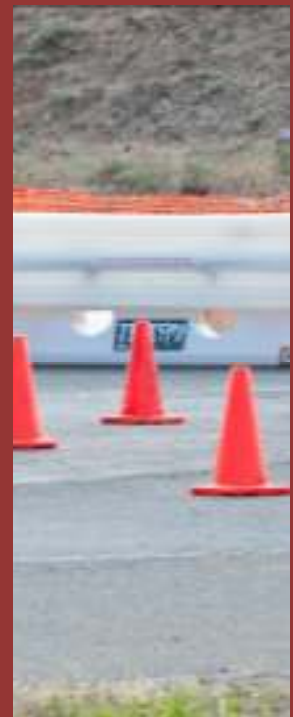




# SAE-A

ial Skills Centre  
e, Werribee

er 2011



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## **EMERGENCY INFORMATION**

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### **Communication**

The registration/administration tent will be staffed with several volunteers and at least one Planning Consortium member at all times that the competition is in progress. It will also be equipped with a two-way radio. All communication is to be done via the two-way radios to the event crew.

In case of an emergency the following number can be called should no other communication options be available:

<b>0403-267-166 (Michela Bartels)</b>
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### **First Aid**

There will be a first aid ambulance on site Friday, Saturday & Sunday from 8.30am until 5.30pm. Outside of these times visit the Administration tent for assistance.

### **Emergency Numbers**

In case of an emergency outside of competition times please contact "000"

### **Hospital**

Werribee Mercy Hospital  
300 Princes Highway (Cnr Hoppers Lane)  
Werribee  
Tel: 9216 8888

## **EVENT STRUCTURE & INFORMATION**

### **CONTACT INFORMATION**

<b>F SAE-A POSITION</b>	<b>NAME</b>	<b>COMPANY</b>	<b>CONTACT DETAILS</b>
<b>Event Manager</b>	Michela Bartels	Society of Automotive Engineers - Australasia	Suite B, Level 2 70 Dorcas Street, Southbank VIC 3006 Ph: +61 3 9696-5190 Fax: +61 3 9696-5865 <a href="http://www.sae-a.com.au/fsae/index">www.sae-a.com.au/fsae/index</a> E: formulasae@sae-a.com.au
<b>Event Coordinator</b>	<b>Adrian Feeney</b>	<b>GM Holden</b>	<b>Ph 0432689114</b>
<b>Technical Advisor</b>	C/- FSAE Rules Committee <b>Rules Enquiries concerning Formula SAE Australasia only</b> Send via email to: FSAE-A Rules Committee. Email: <a href="mailto:formulasae@sae-a.com.au">formulasae@sae-a.com.au</a>		
<b>Clerk of Course</b>	Robert Chadwick	Mitsubishi	
<b>Assistant Clerk of Course</b>	Mark Doody	GM Holden	

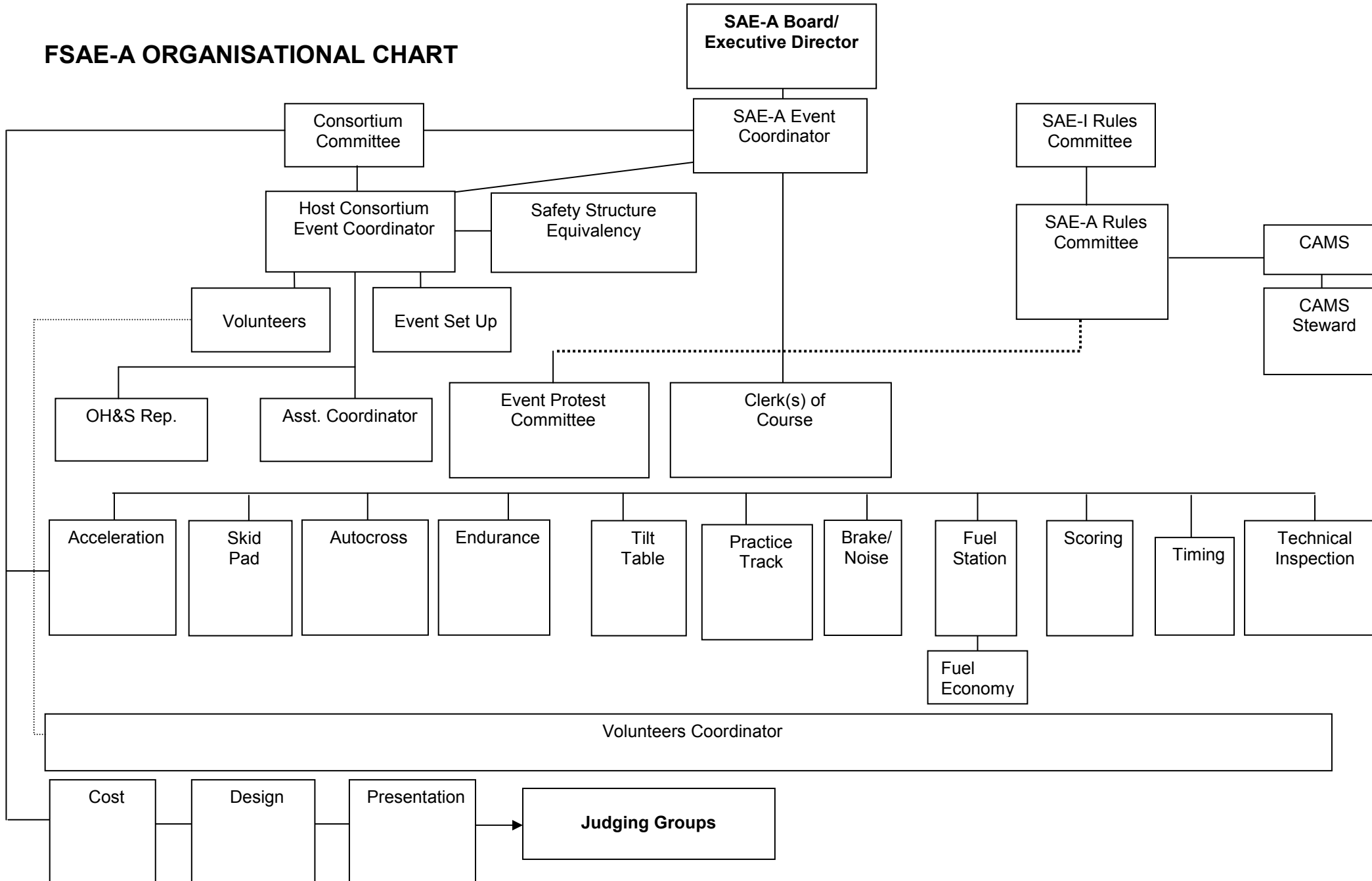
### **VEHICLES OUTSIDE OF FORMULA SAE-A**

