

FORMULA SAE-A 2011: December 15 to 18, 2011
ADDENDUM TO FORMULA SAE 2011 RULES


Revisions & Clarifications versus the US 2011 Formula SAE Rules follow:
 Except where otherwise noted, the following Addendum applies to both Internal Combustion Engine Powered Vehicles and Electric Vehicles.
 Teams should particularly note the additional requirements relating to On-Site Registration, Technical Inspection and Driver Requirements in the first section below. Other additions have been made – **Read all the Rules carefully!**

US Rule	Page	Variation																																				
General; Covering A1	6	<p>ORGANISATION & STATUS of the SAE-A Event</p> <p>a) The SAE-A event will be held under the International Sporting Code of the FIA, the National Competition Rules of CAMS, and the Speed Event Standing Regulations, any relevant Championship Sporting Regulations as approved by CAMS, these Supplementary Regulations and any Further Regulations and instructions to competitors that may be issued.</p> <p>b) The event shall be a Formula SAE Inc Club Meeting run under 2011 F-SAE Rules plus F-SAE-A 2011 Rules Addendum.</p> <p>c) This Event will be conducted under and in accordance with CAMS OH&S and Risk Management Policies, which can be found on the CAMS website at www.cams.com.au</p>																																				
A1.4.1	7	<p>Event Scoring - The scoring for individual events are revised for 2011 to provide more emphasis on vehicle versus driver capability in particular, Engineering Design and Fuel Economy. For 2011 the Scoring will be:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Static Events:</td> <td style="width: 30%;">Presentation</td> <td style="width: 10%; text-align: right;">50</td> <td style="width: 30%;"></td> </tr> <tr> <td></td> <td>Engineering Design</td> <td style="text-align: right;">200</td> <td></td> </tr> <tr> <td></td> <td>Cost Analysis</td> <td style="text-align: right;"><u>100</u></td> <td style="text-align: right;">350</td> </tr> <tr> <td>Dynamic Events:</td> <td>Acceleration</td> <td style="text-align: right;">50</td> <td></td> </tr> <tr> <td></td> <td>Skid-Pad</td> <td style="text-align: right;">75</td> <td></td> </tr> <tr> <td></td> <td>Autocross</td> <td style="text-align: right;">100</td> <td></td> </tr> <tr> <td></td> <td>Fuel Economy</td> <td style="text-align: right;">125</td> <td></td> </tr> <tr> <td></td> <td>Endurance</td> <td style="text-align: right;"><u>300</u></td> <td style="text-align: right;"><u>650</u></td> </tr> <tr> <td>Total Points:</td> <td></td> <td></td> <td style="text-align: right;">1,000</td> </tr> </table>	Static Events:	Presentation	50			Engineering Design	200			Cost Analysis	<u>100</u>	350	Dynamic Events:	Acceleration	50			Skid-Pad	75			Autocross	100			Fuel Economy	125			Endurance	<u>300</u>	<u>650</u>	Total Points:			1,000
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A4.5	10	<p>Driver's Licence and Competition Licence</p> <p>All Drivers of each team must present a valid, government issued, highway driver's licence containing a photograph.</p> <p>They must also hold the minimum of a CAMS L2S Licence; see NCR 47 or the equivalent authority issued by CAMS. International drivers must apply for a CAMS Level 2S licence and obtain an 'Authority to Compete' from CAMS. All drivers should obtain their CAMS licences well in advance of the commencement of the event</p>																																				

