2019 Formula Student Class 2 Regulations

1. CLASS 2 - Overview

Class 2 is specific to Formula Student and is designed to accommodate teams that are not in a position to enter Class 1 immediately with a full running vehicle. In principle it is assumed that a Class 2 design is capable, 12 months later, of being a full running Class 1 entry.

You are therefore required to consider fully all of the FS Class 1 Rules and Regulations in parallel with these FS Class 2 Regulations.

Class 1 includes internal combustion engine vehicles, electric vehicles and alternative fuelled vehicles; it is assumed that a Class 2 entry pays full attention to this important FS specific fact. For the avoidance of doubt, a key design choice for which entrants must provide detailed understanding is that of Powertrain conceptual choice.

However, many of the regulations remain identical to Formula Student and so you must also fully understand the Formula Student event objectives (i.e. those applicable to Class 1 running vehicles) and the intended customer and manufacturing realities.

The organisers will provide adequate space for a display area for each Class 2 team. As an indication, the proposed space per Class 2 team is 3m x 2m, however this is subject to change and will be confirmed closer to the event. Teams are required to supply their own displays and supporting structure, showing their vehicle and giving details of their design and development work.

Note: Class 2 entrants must submit a Business Logic Case (see Section 5 of this document). The template will be available on the Forms webpage. https://www.imeche.org/events/formula-student/team-information/forms-and-documents

There are a number of documents required to be submitted prior to the event in July 2019: the documents are generally those required for Class 1 with some exceptions related to the running vehicle and the key dates for submissions are on the webpage, https://www.imeche.org/events/formula-student/team-information/key-dates

A summary of the required submissions prior to the event is as follows:
- Business Logic Case
- Engineering Design report
- Engineering Design Spec Sheet
- Essential Information

Penalties for lateness, non-submission and poor quality submission are as per Class 1, please see the Key Dates document.

Points will be awarded for the following:

2. Engineering Design (150 points)

Prior to the event, teams will submit an Engineering Design Report and Engineering Design Spec Sheet. These documents should reflect the current state of development of the designs and outline plans for resolution of outstanding issues/manufacture. As per the Class 1 regulations, late submission of documents will be penalised. For the
Engineering Design event documents, penalties will be awarded as per Class 1 but note that Class 2 entrants are not required to submit an Impact Attenuator Report.

Understanding that the vehicle design is incomplete, i.e. a non-running vehicle, the judges will be looking at the project planning as well as the design process and will be looking to see evidence of understanding of proposed manufacturing methods and their implications (e.g. costs, tooling requirements, etc).

Judges expect to see proof of reasoning for key design and concept choice decisions. Given that Class 1 now accommodates alternative powertrain technology possibilities it is expected that teams will outline their basic conceptual choice in this regard in some detail. In recognition of the “real world” it is further expected that teams will consider fully the costs of manufacture, service and safety of innovative design choices in addition to the usual parameters of mass and performance and customer appeal. You should note that there is an increased link between the information provided to Cost & Manufacturing, Engineering Design and Business Plan Presentation static event judges, e.g. proposed production volumes given for the Business Logic Case will be assumed to apply to Cost & Manufacturing and Engineering Design as well as Business Plan Presentation.

Please note that it is essential that some component parts are manufactured in order that teams may demonstrate their understanding of manufacture. This is not solely a paper design concept class: designs must have their basis in reality with specific reference to the Class 1 Rules and intents as a long term future objective. Teams that present only the smallest or simplest parts for judging will naturally be awarded their points accordingly.

At the event, teams will be expected to give a brief informal presentation about the engineering design of their vehicle. This will be followed by a 30-40 minute discussion with the design judges about the designs, concepts and analyses presented, and to view the drawings and components etc. that have been produced.

Points will be awarded according to the specific Class 2 Engineering Design Scoring Sheet. [https://www.imeche.org/events/formula-student/team-information/forms-and-documents](https://www.imeche.org/events/formula-student/team-information/forms-and-documents) There is no Engineering Design Final for Class 2.

**3. Business Plan Presentation (75 Points)**

The Business Plan Presentation is a combined event for both Class 1 and Class 2 teams. Please see the FS2019 Class 1 UK Supplementary Rules for further information.
4. Cost & Manufacturing (150 Points)

At the event, teams will provide a hard copy of their Cost report to the judges whilst they are being judged (a posted copy prior to the event is not required). This will meet the same formatting and other requirements of the Class 1 rules, but reflecting only the costs for producing the chassis (frame and body).

Reports do not need to be submitted before the event.

At the event, teams will give a 15 minute presentation on the overall project management, followed by 15 minutes of questioning from the cost judges on the likely costs and manufacturing and management processes implied by the team’s designs and ideas (similar to the cost event described in the Formula Student Rules). The questions (and points) will be split equally between the overall cost estimates and management plans for building a complete car of the team’s design within the next year, and the costing of the chassis (frame and body) and any sustainability considerations the team wants to highlight.

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<th>Overall Management (60)</th>
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<td>The teams will be judged on their proposed structure and how they plan to manage the project considering the costing of the vehicle.</td>
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<th>Component Costing (90)</th>
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<td>The teams will be judged on the accuracy and quality of the vehicle chassis costing, understanding and demonstration of manufacturing processes used and the impact on the environment.</td>
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<th>Total Points (150)</th>
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Points will be awarded according to the Class 2 Cost & Manufacturing Scoring Sheet. Team should aim to cover the following areas to achieve associated points.

No pre-event document submissions are required for the Cost & Manufacturing event therefore there are no pre-event late submission penalties.

5. Business Logic Case

All teams must submit a Business Logic Case (BLC) report by the deadline published in the Key Dates document, using the template published for that competition year on the Formula Student website.

If the competition is oversubscribed the organisers may use the submitted BLC as part of their assessment criteria when selecting teams.

The Business presentations must take into account a “special condition” set prior to the event. Details of the special condition will be published no later than one calendar month prior to the submission of the Business Logic Case.
Late submission or failure to submit the Business Logic Case will be penalised at the standard negative ten (-10) points per day to a maximum of negative fifty (-50) points. If the document is received more than five (5) days late it will be classified as “Not Submitted”. For the avoidance of doubt the most recent version of any document submitted will be the submission evaluated for both lateness and quality.

6. Essential Information

In addition, Class 2 teams are required to submit Essential Information via your account (technical specification data, text about your team, concept and 1 image for the Event Programme). This can be a photo of the chassis, a computerised image of the chassis or car, a photo of the team or of the team logo.

Your Essential Information provides the basis of the material that the organisers print about each team in the Formula Student Event Programme and may be used by the organisers for pre-event PR, press releases etc. It will also be shown to the Business Presentation judges prior to the event, and is an opportunity to promote the team, university and car. As well as talking about the design choices you have made, and the key development features of your car, the text may also include how the team is organised, main objectives, etc.