Cost Report Documents (CRD) S4.3.1 The CRD consists of the following documents. (a) Costed Bill of Materials (CBOM)of the frame and Body uploaded as a PDF in A4 landscape format. e.g. list all parts/assembly, materials, processes and fasteners and associated costs (No other BOMs (DBOMs or CBOMs) for any other part or section of your car are required for this event). (b) The Supporting Material file uploaded as a PDF in A4 portrait format for your frame 2022 IMechE 127 Formula Student 2022 Rules and body (only). (c) The Cost Explanation file uploaded as a PDF in A4 portrait format for your frame and body (only) S4.3.2 The CBOM should be created utilising the FS UK Online BOM tool, any other format will not be scored. S4.3.3 Changes to the CRD will not be permitted after the deadline. S4.3.4 All CRD must be brought as a hard copy to the event and must match exactly the submitted documents. S4.4 Costed Bill of Material (CBOM) S4.4.1 The cost calculations must include the costs of materials, fabrication, bought parts and assembly to the vehicle and must be completed as realistically as possible. S4.4.2 The cost calculations MAY consider research, development and capital expenditures for real estates (e.g. plant or development hours of the team) so that a real–world learning experience can be achieved and to enhance discussions with Cost Judges at the event. Equally if a team's wishes to omit these elements that should be made clear in the Cost Explanation file and the judges will focus conversations on only the elements included. All cost should be realistic and measured and points will be award for an enhanced and real– world understanding. S4.4.3 All costs must be displayed in EUR. For calculating the prices in EUR from other currencies, the team must provide the exchange rates used. S4.4.4 There is no maximum cost. Receipts are not required for any items. S4.4.5 If production tooling is associated with processes that are specific to the part geometry, it must be included. For example, the dies to stamp out a chassis bracket are tooling. S4.5 Supporting Material File S4.5.1 The supporting material file is a document containing additional information which allows the judges to understand the CBOM. It should include drawings, exploded view drawings and/or pictures of the vehicle and the parts included in the CBOM. S4.6 Cost Explanation File S4.6.1 The cost explanation file is a document containing additional explanations, which allow the judges to understand the costs within the CBOM. S4.6.2 The cost explanation file should point out which cost model was used and which types of costs are included. It should also contain which specific cost figures were used, e.g., the cost of one machine operation hour, labour rate per hour etc. S4.6.3 The estimations for machining rates, hourly rates, included overheads etc. must be shown S4.7 Cost and Manufacturing Scoring S4.7.1 The cost and manufacturing event will be evaluated on the categories specified in the following table: 2022 IMechE 128 Formula Student 2022 Rules S4.7.2 Category S4.7.4 Format and Accuracy of Documents S4.7.6 Knowledge of Documents and Vehicle S4.7.8 Content and Completeness of the CBOM S4.7.10 Realism of the CBOM S4.7.12 Discussion Part 2 "Cost Understanding" S4.7.13 Real world task S4.7.16 Cost Final S4.7.18 Total S4.7.3 Points S4.7.5 5 S4.7.7 5 S4.7.9 20 S4.7.11 30 S4.7.14 50 S4.7.15 30 S4.7.17 10 S4.7.19 150 S4.7.20 S4.7.21 S4.7.22 S4.7.23 S5 S5.1 S5.1.1 S5.1.2 S5.2 S5.2.1 2022 Teams that submit incorrectly formatted documentation, completed not as prescribed or one of the three required pieces of documentation is missing from the upload/submission will be subject to a penalty of 30 points per failed document on top of any late penalties incurred. A maximum of four top teams will be chosen to participate in the cost and manufacturing finals to determine the Concept Class cost and manufacturing

event winner. The cost and manufacturing finals will be held separately from the initial judging and teams will be informed about their participation during the event. The scoring for the non-finalist is calculated as followed: COST SCORE = 140(Pteam/Pmax ) Pteam is the score awarded to the team Pmax is the highest score awarded to any team not participating in the finals The scoring of the cost and manufacturing finalists will vary from 140to 150 points ENGINEERING DESIGN EVENT – FORMULA STUDENT CLASS Engineering Design Objective The concept of the design event is to evaluate the student's engineering process and effort that went into the design of a vehicle, meeting the intent of the competition. Proprietary components and systems that are incorporated into the vehicle design as finished items are not evaluated as a student designed unit, but are only assessed on the team's selection and application of that unit. Engineering Design Report (EDR) The EDR should contain a brief description of the overall vehicle with a review and derivation of the team's design objectives. Any information to scope, explain or highlight design features, concepts, methods or objectives to express the value and performance of the vehicle to the judges shall be included at the teams' discretion. IMechE 129 Formula Student 2022 Rules S5.2.2 The EDR must not exceed eight (8) pages, consisting of not more than five (5) pages of content (text, which may include pictures and graphs) and three pages of drawings. TIP: Do not use newspaper style twin columns of text or wrap text around images or graphs as reading and evaluating such Reports is hard for Judges using a laptop. S5.2.3 The three EDR drawings (no renderings) must show the vehicle from the front, the top and the side. Each drawing must appear on a separate page. S5.2.4 Any measures to facilitate reviewing the drawings (e.g. measurements, details, colours) may be utilized at the teams' discretion. S5.2.5 Any portions of the EDR that exceeds five pages of content and/or three pages of drawings will not be evaluated. S5.2.6 If included, cover sheets and tables of contents will count as text pages. S5.2.7 The EDR shall be used to sort the teams into appropriate design queues based on the quality of the information and understanding of the event objective contained in the Report. S5.2.8 Evidence of information mentioned in the EDR should be brought to the competition and be available, on request, for review by the judges. S5.3 Design Spec Sheet S5.3.1 A completed DSS must be submitted online on the competition website. S5.4 Engineering Design Procedure S5.4.1 The design event starts with the submission of the DSS and the EDR and their review respectively. S5.4.2 At the competition, teams will present their knowledge and their vehicle to the judges, which will evaluate the teams' performance following the design objectives stated in S5.1. S5.4.3 Some teams may be chosen to participate in the design finals to determine the engineering design event winner. The design finals will be held separately from the initial judging and teams will be informed about their participation during the event. S5.4.4 Teams may bring any photographs, drawings, charts, spare parts or other material that they believe are supportive to the design event, but the space provided for design judging may be limited. S5.4.5 [EV ONLY] Only sealed TSACs which passed the accumulator inspection may be presented or mounted in the vehicle. They must not be opened. S5.4.6 [EV ONLY] Only fully discharged and electrically shorted spare accumulator cells or spare stacks may be presented. S5.5 Engineering Design Vehicle Condition S5.5.1 Vehicles must be presented for design judging in finished condition, fully assembled, complete and ready-to-race. 2022 IMechE 130 Formula Student 2022 Rules S5.5.2 The judges may not evaluate any vehicle