A7.10 B1.1	15 22	<p>On-Site Team Registration – Added Requirement</p> <p>At the On-Site Registration, all teams must submit a completed copy of the Technical Inspection Check List as a primary self evaluation by the Team. This must be signed by both the Team Captain & the Faculty Advisor.</p>
B4.8	39	<p>All drivers must comply with the egress time requirements per B4.8, not just the largest driver. Accordingly, a list of the names of all drivers and times they achieved in the test must also be provided with the Technical Inspection List at Registration. The drivers to be required to complete the test for verification at Technical Inspection will be identified at the event. This may or may not include all drivers.</p>
A4.2	10	<p>Student Status - Clarification The reference to “college” means a tertiary education college.</p>
A4.3	10	<p>Society Membership - Delete US words and add the following:</p> <p>Formula SAE-A is open to teams from Australia/NZ Universities & TAFE Colleges and some overseas teams.</p> <p>All members of Australia/NZ teams must be members of SAE-A. Team members of international teams must be members of their local SAE Society or ATA or IMechE. If no local society membership is available, they may register to become members of SAE-A in order to compete at the event.</p> <p>Proof of membership, such as membership card, is required at the competition. Students can join SAE-A online at: www.sae-a.com.au.</p>
A4.7	10	<p>Medical Insurance - Delete US words and add the following:</p> <p>Individual medical insurance coverage per the US wording is obviously desirable but government versus private coverage varies significantly around the world. Accordingly, foreign teams must ensure that they are adequately covered by their domestic insurance and carry adequate travel medical and accident insurance to cover their time in Australia.</p>
A4.8	10	<p>The US Rule 4.8 for 2011 is NOT applicable for the Australian event and is replaced by the equivalent Rule from 2007.</p> <p>Onsite Registration of Individual Team members– Document Copies Required</p> <p>All participating team members must, at the time of onsite registration, provide photo copies of the following documents and emergency contact data to be filed with registration officials:</p> <p>1) Photographic Identification: Drivers must present a valid, government issued, highway driver’s licence containing a photograph. Non-drivers may provide alternative photographic ID. (e.g. University ID or passport).</p>

		<p>Onsite Registration of Individual Team members– Document Copies Required (cont'd.)</p> <p>2) Emergency Contact Information: Each student must include the name and phone number of a designated contact on their emergency details. 3) Proof of Society Membership</p> <p>Team Drivers at the Competition must also present proof of their CAMS accreditation at Registration.</p>
A5	11	<p>Faculty Advisor Additional paragraph A.5.4 to US words.</p>
A5.4		<p>To avoid duplication, ensure proper identification of teams and requests, all contact between teams and SAE-A officials prior to the event, should, in the first instance, be via the Faculty Advisor or reviewed by the Advisor prior to submission. The adviser can often help with prior knowledge and interpretations and ensure maximum efficiency in contacts; they may also liaise with other Faculty Advisers.</p>
A6.9.1	12	<p>Second Year Vehicles - Clarification on extent of change. Replace the US Rule words with the following.</p> <p>Vehicles that have competed during any one (1) previous Formula SAE year may compete provided that they have been substantially modified from the original design in accordance with clause A6.8.1. Photographic and design documentation detailing the modifications are required, along with a statement from the team's Faculty Advisor.</p> <p>The penalties per A6.9.2 apply.</p>
A7.5	14	<p>Registration Limits for SAE-A Event</p> <p>Formula SAE-A is open to teams from Australia/NZ Universities & TAFE Colleges and some overseas teams. There will be a limit of 30 teams for the event. If the number of entries exceeds the maximum available event number, then a ballot or other method will be used to reduce the number of overseas entries within the available number of entrants. If a reduction is required to the number of entries, this decision will be announced to the affected overseas teams as soon as possible after the entry closure date.</p>
A7.6.2	14	<p>Registration Fees</p> <p>Registration fees will not be refunded after the registration cut off date of July 29, 2011. Early advice of withdrawal prior to that date may, at the discretion of the organisers, result in some refund of fees paid.</p>