*The intent of the Formula SAE-A is to focus on being an aid to the education of engineering students by providing a real world experience of – design; working in teams; working to schedules; applying computer analysis, design and simulation tools; establishing targets and costing a product.*

*The resultant vehicles are then used as part of the assessment of how successfully a team has integrated these elements of the learning process into a final product. The competitive parts of the competition are used to determine how effectively the designs have been executed and how effectively the physical product reproduces the intended design's dynamic outcomes. They are thus limited in nature and do not attempt to test ultimate speed, or other ultimate capabilities of the vehicles. The competition courses are constrained, to limit speeds and maneuvers to within the safe limits of the general Formula design and competition criteria.*

*Accordingly, these vehicles are not assumed to be capable of performing in other environments, nor other types of competition, where the speed limitations and tightly constrained operating confines of the competition's evaluation courses, are removed.*

**FSAE-A ORGANISATIONAL CHART**



## **EVENT STRUCTURE & INFORMATION**

### **EVENT COMMITTEE RESPONSIBILITIES**

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- Read and understand FSAE-A Rules and Event Schedules.
- Liaise with host institution as to where exactly the event will be held.
- Liaise with host institution to ensure necessary equipment is available during the competition for specific events.
- Assist host institution to access necessary equipment required for specific event.
- Act as a liaison between all teams and judging panel for specific event.
- Keep teams informed of event schedule (right place at right time).
- Monitor actions of the teams with safety as a prime concern – especially welding.
- Discuss possible design solutions/repairs, but please don't work on the cars.
- Remember the competition is for the students and they may ask questions, but you should not be offering advice about tuning or repairing the car.
- Help students file protests, but remind them of the risk of losing points for rejected protests.
- Be aware of the student's anxiety over the culmination of their year-long endeavor to build their car.
- Be aware and be a part of the competition. If in your opinion something is mishandled, do make the judges aware of your concerns.
- Be aware of safety. Students bend rules to make deadlines, let's keep everyone safe.
- Be aware that no school is to bring fuel to the competition. SAE-A will be providing all fuel for the competition at the fuelling station.
- Be aware of the potential of fire and environmental spills.
- Be aware of liability and safety.

## **EVENT STRUCTURE & INFORMATION**

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### **SAFETY: PIT AREA – ACCIDENT AVOIDANCE**

Everyone (participants, volunteers, spectators) at Formula SAE-A wants to have an accident free event. The Pit Area – Accident Avoidance has been established to advise teams on potential unsafe practices in the paddock/pit area. The actual FSAE-A events are under the control of the event captains and are operated in a very safety conscious manner.

While in the pits, occasionally our minds lapse and cause us to take risks that when looking back just don't make sense.

Some rules and guidelines to remember:

#### **Jacking**

When supporting cars off the ground, use stands, not milk crates, piles of wood, four of the strongest team members, etc.

#### **Running Engines**

Whenever an engine is running, either;

- The car is on an adequate stand and the drive wheels are at least 10.2cm (4") off the ground.
- A driver wearing full safety gear is in the cockpit.
- The drive wheels have been removed.

Do not allow people under cars with running engines.

Engines must be off when adding fuel.

Engines are not to be running while cars are moved through the paddock.

#### **Fires**

No open fires in the paddock – includes BBQ grills, oxy-acetylene, heaters, cigarettes etc. All welding and soldering of any type is not allowed in the Pit Area and must be carried out at the Kangan Institute welding tent.

#### **Power**

Each pit bay will be supplied with power. Each pit bay can draw a maximum of 5 amps. All electrical equipment must have affixed current test labels. The use of portable generators is prohibited.

#### **Support Vehicles.**

Support vehicles may only be brought into the pit area with the permission of the officials

#### **Fuel and Oil**

No open fuel containers. No fuel containers in the pits or adjacent areas. Waste oil is to be taken to the fuel station for disposal.

#### **Fire Extinguishers**

Fire extinguishers are to be accessible and team members knowledgeable in their use. A fire extinguisher accompanies the car whenever it is moved in the paddock.

#### **Vehicle Modifications**

No unapproved modification to the vehicle after it has been through Technical Inspection. Metal joining is available at the Kangan Institute welding tent.

#### **Flagging**

All drivers must know the competition-flagging signals (Section 5.8).

## **EVENT STRUCTURE & INFORMATION**

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### **SAFETY: PIT AREA – ACCIDENT AVOIDANCE CONT**

#### **Behaviour**

Alcohol, drugs and firearms have no place at this gathering. Rollerblades, scooters, bicycles, self propelled vehicles and pets are not allowed.

#### **Driving Practice**

Practice is only to take place in the designated areas.

#### **Footwear**

All team members must at all times be wearing enclosed footwear and preferably of a sturdy construction. This will be strictly enforced for all team members for the entire site.

It is recommended that the teams advise their family, friends and supporters of this requirement as access to the pit/paddock area will be denied to anybody not wearing enclosed footwear.

#### **Pets**

Would all participants please advise your family and friends intending to come and watch the event that this event has a NO PETS ALLOWED policy and this will be strictly enforced.

#### **A Special Note for Drivers**

All drivers should do a check of critical fasteners and components on their vehicles to assure complete control during the driving events. Fasteners do come loose, parts do fatigue, and occasionally someone forgets to torque a nut – you will be intimately involved if this happens. Drivers are to make themselves fully familiar with the kill switches (there are two, 2) on the vehicle. It is OK to use the kill switch in the event of engine or brake malfunction.

**HAVE FUN – DRIVE SAFE – USE COMMON SENSE**

**ACTION DEADLINES FOR FORMULA SAE-A**

See [www.sae-a.com.au/fsae/index.htm](http://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.