that is presented at the design event in what they consider to be an unfinished state and may, at their sole discretion, award a substantially reduced score for the entire design event. S5.5.3 Vehicles may be presented for design judging without having passed technical inspection, even if final tuning and setup is in progress. S5.5.4 Covers and/or parts may be removed during the design judging to facilitate access and presentation of components or concepts. S5.6 Engineering Design Judging Criteria S5.6.1 The judges shall inspect the vehicle and discuss the vehicle design with the team to determine if the design concepts are adequate and appropriate for the application (relative to the objectives set forth in the rules). The judges may sit in the vehicle to ascertain the ergonomics and the driver environment. S5.6.2 The judges may deduct points if the team cannot adequately explain the engineering and construction of the vehicle. S5.7 Engineering Design Scoring S5.7.1 The overall engineering design event maximum scoring is 160 points for FS Class. S5.7.2 Up to 50 penalty points may be given to teams that demonstrate a fundamental lack of engineering knowledge and are unable to provide justification for their designs, including the use of 'carry-over parts' from previous competition vehicles. ● The Universal Design Judging Score Sheet for both FS and Concept Class will be available at: http://www.formulastudent.com/formula-student/Teams/forms S6 ENGINEERING DESIGN EVENT – CONCEPT CLASS S6.1.1 The concept of the design event is to evaluate the student's engineering process and effort that went into the design of a vehicle, meeting the intent of the competition. S6.1.2 The maximum points awarded for the Concept Class Engineering Design Event are 150 points. S6.1.3 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 Formula Student regulations, late submission of documents will be penalised. For the Engineering Design event documents, penalties will be awarded as per Formula Student but note that Concept Class entrants are not required to submit an Impact Attenuator Report. The requirement for pre-judging submissions of individual Score Sheet Category presentations may be added. If required, teams will be informed via email and the Key Dates spreadsheet will be updated. We aim to inform teams of this requirement no later than April for a June submission deadline. 2022 IMechE 131 Formula Student 2022 Rules S6.1.4 Understanding that the vehicle design/manufacture 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). S6.1.5 Judges expect to see proof of reasoning for key design and concept choice decisions. Given that Formula Student 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. S6.1.6 Although the Concept Class does not require manufacture of a vehicle, and may be judged online, it is in your interests to have manufactured or procured some real parts before the competition. You will be able to

then demonstrate greater understanding of how you progress from “paper” to “part”. S6.1.7 Points will be awarded according to the Universal Engineering Design Scoring Sheet. https://www.imeche.org/events/formula-student/team-information/forms-and- documents. S6.1.8 There is no Design Final for Concept Class entrants: the only potential exception is if under “force majeure” the Organisers decide to run a fully virtual/online event where all entries effectively become Concept Class. All entries will be notified in such circumstances. S7 LAP TIME SIMULATION (LTS) S7.1.1 At the time of publication this is a placeholder for the full LTS rules that are still under development. For 2022 this event is now mandatory for FS Class and Concept Class. S7.1.2 Teams will be provided with a free license for Formula Car Maker, configured with a generic model of a Formula Student car. Certain parameters such as the vehicle mass and tyre behaviour will be fixed, but others such as suspension geometry, spring rates and gear ratios will be adjustable within predetermined limits. S7.1.3 Each team must experiment with the tuneable parameters to achieve the highest combined score in simulated runs of the acceleration, skid-pad and sprint events. The input deck used for the simulation will be submitted and each team’s submission checked and scored. Teams will be ranked using criteria similar to those for the equivalent Formula Student dynamic events. S7.1.4 Teams will be provided with further upgrade options such as forced induction for their powertrain, or an aerodynamic package. Teams must simulate the effect of adding these upgrades to the car and submit a short presentation discussing the influence of the upgrade on the vehicle performance and the pros and cons associated with each. S7.1.5 A separate document specific to the LTS, including submission deadlines and instructions for the teams, will be published in early 2022. 2022 IMechE 132