A7.7	14	<p>Withdrawals.</p> <p>Any teams registered for the Australasian competition must notify the organisers via telephone or via formulasae@sae-a.com.au as soon as any decision is made to withdraw in order to allow other teams the opportunity to compete.</p> <p>Likewise, any team which has indicated potential entry, but not yet registered, is requested to advise that they will not be registering at the earliest possible date (as soon as such decision is reached).</p>
A7.10	15	<p>Formula SAE Australia Registration. Added clarification.</p> <p>When teams arrive at the FSAE-A venue and register, both the Team Captain and the Faculty Advisor must be present and be able to identify themselves as being those nominated in those roles at the initial online registration.</p>
B3.0	23	<p>Vehicle Structure – Alternative Frame Rules</p> <p>Formula SAE-Australasia will not offer the Alternative Frame Rules for local submission in 2011.</p> <p>Teams which have had their Alternative frame request approved for competition at another Formula SAE event in 2011 will be allowed to compete with that frame at the Australasian event, following submission of proof of acceptance for the prior event.</p>
B3.8	26/27	<p>Structural Equivalency and Structural Equivalency Form (SEF)</p> <p>As all teams must submit an SEF (even to confirm “no variance”), in addition to revisions from the base case to the tube material, size or section, they must also consider the position and layout of Tubing in accordance with applicable areas of the rules. (In particular for Front Bulkhead support and Side Impact Protection, as various questionable configurations have been observed at the events). Teams must confirm adequate bulkhead support in accordance with one of the “OK” configurations shown on the US Formula SAE Frequently Asked Questions website. The SEF must demonstrate equivalent crush strength for the configuration of the team’s vehicle.</p> <p>See further under paragraph 3.19.</p> <p>A sketch should be included with the SEF to show the basic structure and configurations of the various tubes in a steel space frame vehicle, even if the team believes equivalency calculations are not required.</p>
B3.8.5 (c)	27	<p>Acknowledgement</p> <p>SEF’s submitted for vehicles entered into the Australasian event will be acknowledged within 2 working days of receipt.</p>

B3.9.5	28	<p>95th percentile male template - Replace the US words as follows:</p> <p>To ensure adequate driver protection for varying driving positions, and to ensure a common approach to driver packaging, if the requirements of 3.9.3 are not met with the 95th percentile male template, 35 points will be deducted from the team's Design Event score and the car will not be allowed to compete in any dynamic events until modified to ensure compliance.</p>
B3.19.3	31	<p>Front Bulkhead Support</p> <p>Per 3.8 above, the configuration for the bulkhead support must be able to be correlated to one of the defined "OK" configurations.</p> <p>If there is any doubt, the team should submit an SEF to show equivalency or superiority of crush strength to the base case, which is assumed to be a simple rectangle (formed by the front roll hoop, front bulkhead and upper and lower members) with a node-to-node triangulation tube forming two internal triangles.</p>
B4.3.2	38	<p>Heat Protection (Added requirement)</p> <p>In addition to when seated in normal driving position, the Heat Protection requirements also apply to areas where contact may be made on entry to, or exit from, the cockpit.</p>
B7.3.3	46	<p>Brake Over-Travel Switch (Replace US clause with Formula Student to clearly identify and inspect switches).</p> <p>The Brake Over-Travel switch must be a mechanical single pole, single throw (commonly known as a two-position) switch (push-pull or flip type) as shown in figures below.</p> <div style="text-align: center;">  </div>
B7.4 B7.4.3	46	<p>Brake Light - Added clarification 7.4.3</p> <p>To assist track safety/fair play in the Endurance Event, any vehicle with a brake light illuminated continuously, or under non-braking conditions, will be black flagged.</p>

B8.9.1	48	<p>Fuel Rail</p> <p>In line with Formula Student, the fuel rail must not be made from any form of flammable material, plastic, carbon fibre or rapid prototyping material.</p>
B9.1	51	<p>Fuel</p> <p>The primary fuel supplied for the event will be Unleaded Petrol with a Research Octane Number (RON) of 98.</p> <p>Ethanol E85 will also be provided as an alternative fuel. Any teams wishing to compete using E85 must advise their intention at the time of submitting their entry registration.</p> <p>Note: E85 formulation and characteristics may vary between locations and between the fuel obtained by teams during development and that supplied at the event. All US Rules relating to Ethanol (Restrictors, etc) will apply.</p>
B9.7.3	53	<p>Venting: (Delete US words and adopt Formula Student)</p> <p>Enclosed monocoque structures, undertrays, or skid plates designed to protect the engine or tanks carrying liquids; must be vented and have at least 2 (two) holes (each a minimum of 50 mm in diameter). These holes must be positioned in the lowest part of the structure in such a way as to positively prevent accumulation of volatile liquids and/or vapours.</p>
B15 15.2	57	<p>Transponders</p> <p>Transponders will be used for timing at Formula SAE-A and will be supplied at the event by the organisers.</p>
B16.3	49	<p>Logos/Decals (added Requirement)</p> <p>The decals of the four consortium companies (Ford, Holden, Mitsubishi and Toyota) and SAE-A must be displayed on the front of the vehicle, symmetric about the centreline of the vehicle. The host consortium company (Holden - 2011) is to be uppermost and SAE-A lowest. The decals will be supplied to the teams well before the competition as well as advice for the relative positioning of all five decals. Teams must ensure clear space is reserved along the centre of the nose cone for these decals.</p>
B17.1.a	59	<p>Safety Helmets</p> <p>In addition to the US or British Standards listed, helmets conforming to Australian Standard AS 1698 or CAMS Schedule D are allowed.</p>
B17.6	60	<p>Underclothing</p> <p>Replace the US wording "It is strongly recommended that all competitors wear -- " with "All competitors must wear -----"</p>