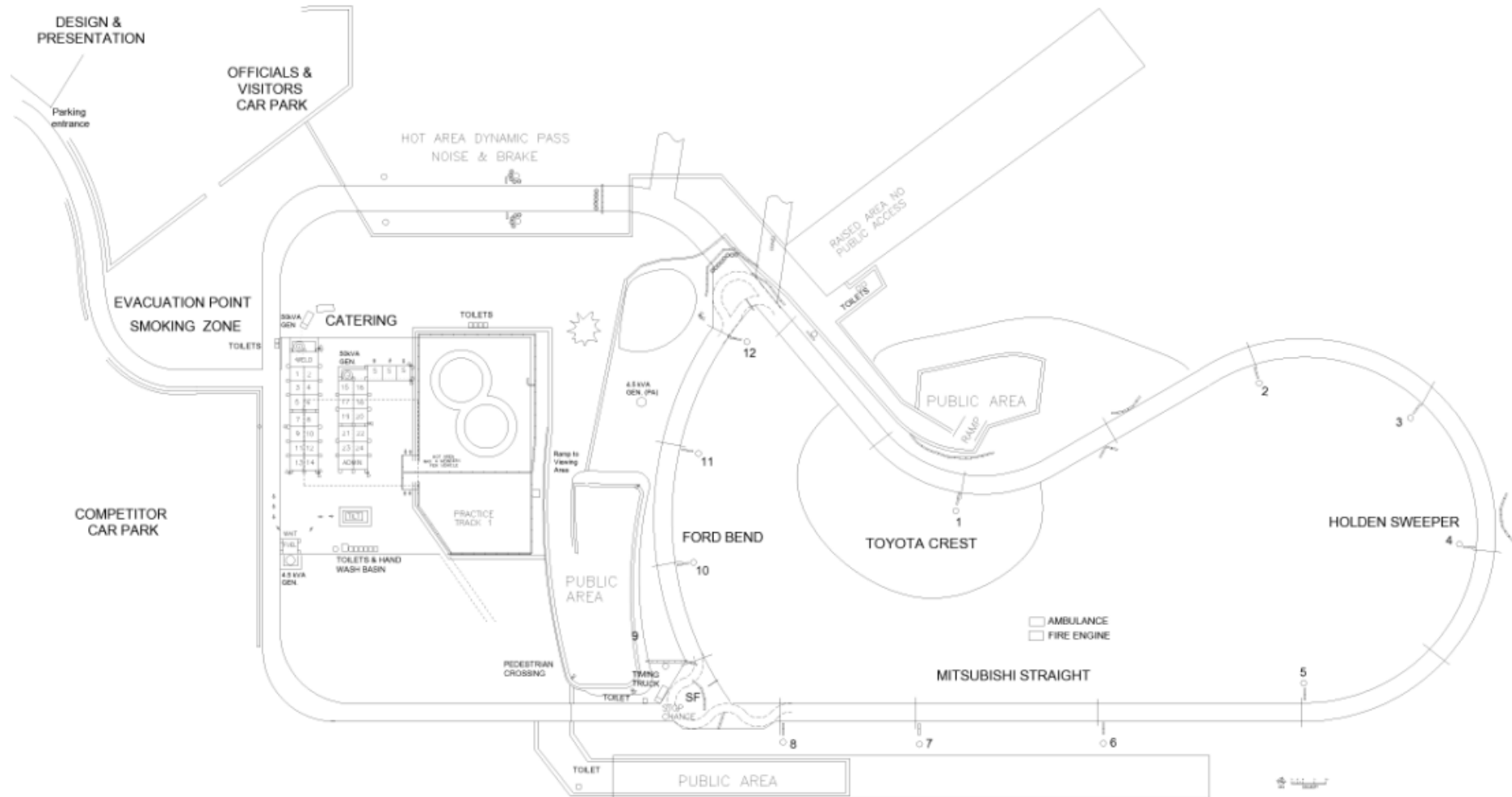
**Note:** Due to time zone differences, teams may need to submit ahead of this time.  
Early submission of all items is highly recommended.

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

**Note:** The US Rules for late receipt apply except where otherwise noted.

<i>Date</i>	<i>Action</i>
<b>June 28, 2011</b>	<b>Registration - Opens. Closes July 30, 2011</b> Registration forms may be obtained by: Email from the SAE-A Office: <a href="mailto:formulasae@sae-a.com.au">formulasae@sae-a.com.au</a> On-line from SAE-A: <a href="http://www.sae-a.com.au/fsae/index.htm">www.sae-a.com.au/fsae/index.htm</a>
<b>July 30, 2011</b>	<b>Registration Closes</b>
<b>September 10, 2011</b>	<b>Safety Structure Equivalency Form Due</b> See Appendix B-1 of US Rules Submit on line in Adobe Acrobat. Formula SAE-A Technical Committee <a href="mailto:formulasae@sae-a.com.au">formulasae@sae-a.com.au</a>
<b>October 1, 2011</b>	<b>Impact Attenuator Data &amp; Student Activity Disclosure Due</b> Submit on line in Adobe Acrobat. Formula SAE-A Technical Committee <a href="mailto:formulasae@sae-a.com.au">formulasae@sae-a.com.au</a>
<b>October 1, 2011</b>	<b>Design Report &amp; Design Spec Sheet Due</b> Submit as Adobe Acrobat format E-mail: <a href="mailto:formulasae@sae-a.com.au">formulasae@sae-a.com.au</a>
<b>October 15, 2011</b>	<b>Cost Report Due - Electronic Version</b> E-mail: <a href="mailto:formulasae@sae-a.com.au">formulasae@sae-a.com.au</a>
<b>October 22, 2011</b>	<b>Cost Report Due - Hard Copy Version</b> Post: Formula SAE-A Technical Committee SAE-Australasia Level 2, Suite B – 70 Dorcas Street Southbank Victoria 3006 Australia

# EVENT DETAIL SITE MAP (TYPICAL)



**EVENT DETAILS**  
**SCHEDULE - THURSDAY**

Time	Event	PA	Site
7:30	Gates open		Generators refueled& started
9:00	Officials/Volunteers Sign In & Collect Meal Tickets		Toilets checked
9:15	Officials/Volunteers Briefing		
9:30	Radio check and distribution	PA System – Sound check "Registration will commence at 10am"	
<b>10:00</b>	<b>Team Registration begins</b>	<b>"Registration is now open"</b>	
11:30	Volunteers lunches arrive		
12:00			Catering arrives for set up
12:30	Officials/Volunteers Lunch		
13:00		"The Team Briefing is at 3:00pm"	Set-Up of all Static Events, Design, Scrutineering, Presentation, Fuel station, Tilt test, Noise and Brake test
	<b>Technical Inspection Open</b>	<b>"Technical Inspection is now open"</b>	
13:50		"The team briefing is at 3:00pm" "The drivers briefing is at 4:00pm"	
14:30			Timing to set up equipment
14:50		"Drivers briefing is at 3:00pm"	
<b>15:00</b>	<b>Team Briefing</b>	<b>"Team briefing has now started"</b>	<b>Welding tent set-up</b>
<b>16:00</b>	<b>Drivers Briefing</b>	<b>"Drivers briefing has now started"</b>	
16:30	Registration Closes	"The Gates will be closed at 7:00pm"	Bin and toilet check
16:45	Radios returned to officials centre		
16:50			Generator turned off
<b>17:00</b>	<b>Technical Inspection Closes</b>	<b>"Technical Inspection is now closed"</b>	
17:00		"Welcome Event commences at 5:30pm"	
17:30	Welcome Event Commences		
19:00			Security on site
19:30			Gates Closed

