost calculation data (FCA) for each part is incomplete.

Article 15 Design Event

Since the time allocated to the Design event in the FSAEJ 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/>) 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.

Article 16 Shakedown Certificate

Teams shall submit a **Shakedown Certificate*** by 2:00 pm on Friday, August 16 in order to prove the completion level of the car. Teams that fail to submit this or don't pass shall not be permitted to participate in the Technical Inspections.

Shakedown Certificate*

This certificate shall consist of the moving images of the car moving forward, accelerated and stopped. The team plate that has the following information is included in the movie.

- ① Name of the University
 - ② Car Number
 - ③ Place information
 - ④ Date
 - ⑤ Sign of team FA
- [NOTE] There is [the sample movie] on the team page.

*When teams make a movie, they have to use the Driver Equipment and Impact Attenuator and ensure a safe location.

Submission Methods: Upload to the Team Page

Form/Maximum Capacity: mpg, wmv (For Windows Media Player)/ At most 20MB

- *EV Class Only* -

Teams shall submit moving images of the shutdown button that operates properly. The images shall include the way it operates as “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 17 Process to Dynamic Events

Teams must pass the Technical Inspections to proceed to the Dynamic Events in accordance with the rules described below; the Formula SAE® Rules 2019, 2019 FSAEJ Participation Rules and 2019 FSAEJ Local Rules.

Article 18 Schedule to the 2019 Formula SAE Japan

Tuesday, January 15

Beginning of Participating Application



Friday, January 25

Deadline for Participating Application



Wednesday, January 30

Notification of the Applicants on the official website.

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

After Monday, February 18, the pending list is going to be updated every Monday until the 98th team is added.



Thursday, January 31

Beginning of Submission of Documents on team page



Friday, February 22

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

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



Friday, May 10

– EV Class Only –

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

– ICV Class using ETC Only –

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



Monday, May 13

Deadline for Submission of **Structural Equivalency Sheet (SES)** and **Impact Attenuator Data (IAD)**



Wednesday, June 5

Postmarked Deadline for Submission of **Cost Report** (Both of the Printed Documents and CD-R)



Tuesday, June 11

Deadline for Submission of **Design Report** and **Design Spec Sheet**



Wednesday, June 26

Deadline for Submission of **Sales Presentation Document**



Friday, July 19

Announcement of **Document Screening Result** on the official website



Wednesday, July 31

Deadline for **Re-Submission of SES, IAD, ESF, FMEA**



Friday, August 2

Deadline for Submission of **Documents of Registration**



Friday, August 16

Deadline for Submission of **Shakedown Certificates**



August 27 to 31

2019 Formula SAE Japan

Article 19 Official Q&A

Any questions about these rules, the various other rules, or the Competition in general shall be submitted via the official Q&A form on the team page that will be set up after the entry period.

*Team page: https://tech.jsae.or.jp/formula/2019team_en/login.aspx

Article 20 Awards

Overall award, awards in individual categories, special awards

*Check the separate table [Planned Prizes for 2019 Student Formula Japan Competition]

Article 21 Supplements

1. 2019 FSAEJ Local Rules will be announced on the official website at any time if it needs.
2. On participating in 2019 Formula SAE Japan, each team and the members shall thoroughly read and comprehend the contents of the Formula SAE® Rules 2019.
3. In case you abandon to participate in 2019 Formula SAE Japan even though the documents screening is qualified, please declare to do so (Formula SAE® Rules 2019 AD.6.5) with the least delay.
4. Teams must comply with Japanese laws.
5. When any doubt occurs as to the interpretation of the Rules, the decision of Rule Committee and Execution Committee has priority over all others.
6. The organizers, sponsors, and supporting institutions shall 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.

Planned Awards for 2019 Formula SAE Japan

Outstanding Performance Awards

Name of prize	Outline
Minister of Economy, Trade and Industry Award Minister of Land, Infrastructure, Transport and Tourism Award Governor of Shizuoka Prefecture Award Mayor of Kakegawa City Award Mayor of Fukuroi City Award JAMA Chairman Awards JAPIA Chairman Awards	[Ex.] Top finisher overall in overall which accomplished all events Top EV finisher overall in overall which accomplished all events Teams that are highly rated in terms of sportsmanship, management, safety, and the like. Top team overall rating in Dynamic Events Top team overall rating in Static Events Teams accomplished all Static & Dynamic Events (exc. penalized by Noise or document submission delay) Teams have passed the Technical Inspection on their first try (i.e., teams that participate in all the events, excluding the Endurance Event)
Spirit of Excellence Awards	Top 6 finishers in overall which accomplished all events
Spirit of Excellence Award for the Best ICV	Top ICV finisher in overall which accomplished all events
Spirit of Excellence Award for the Best EV	Top EV finisher in overall which accomplished all events

Categorized Awards

Name of prize	Outline
Cost Awards	Top 3 teams in Cost & Manufacturing
Design Awards	Top 3 teams in Design
Presentation Awards	Top 3 teams in Presentation
Acceleration Awards	Top 3 teams in Acceleration
Skid-Pad Awards	Top 3 teams in Skid-pad
Autocross Awards	Top 3 teams in Autocross
Endurance Awards	Top 3 teams in Endurance
Efficiency Awards	Top 3 teams in Fuel Economy

Special Awards

Name of prize	Outline
Rookie Awards	Awarded to teams participating in the Competition for the first time with the highest overall score (ICV and EV classes).
Best Improvement Awards	Awarded to teams that participated in all the events and that improved their score by the highest number of points compared to the previous Competition.
Lightweight Engineering Awards	Awarded to teams that participated in all the events other than the Endurance Event and that manufactured the lightest car (ICV and EV classes).
Best Electrical System Awards	Awarded to teams in the EV class with the best electrical circuit design.
Good Accumulator Container Design Awards	Awarded to teams in the EV class with the highest design score for the accumulator container.
Best Lap Awards	Awarded to the teams with the fastest lap time in the Endurance Event.
Best CAE Awards (*)	Awarded to teams that achieved highly efficient and excellent designs making effective use of CAE technology.
Best Suspension Awards (*)	Awarded to teams that achieved a high-performance suspension, as evaluated based on an overall consideration of the geometry setting concept, component part weight, manufacturing accuracy, quality of external appearance, times achieved in the dynamic events, vehicle
Best Three-View Drawing Award (*)	Awarded to teams that communicated more information most accurately to the judges through drawings as the distillation of the team's design work.
Best Aerodynamics Award (*)	Awarded to teams that completed the Autocross Event, and that analyzed and implemented the aerodynamic and thermo-fluid aspects of a racing car most effectively.
Best Composite Award (*)	Awarded to teams that achieved the most complete composite parts in terms of weight reduction, strength and stiffness, appearance, and the like, from the standpoint of a racing car.
Best Ergonomics Awards (*)	Awarded to teams that achieved excellent ergonomic design in terms of the driving position, ease of operation of the pedals and steering wheel, meter visibility, and the like, from the standpoint of a racing car.

(*): Teams wishing to be considered for these awards are required to enter in advance. Teams wishing to enter should submit an entry sheet. These entry sheets will only be used to select the special awards and will not affect the scoring of the Design Event. Details, such as the entry sheet formats and submission methods will be posted on the official Competition homepage by Thursday, February 28, 2019.