B17.14		<p>Fire Extinguishers</p> <p>In line with Formula Student, Aqueous Film Forming Foam (AFFF) Fire Extinguishers are not permitted at the Australian event.</p>
C3	79	<p>Article 3 - Cost & Manufacturing Event.</p> <p>As vehicles are costed using tables and “generic dollars” the exact US rules and use of tables apply with no exchange rate calculations required.</p>
C3.8.1a	83	<p>Cost Report</p> <p>The electronic copy of the BOM must use Microsoft Excel on a single IBM compatible 3.5” disc or a CD ROM. It should NOT include copies of (receipts or any back-up material.</p>
C3.8.1.b	83	<p>For the Australasian event, a hard copy is mandatory and timely submission of the hard copy is a key element of the judging process.</p>
C5.2.4	93	<p>Design Report</p> <p>For the Australasian event, teams will be assigned to judging groups on a sequential allocation based on prior year results and new teams allocated to balance the level of technical features reviewed.</p>
C5.8	95	<p>Design Event. Penalty for Late Submission or Non-Submission - delete US words and add the following;</p> <p>Non-Submission; Teams that fail to submit a Design Report, a Design Spec Sheet and a Student Activity Disclosure Form, will not compete in the design event, and will receive zero (0) points for design.</p> <p>Late Submission: Teams that do not submit a Design Report and a Design Spec Sheet and a Student Activity Disclosure Form by the specified deadline will receive a 20 point penalty and will not be eligible to compete in the design final. Any submission more than 4 weeks late will be treated as a Non-Submission.</p> <p>Note: Confirmation of receipt will be given by email.</p>
C5.9	95	<p>Penalty for Unsatisfactory Submissions - delete US words and add;</p> <p>At the discretion of the judges, teams that submit a Design Report or a Design Spec Sheet, which is deemed to be unsatisfactory, will have their points score reduced and will be excluded from the Design Final.</p>
Article 4	103	<p>Driver Limitations</p> <p>A minimum of 5 drivers must be used. The Australasian Event will consist of two heats for the Endurance and Fuel Economy event.</p>

Article 7	108	<p>Autocross Event/Endurance & Fuel Economy</p> <p>The track will generally be similar to the US rules but teams will be advised of the final layout and direction of travel following registration. Teams will have the opportunity to walk the track with the Clerk of Course on the Friday of the event. Min. track width will be 3.5m</p>
Article 8	110	
D8.7.1	111	
D8.12.2	112	<p>Endurance & Fuel Economy</p> <p>The Event will be run in two heats - one in the morning and one in the afternoon. No driver will be allowed to drive in both heats. The starting order will be the same for both heats</p> <p>The number of vehicles on the track simultaneously will be at the discretion of the clerk of the course but generally will not exceed 4.</p>
D9.3 D9.4	117	<p>Information and Command Flags.</p> <p>The specific flags to be used at the Australasian Event will be clarified at Team and Driver Briefings at the Event.</p>
Article 10 D10.7.3	118	<p>Trash Clean Up (added Clause)</p> <p>A reimbursable bond of \$A 500 cash must be posted by each team at registration at the event, against site/pit damage and clean up. Any costs incurred beyond this amount, will be billed to the team.</p>
Article 11	119	<p>General Rules</p> <p>The following general clarification is given to cover all events regarding</p> <p>External Equipment and Work on Vehicles</p> <p>All vehicles must be capable of start, stop, restart and idle in all dynamic events, without external assistance, once the vehicle is on the starting line. This reinforces the requirement that any item essential to satisfactory vehicle operation are included in the cost and design reports for the event.</p> <p>Accordingly, for all dynamic events, from the time the vehicle is deemed "ready to run", and has moved forward to the starting line, it cannot be worked on, and no auxiliary batteries or cooling fans are allowed, until the event is completed (including all heats required to be run consecutively or with some delay under officials' direction). If the vehicle subsequently cannot run it may be removed from the line and repaired but will be deemed to have run "out of order".</p> <p>Additionally, to ensure that the line for the start is not disrupted, and safe operation or clear movement of other vehicles is not impaired, the above requirements will also apply for vehicles entering the holding queue for an event, unless specific clearance for any work, or use of auxiliary equipment, has been obtained from the officials controlling that event.</p>