## EVENT DETAILS

### SCHEDULE - FRIDAY

Time	Event	PA	Site
<b>7:00</b>	<b>Gates open</b>	<b>PA Sound check</b>	
7:30	Presentation, Design & Cost Briefing & Sign In	"The Presentation & Cost event commences in 30 mins"	Generators started
7:45	Distribution of radios and stop watches Officials Sign In and collect meal tickets	"The Design event commences in 15 mins" "The first three teams proceed to weighing by 7:50"	Set up volunteers meals area for morning tea/coffee
8:00	Officials/Volunteers Briefing Presentation, Design & Cost events begin	"The Scrutineering event commences in 20 mins"	
<b>8:30</b>	<b>Tech Inspection Open</b> <b>Tilt table open</b> <b>Noise/Brake test area open</b> <b>Practice Track Open</b>	"The Fuel station, Tilt test, Noise and Brake test areas are now open"	<b>Ambulance arrives on site</b>
9:00		"Drivers Briefing will commence in 30 mins"	
<b>9:30</b>	<b>Drivers Briefing</b>	"Drivers Briefing is about to commence"	
11:30			Volunteers lunches arrive
11:15		"The practice track will be closed at 12:30pm for lunch"	
<b>12:30</b>	<b>Practice Track closed</b>  <b>Fuel station closed</b> <b>Tilt table closed</b> <b>Scrutineering Closed</b>	"The static events and practice track are now closed"	
	<b>Officials/Volunteers Lunch</b>		
<b>13:00</b>	<b>Technical Inspection Open</b> <b>Practice track open</b> <b>Fuel station open</b> <b>Tilt table open</b> <b>Noise/Brake test area open</b>		
<b>17:00</b>	<b>Tech Inspection closed</b> <b>Practice track closed</b> <b>Tilt table closed</b> <b>Noise &amp; brake closed</b> <b>Fuel station closed</b>	"Scrutineering, tilt table, noise & brake, fuel station and practice track are now closed"	<b>Set up Acceleration</b> <b>Set Up Skid Pad</b>
17:05	Scores to be collected and passed into scorers tent		
17:30			Ambulance leaves site
18:00			Toilets checked Rubbish bin collection
19:00			Security on site
<b>20:00</b>	<b>Gates closed</b>		

## EVENT DETAILS

### SCHEDULE - SATURDAY

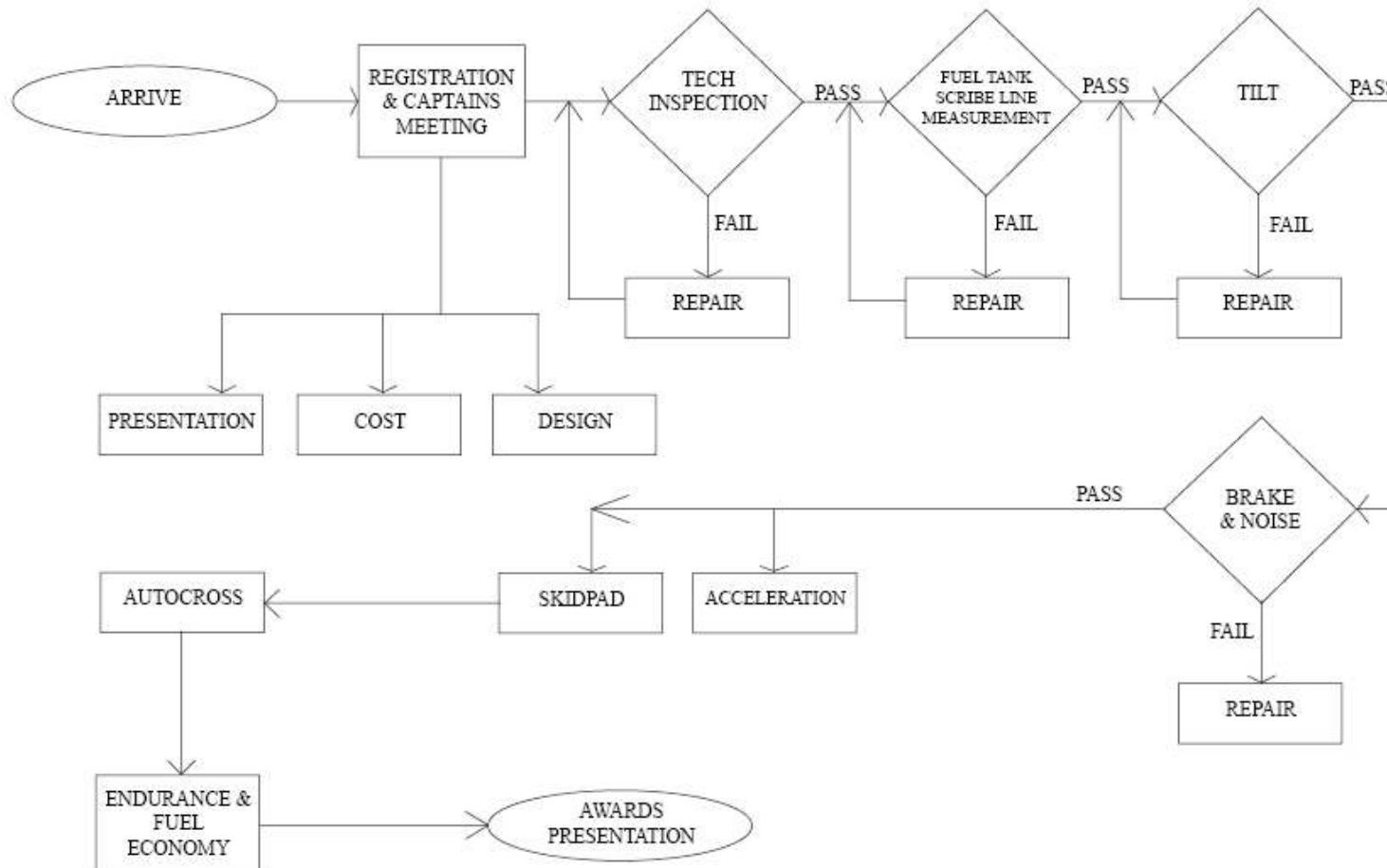
Time	Event	PA	Site
<b>7:30</b>	<b>Gates open</b>	<b>PA Sound check</b>	<b>Generators refueled&amp; started</b>
7:45	Officials Sign In and collect meal tickets Distribute radios and stop watches Distribute Scoring sheets for Skid Pan, Acceleration and Autocross events		Set-up Volunteers meals area for morning tea
8:00	Officials/Volunteers Briefing	"The Drivers Briefing will be held at 8:30 at the front of the administration tent"	
	Event officials to their posts	"The practice track will open at 9:00am"	Ambulance arrives on site
<b>8:30</b>	<b>Drivers briefing</b>	<b>"The dynamic events this morning will start at 9:00am"</b>	<b>Check correct setup for Acceleration/Skid pad event</b>
<b>8:45</b>	<b>Fuel station open</b>	<b>"The fuel station is now open"</b>	
<b>9:00</b>	<b>Practice track open</b>	<b>"The practice track is now open"</b>	
<b>9:15</b>	<b>Start Acceleration and Skid pan events</b>	<b>"The acceleration &amp; skid pan events have now started"</b>	
10:00	Protest Period closed	"The protest period for the Presentation & Cost event has now closed."	
11:45		"The Acceleration and Skid Pan events will close in 15 minutes"	
<b>12:00</b>	<b>Practice track closed</b>	<b>"The Acceleration and Skid Pan events have now finished and the practice track is now closed"</b>	
	<b>End of Acceleration / Skid pan events</b>		
	<b>Design Event Finalists Announced</b>	"Design Event Finalists and their Finals presentation time have been posted in the Admin tent"	
	<b>Officials/Volunteers lunch</b>	"The Autocross track will be available for drivers to walk"	Mark out track with cones for Autocross event
<b>13:00</b>	<b>Practice track open</b>	<b>"Gates for the Autocross event and Practice Track are now open"</b>	
<b>13:15</b>	<b>Autocross event – Session:1</b>	<b>"The Session 1 of Autocross event has now started"</b>	
<b>14:30</b>	<b>Autocross gate closes – Session:1</b>	<b>"The gate will close on Session 1 of the Autocross event in 20 mins"</b>	
<b>15:00</b>	<b>Autocross event – Session:2</b>	<b>"The Session 2 of Autocross has now started"</b>	
15:40		"The gate will close on Session 2 of the Autocross event in 20 mins"	
<b>16:00</b>	<b>Autocross gate closes- Session:2</b>		
<b>16:30</b>	<b>End of Autocross event</b>	<b>"The Autocross event has now finished"</b>	
17:00	Release scores for events up to conclusion of day 2	"Results have now been released for the Dynamic events of this morning and this afternoon. The protest period for these events will now commence and conclude in an hours time"	
	Practice track closed	"The practice track and fuel station are now closed"	
	Fuel station closed		
<b>17:30</b>	<b>Design Finals Commence</b>		<b>Ambulance leaves site</b>
18:00	Protest Period Closed	"The protest period has now closed for the Skid Pan, Acceleration and Autocross events"	Generators turned off
19:00			Security on site Teams left site
<b>20:30</b>	<b>Design Finals conclude</b>		<b>Gates closed</b>

**EVENT DETAILS**  
**SCHEDULE - SUNDAY**

Time	Event	PA	Site
7:30	<b>Gates open</b>	PA Sound check	<b>Generators started</b> Bin check
7:45	Officials Sign In and collect meal tickets Distribute radios and stop watches Distribute Scoring sheets for both heats of the Endurance/Fuel economy event		Set-up Volunteers meals area for morning tea Check track is correctly laid out for the Endurance event
8:00	Officials/Volunteers Briefing Track available for drivers to walk the endurance track	"The Drivers Briefing will be held at 8:30 at the start /finish area"	
8:15		"The fuel station will open at 8:30am"	
8:30	<b>Fuel station open</b> <b>Drivers briefing</b>	"Drivers Briefing has commenced"	<b>Ambulance arrives on site</b>
8:45		"The Practice Track & endurance events will open at 9:00am"	
9:00	<b>Practice track open</b>	"The practice track is now open"	
9:15	<b>Start Endurance / fuel economy event</b> <b>Heat:1</b>	"The endurance event has started"	
11:00		"Warning, the endurance event will be closed at 12:30pm. You must have completed your run"	
11:30		"The practice track will be closed at 12:30"	Volunteers lunches arrive
12:00	Design Event Results released <b>Endurance gate closed</b>	"The Design Event results have now been posted in the Admin tent – the protest period for this event will now commence and conclude at 1:00pm" "The endurance gate for Heat 1 is now closed"	
12:05	Collect scores & penalty sheets and return to scorers		
12:30	<b>Practice track closed</b> <b>End Endurance / fuel economy event</b> <b>Heat:1</b>	"The practice track is now closed" "Tech Inspection, tilt table, brake & noise is now closed except for vehicles which have previously passed and have been referred for retest by the officials"	
	<b>Officials/Volunteers Lunch</b>		
13:00	<b>Protest Period Closed</b> <b>Practice track open</b>	"The protest period for the Design Event is now closed" "The practice track and the gate for the 2nd heat of the endurance event are now open"	
13:15	<b>Start Endurance / fuel economy event</b> <b>Heat:2</b>	"The 2nd heat of the endurance event has now started"	
15:00		"Warning the endurance gate will be closed at 4:30pm."	
15:15		"The practice track will close at 3:30pm"	
15:30	<b>Practice track closed</b>	"The practice track is now closed"	
16:30	<b>Endurance gate closed</b>	"The gate for endurance heat 2 is now closed"	<b>Trade displays commence pack up</b>
17:00	<b>End Endurance / fuel economy event</b> <b>Heat:2</b>	The 2nd heat of the endurance event has now finished	<b>Commence removal of supplies from track including, cones, bunting, tools, tilt table, so on</b>
17:30	Pack-up of teams from pit area Radios returned to the officials centre Preliminary Endurance Scores released		Ambulance leaves the site Furniture to be packed up and stored PA system to be packed up and removed
17:45	<b>Awards Presentations begin</b>	"The awards presentations will now commence in front of the Administration tent"	
19:30			All cars and people off site – Gates Closed

# COMPETITORS' FLOW CHART

## Competitors' Flow Chart



## **EVENT DESCRIPTIONS**

### **COST EVENT (100 points)**

**Location:** Workshop facility (adjacent to Design Presentation)

**Overview:**

Each team will prepare a report of their car's cost to be evaluated by the cost judges. The concept of the cost event is to obtain an accurate estimate of cost of the car in a low volume production (1000 cars per year) scenario. The report is in effect your cost proposal to the senior management of a company to get them to invest in your product line. The more information that you can supply to them, the more professional the look of your materials, the more likely the company may be willing to look at the product itself. This is the goal of the cost report itself. Additionally, the teams will also prepare an electronic and hard copy Bill of Materials and detailed process descriptions. This evaluates not only the cost of the car, but also the team's ability to prepare an accurate engineering cost estimate and know exactly how the vehicle would be built. The car with the lowest corrected cost and the best report will win the event.