Article 13 D13.1.6	120	General Pit Rules (additional Requirements) (In line with Formula Student). It must be possible to move the car around with all electrical systems deactivated and the primary master switch in the "Off" position.
D13.6		No fluids are to be drained within the pit area except into approved receptacles and no fuels/oil are to be drained in the pit area without prior approval from the organisers and with appropriate fire protection present.
D13.7		No open vehicle fluid containers are allowed in the pit area.

Electric Vehicles Only;

The following section applies for Electric Vehicles Only at the Australian Event.

Formula SAE-A Electric – 2011

Subject	References	Commentary
General	Formula Student Germany Electric, 2011	<p>For the Australian Event, Electric Vehicles must comply with the Formula Student (Germany) Rules for all clauses which apply uniquely for Electric versus IC powered vehicles, with the Exception of 7.21.3, Mechanical Configuration (see further below).</p> <p>In particular these include:</p> <p>5.3 Activating the tractive system. 7.1 - 7.30 Electrical Rules 8.1 - 8.3 Technical Inspection.</p> <p>All other aspects of the FSE rules which apply commonly for IC and Electric vehicles are superseded and the Australasian event will follow the SAE US Rules 2010 and/or the Australian Addendum for these requirements.</p> <p>NB: Use of Energy Meters (7.27) and electric vehicles competing in the economy aspects of the competitions is under investigation for the 2011 Australasian event and will be further advised</p>

7.21.3	Mechanical Configuration	<p>This clause is modified and supplemented by the more specific Formula Hybrid Rules</p> <p>Energy Storage Container Mechanical Configuration</p> <p>The energy storage container and mounting system must be sturdy, considering forces encountered during on-course competition and the possibility of a rollover accident. The accumulator enclosure and mounting must be designed to withstand</p> <ul style="list-style-type: none"> • 20g static load in both the for/aft and side to side directions • 8g static force in the vertical direction <p>The cells and/or stacks must be appropriately secured against loosening inside the container. If fasteners are used for mounting an accumulator container, they have to comply to Article B14 of the FSAE rules. All accumulator containers must lie within the surface defined by the top of the roll bar and the outside edge of the four tyres (See Figure 13 in the FSAE rules).</p> <p>All accumulator containers must be protected from side or rear impact collisions. If an accumulator container or parts of it are mounted outside of the primary structure (B.3.2) an additional impact structure according to FSAE rules B3.24 or B3.26 must be built to protect the accumulator.</p> <p>The materials used to construct the container must be electrically insulating, mechanically robust, fireproof, and transparent on at least one outer face to facilitate inspection. Not all of these properties are available in a single material, but the following are required:</p> <ul style="list-style-type: none"> • Mechanically robust. • Fireproof • Providing an insulating material (e.g., electrical Nomex sheet) between live electrical parts and any inner conductive portions of the container. <p>There must be no unintentional electrical conduction paths through any of the walls of the container. (Metal screws, rivets, etc.) Breakthroughs or holes in the container are only allowed for the wiring-harness and for ventilation. These holes must be sealed according to article 7.10.</p> <p>The container has to be completely closed at all times, when mounted to the car and also when dismantled from the car without the need to install extra protective covers. Openings for ventilation should be of a reasonable size, e.g. completely open sidepods containing accumulators are not allowed.</p>
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Formula SAE-A Electric – 2011