**The Cost Report:**

The actual cost report is due into the judges approximately six to seven weeks prior to the event at the venue. Books must be mailed before the post mark deadline or the book will incur a penalty of 10 points per day after that date. The cost report is judged on the basis of the cost of the car and quality of the cost report. The cost of the car is determined by the cost of the parts and fabrication processes using the look up tables available on the FSAE website. No exchange rate is used as all parts are costed using "world dollars" from the tables. The report will follow the guidelines set forth in the published rules. From this analysis the judges will determine if all parts and processes were included and presented in a logical manner - the judges will add penalties if there are errors, items omitted, or inconsistencies with the look up. The report score will be given based on the quality of the report and its overall presentation.

	<b>40 Points</b>	<b>Lowest Cost – Each of the participating schools will be ranked by total adjusted retail cost from the BOM and given a 0-40 point score based on the formula published in the current rules</b>
	<b>40 Points</b>	<b>The Cost Report – written, professional presentation of the cost data - The report score will be based on the quality of the cost report, its accuracy and thoroughness. The range for the report score is 0 – 40 points. Event Day / Visual Inspection – The cars will be reviewed for part content and manufacturing feasibility.</b>
	<b>20 Points</b>	<b>Real case scenario – On the day of the event the team will be asked to explain how they would achieve a cost reduction of 15% on a predetermined vehicle system. The team will be judged on its knowledge of the current system process and the effectiveness and viability of the proposed cost reduction, presentation skills are NOT a part of the judging criteria</b>
<b>Total</b>	<b>100 Points</b>	

## **EVENT DESCRIPTIONS**

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### **COST EVENT cont-.**

#### **The Visual Evaluation:**

On the day of the event, the cost event judges will be in the design shed, with teams to present to the judges as per schedule. This review is to make sure that the parts that are on the vehicle are properly reflected in the cost report and that nothing has been added or changed since the cost report's publication.

The focus of the cost event is the process of building the vehicle and the components contained therein. The cost judges will speak with the students to ask them any questions that they had regarding the report and the process. This is a critical step in the cost event process.

The time allotted for the appointment on event day is ½ hour per team at the designated time for that school. That time can then be broken down as follows.

Check-in:	1 or 2 minutes
Overall Process and Mfg. methods:	4 to 5 minutes
General questions on report:	10 minutes
Cost reduction proposal:	10 minutes

Addenda to the report can be taken into consideration to cover any necessary changes made in the car. These addenda will only be accepted at the time of registration at the event and must be in the format proscribed by the rules

The final scores are tabulated and presented at the end of the judging day to the statisticians and are posted the next morning for the students viewing. Once posted, the scores may be protested for only one hour, after which the scores become final.

#### **Electric versus IC engine vehicles.**

Regardless of Powertrain type, all vehicles will be concurrently judged and results tabulated. They will then be subsequently split into two separate groups for final allocation of cost points and overall event scoring.

#### **Tips for a Good Cost Report:**

- Follow the rules - put the items and processes where the guidelines tell you to put them.
- In addition to a well presented binder on A4 sheets, include an EBOM (Electronic Bill of Material) on disk (3.5 in MS Excel) that follows the format in Appendix A-5.
- Give sufficient detail for the judges to fully understand your vehicle and the processes applied.
- Be careful to detail all relevant processes.
- Include any photographs, pictures, drawings, blue prints, receipts, etc. in the appropriate sections of the book to help us understand the design processes used in manufacturing the parts and to help verify the submitted costs.

## **EVENT DESCRIPTIONS**

### **ENGINEERING DESIGN (200 points)**

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**Location:** Workshop Facility

#### **Design Judging Procedure:**

The students must provide a pre-event design summary and the design specifications sheet. The two will be used to group the teams as well as provide judges with a preview of their designs. Teams that do not submit both the design summary and spec sheets will be disqualified from the design event and receive zero points. Design summary text should be no more than 4 pages in length, including an additional three pages of vehicle drawings and one page of optional material. The summary will not be judged based on length or amount of material. Content of these summaries should be similar to a flyer at a technical trade show and contain vehicle specs and interesting design features. The Design Specifications Sheet is based on a fixed template located on the FSAE-A website and contains detailed system and component level specifications.

It is the students' responsibility to prove to the judges that their vehicle is a first year car since second year cars are not allowed. If the structure of the frame is not obviously a completely new design from previous years, then thorough photo documentation should be provided to prove that the car is new. If the frame is not new, 20 points will be deducted from the design score. At their discretion, the judges may also deduct up to 30 additional points if photographic documentation shows the remaining parts of the vehicle have not been significantly altered or if sufficient new design work has not taken place.

The design judging will start promptly Friday at 8:00am (see schedule). Each time slot will be exactly 60 minutes long with 40 minutes for the judges to review the vehicle and 20 minutes to total their scores. Design judges should arrive close to 7:00am to ensure there is sufficient time for registration and briefing / clarification of any issues and preparation for the first time slot.

In 2005 the Formula SAE-A competition adopted a method similar to that in the US competition where a final is held for Design judging. This final is held on the Saturday evening after the close of the autocross event. Results are announced at midday Sunday.

Teams will need to ensure their entry is weighed before judging. Teams will need to arrive 10 minutes prior to their allocated judging time in order to be weighed before commencement of judging. Teams who are late or who miss their slots will be re-judged only if time allows, at the discretion of the event captain. Point penalties may be applied.