		<p>Energy Storage Container Mechanical Configuration (Cont'd.)</p> <p>The container must be prominently labelled with high voltage signs, A sticker with an area of at least 750mm² and a red or black lightning bolt on yellow background or a red (or white on red) lightning bolt and the text "High Voltage" or "Danger High Voltage". must be applied on every accumulator container if the battery voltage is greater than 40VDC e.g. Figure below.</p> <div data-bbox="863 689 1126 936" data-label="Image"></div> <p>Systems capable of venting H₂ gas (batteries) must have an active ventilation system that is active whenever the system is charging, whether from on-board or off-board sources. Every accumulator container which is completely sealed must have an equalizing valve to prevent high-pressure in the container.</p> <p>Energy Storage Container Cockpit Barrier</p> <p>A fireproof barrier must be provided between energy storage containers and the cockpit. This barrier must cover the vertical interface between container and cockpit, and also span the complete top surface of the container so that continuous protection is provided for the driver. The barrier may be an integral part of the energy storage container, or the cockpit. This barrier must consist of, at a minimum, a layer of 1.6 mm aluminium covered on the accumulator side by an insulating sheet such as electrical Nomex.</p> <p>Materials with equivalent mechanical electrical and fire performance are allowable but require prior approval. Equivalent fire performance may be demonstrated using a torch-test.</p>
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Formula SAE-A Electric – 2011

Cost Tables	C 3	<p>The Cost Tables from the SAE-I Formula SAE website apply for the Australian event for all materials/systems for both IC and Electric vehicles. The US tables do not cover Electric Traction motors and some other unique items.</p> <p>An “EV Cost Look Up Table” has been created and posted on the SAE-A Formula website for use by EV teams.</p>
Scoring	Various	<p>To provide sensible scoring related to the small number of Electric Vehicles at the Australian event, scores for Electric Vehicles will generally be calculated integrally with the IC vehicles and then extracted to separate EV and IC scoring groups. The scoring method that will be used is posted on the SAE-A Formula website as “EV Event and Scoring Method”</p>

IC and ELECTRIC VEHICLES:

ATTACHMENTS: APPENDIX PDA - 1 Priority Dates for the Formula SAE Australasia Event.

APPENDIX PDA - 1

Action Deadlines for 2011 Formula SAE Australasia

See www.sae-a.com.au/fsae/index.htm for rules specific to FSAE-A

All submissions must be received at the SAE-A Office by 5:00 PM on the defined date. Note that due to time zone differences, teams may need to submit ahead of this time. Early submission of all items is highly recommended.

Email confirmation of receipt will be given for all submissions within two business days of receipt.

Note that the US Rules for late receipt apply except where otherwise noted earlier in this Addendum.

1. Registration - Opens June 27, 2011. Closes July 29, 2011

Registration forms may be obtained by:

Email from the SAE-A Office: formulasae@sae-a.com.au

On-line from SAE-A: www.sae-a.com.au/fsae/index.htm

2. Safety Structure Equivalency Form - September 9, 2011

See Appendix B-1 of US Rules

Submit on line in Adobe Acrobat.

Formula SAE-A Technical Committee

formulasae@sae-a.com.au

3. Impact Attenuator Data Requirements – September 30, 2011

Submit on line in Adobe Acrobat.

Formula SAE-A Technical Committee

formulasae@sae-a.com.au

4. Design Report, Design Spec Sheet & Student Activity Disclosure Form – September 30, 2011

Submit as Adobe Acrobat format

E-mail: formulasae@sae-a.com.au

5. Cost Report must be received by - Electronic Version October 14, 2011 - Hard Copy Version October 21, 2011

Post: Formula SAE-A Technical Committee

SAE-Australasia

Level 2, Suite B – 70 Dorcas Street

Southbank 3006

Australia

E-mail: formulasae@sae-a.com.au

6. ESF & FMEA – (Electric Vehicles Only)

Formats will be made available on the SAE-A website as well as via Formula Student.

Submit ESF as both Adobe Acrobat format as well as hard copy.

Submit FMEA in hard copy. - **Electronic Version September 30, 2011**

- **Hard Copy Version October 7, 2011**

Rules Enquiries concerning Formula SAE Australasia only Send via email to:
SAE-A Rules Committee. Email: formulasae@sae-a.com.au