Design judging will consist of three groups of judges each having approximately five judges. Each group will consist of at least one judge in each of the following areas: Chassis Design, Mechanical Design, Powertrain and Data Acquisition, Ergonomics/Interior/Safety and Electrical/Electronic. Each judge will give scores on the remaining five areas (see judging form in rules) as they apply to **the area of the vehicle they are responsible for**. There are some roving judges who will be responsible for pointing out items dedicated judges might miss. This will help to even out scores between groups. Teams invited to participate in the design finals will then be re-judged by the team leader of each of the three groups, the two/three expert roving judges and the event captain.

## **EVENT DESCRIPTIONS**

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### **ENGINEERING DESIGN cont-**

Expanded definitions of each area have been provided on the scoring sheets along with a space for comments. When possible, copies of these sheets will be given back to the teams (with the numerical score blanked out) in order to provide more feedback. The judges are requested to please take notes and provide feedback to the participants – a scribe for each team will be allocated to this task. The scribe will not be a judge - purely an observer.

Students are encouraged to approach design judges on the days following the design event to request additional feedback on their designs. Judges may not comment on vehicles that have progressed through to the design final until results have been announced.

Each student team should have one representative who is prepared to discuss each of the above areas with each judge individually. This means three - four separate students. If the judges have to split their time between a single student, lower scores will be given according to how much information the judges feel they have received. Students should bring any information they feel is relevant (charts, graphs, parts, etc.) to support their design efforts. The judges will give more credit to small amounts of printed data than to word of mouth. Correlation between analysis and physical testing is a very powerful tool and should not be omitted from the presentation of data.

At the end of the initial judging on the Friday, each judging group will be entitled to recommend, **AT MOST**, two to three vehicles to send on to the finals. It is up to the judges in each group, in consultation with the event captain, to determine how many vehicles to send on. If only one vehicle stands out from the rest, then only one should be sent on. If more than two vehicles stand out, then one of the roving judges and the event captain should assess the situation and make a final determination. No more than a **maximum** of six vehicles will be judged in the Final.

The final judging will take place on the Saturday evening at the close of the autocross event. Each vehicle will be re-judged in a less formal structure than the initial judging with emphasis being placed on the innovative design solutions implemented. Teams for the Finals will be advised 12 noon on the Saturday. Final results will be released midday Sunday.

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## **EVENT DESCRIPTIONS**

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### **PRESENTATION (50 points)**

**Location:** Classroom in Main Administration Complex Building

#### **Overview:**

After a year of planning, fabricating, and testing a new, prototype vehicle, the team aspires to sell their vehicle design to a make-believe racing manufacturer. The competitors in this event will be judged on their ability to create and deliver a presentation that clearly explains the merits of their design. The winner of the event will score 75 points.

#### **The Presentation:**

Competitors are to make a presentation to upper level executives of an imaginary manufacturer. The presentation should tie together all factors that would influence the marketability and manufacturability of their design. The technical aspects of the vehicle design should be presented to reinforce or support performance claims. The competitors should show an understanding of the marketplace and the targeted customer, and show how their design fits into its expected market. Competitors must convince the judges that their prototype represents a profitable enterprise for the manufacturer.

#### **The Vehicle:**

The racecar is designed for the nonprofessional weekend autocrosser. It should have high performance characteristics in handling, accelerating, and braking. Knowledge of the customer should dictate a design that is a compromise between cost and performance while also being safe, reliable and easy to maintain. The car's marketability is enhanced by other factors such as aesthetics, comfort, use of common parts, and high tech features. All of the vehicles are required to conform to safety regulations as defined in the FSAE-A rulebook.

#### **Presentation Tips from Previous Experience:**

- 1) Ensure your presentation runs to the time allocated as time limits are strictly enforced.
- 2) Spell check all overheads, hand-outs, slides etc.
- 3) There is no dress code; however, bad first impressions are difficult to remedy.
- 4) Remember that equipment has been known to fail, copies can be ruined in transit, etc. Consider other alternatives in case something should go wrong.
- 5) Have someone from your team video your presentation and the judges' comments afterward for your team's future FSAE efforts.
- 6) The most technically knowledgeable person on the team may not be the best person to lead the presentation team. Choose someone who is charismatic and good at public speaking.

#### **The Event:**

One or more team members will give the presentation to the judges. All team members who will give any part of the presentation, or will respond to the judges' questions, must be at the front of the event room when the presentation starts and must be introduced to the judges. Team members who are part of this "presentation group" may answer the judge's questions even if they did not speak during the presentation itself. All others are excluded from this activity.

Presentations will last no longer than ten minutes with a five-minute question and answer period following the presentation. Only judges may ask questions during this time.

## **EVENT DESCRIPTIONS**

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### **PRESENTATION cont-**

A team of judges will grade the competitors. The judges will use the form in Appendix A-5 of the FSAE-A rules for event scoring. This form breaks the scoring down into five equally weighted categories: Content, Organisation, Visual Aids, Delivery, and Q&A period. A perfect score on the judges' form will be 50 points. The scores for a team of judges will be averaged together. The competitor's final score will be calculated using the following equation:

$$\text{PRESENTATION SCORE} = 50 * P_{\text{team}} / P_{\text{max}}$$

It is intended that the scores will range from near zero (0) to seventy-five (75) in order to provide good separation. If a team misses their allocated period, the team will receive zero (0) Presentation points. The team that makes the best Engineering Presentation (regardless of the quality of the car) will win the event.

#### **Judging Guidelines:**

1. Familiarise yourself with the assessment criteria prior to the commencement of the first presentation.
  2. Place specific emphasis into how well the team presented their design. Technical information will be required to a certain extent but bear in mind this isn't the Design or Cost event.
  3. Don't interrupt the students' presentation. Wait until they are finished to ask questions.
  4. The question period is strictly 5 minutes or less.
  5. Make sure that the presentation is graded immediately after the team leaves the room.
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## **EVENT DESCRIPTIONS**

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### **TECHNICAL & SAFETY INSPECTION**

**Location:**                    **Technical Inspection Tent – Pit Area**

**Purpose:**

The purpose of Technical Inspection is to determine if the vehicle meets the FSAE rules requirements and restrictions and if, considered as a whole, it satisfies the intent of the Rules. For purposes of interpretation and inspection the violation of the intent of a rule is considered a violation of the rule itself.

**Procedure:**

Prior to the event, teams must submit a self assessment using the standard form, completed by the team and signed by the Faculty Advisor. This form must be presented at the Team Registration on the Thursday

Teams attend Technical Inspection at the designated tent area at the assigned time.

With you, you must have:

- The car (obviously).
- Technical Inspection sheet completed by the team (if not already provided at Registration).
- Copies of any Safety Structure Equivalency forms.
- All the helmets you plan to use in the event.
- All the drivers' suits and other safety gear.
- All drivers on the team must be in attendance for roll bar height and egress checks.

When you pass the Technical Inspection, you will be given the first of three (3) parts of the inspection sticker. The second and third parts will be given at the Tilt Table and the Brake & Noise Test respectively. Then, and only then, will you be allowed to compete in the dynamic events, including access to the practice track.

If you pass Technical Inspection, the Technical Inspection Form will be retained by the Technical Inspection Crew and you should proceed to the Tilt Table. If you have items that need to be rectified, the form will be returned to you (the team), you will not get your sticker, and you will have to present your car at Technical Inspection again.

**EVENT DESCRIPTIONS**

**TECHNICAL & SAFETY INSPECTION cont -**

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**Link to be added to SAE website when available.**

**Electric Vehicles.**

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**Link to be added to SAE website when available**

**PAGE TO BE UPDATED**

## **EVENT DESCRIPTIONS**

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### **FUEL AND TILT TABLE**

#### **Description:**

The Fuel Station will provide 98 octane petrol or E85 to each car as needed. No other fuel or additives are permitted. Note: *no vehicle will be provided with fuel until it has passed Technical Inspection*. The first portion of a three-part sticker will be applied in a conspicuous location near the front of the vehicle upon passing Technical Inspection.

#### **Follow specific safety guidelines while in the fueling area:**

1. All engines must be off; cars are to be pushed to and from fueling.
2. Only the driver, in driving suit, is permitted in the area as fuel is dispensed.
3. A scribed line or similar identifying mark must be used to indicate the "full" level.
4. Tank is to be filled to this level each time fuel is received.

The first time the vehicle receives fuel, the car must proceed (with engine off) to the Tilt Table. The vehicle will be placed on the table with the tallest driver aboard. *The vehicle should be oriented on the Tilt Table in the direction that is most likely to create spillage*. The table will then be tilted to an angle of 45 degrees. There must be no fuel (or other fluid) leakage at this angle. If the vehicle passes this test, the angle is increased to 60 degrees. This angle is used to represent a cornering force of 1.5 Gs. If the upper wheels remain on the table the vehicle passes. (Some vehicles may lift one wheel. The station manager(s) should be consulted if this occurs). The person in charge at the Tilt Table must sign off an inspection form, which travels with the car. A second sticker is applied (on the car) next to the first, to indicate passing the Tilt Table test. The vehicle is now free to proceed to the Brake & Noise area. Should the vehicle fail at either of the two angles, the car must be repaired and re-tested.

**Vehicles may be forced to return to this station for re-certification at the discretion of the officials. This may be due to work that was performed on the vehicle's fuel system after having passed the Tilt Test, or due to an incident which results in damage to the vehicle.**

#### **Safety guidelines for the Tilt Table area:**

1. All engines off, push car on and off table. Care must be taken to avoid damage to the vehicle when pushed on and off the Tilt Table.
2. Inside wheels are to be placed against the guard of the Tilt Table.
3. Attach a strap to rollover hoop and side of table which is to be elevated. Allow a little slack. (Team members may be used to spot, if a strap is not available).
4. Be sure table is clear before raising and especially when lowering. Inform people in area when raising or lowering (e.g. "Coming Down").
5. Use absorbent material to soak up leaks.
6. Keep a fire extinguisher handy.

## **EVENT DESCRIPTIONS**

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### **BRAKE AND NOISE**

**Location:**                    **Roadway on the side leading to the Hairpin**

**Description:**

The Brake & Noise station combines two tests of the competition vehicles. First the vehicle will be checked for compliance with the sound level restrictions then the effectiveness of its braking system will be tested. No vehicle is permitted at this station until it has: a) passed Technical Inspection and, b) passed the Tilt Table test. Proof of this is the two “tech” stickers, which must be applied to the car.

The static sound level test shall occur at the start line of the brake test. The vehicle will be placed at the start line with the engine running and the transmission in neutral. An rpm sweep from idle to  $\frac{3}{4}$  of maximum engine speed shall be used during the noise evaluation. Sound level meters will be positioned 0.5m from, and level with, each exhaust outlet. Each meter will be positioned at an angle of 45 degrees from the outlet in the horizontal plane. **Sound level shall not exceed 110dBA.**

Each driver must be instructed as to the proper procedure for the brake test. With the car at the start line of the station a green flag (or similar signal) should be used to signal the start of each run. The driver must accelerate (typically getting into 2nd gear) until reaching the braking area, which is a box defined by pylons. Once inside this box, the driver must apply the brakes with enough force to demonstrate full lock-up of all four wheels. A second flagger should wave a red flag as the driver enters the box. Brake light function will be evaluated during this test.

If the vehicle passes both tests, the person in charge is to sign off the approval form and provide the team with the last “tech” sticker. The vehicle is now free to proceed to the practice track or on to the dynamic events. (The approval forms shall be retained by the Brake & Noise crew and turned in at the Technical Inspection tent periodically.)

If the vehicle is unable to pass either of the two tests in three attempts, the car must be repaired and then brought back for retest. The vehicle will not be allowed to compete without passing these two tests. Note: *The vehicle may be permitted on the practice track without the third tech sticker at the discretion of the officials, but only after a full set of three attempts have been made at the Brake & Noise area.*

The noise level can be measured at any time during the dynamic events. Vehicles may be forced to return to this station for re-certification should the officials deem it necessary. Re-certification may be required if work is performed on the vehicle’s braking system or exhaust system, or if the vehicle is involved in an incident which results in vehicle damage.

Brake light intensity will be assessed in natural daylight by the Brake & Noise judges and deemed suitable or otherwise subjectively.

**Safety guidelines for the Brake & Noise area:**

1. Only one car at a time in Brake & Noise area. Do not allow a second car into the area until the last one has completed its exit.
  2. Do not attempt certification of any vehicle without enough workers. Three (3) workers minimum, four (4) preferred.
  3. Never place yourself in the line of travel of any car. Stay well away from the “hot” area.
  4. Use water barriers for protection of workers and equipment.
  5. Have fire extinguishers handy.
  6. Use brooms and oil-dry as needed to keep braking area clean and dry.
  7. Any vehicle damage or contact must be reported to the event captain.
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## **EVENT DESCRIPTIONS**

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### **PRACTICE TRACK**

**Location:**                      **Track Area**

**Description:**

The practice track is a relatively small open test area designated by the event organizers to provide teams with an opportunity to conduct brief dynamic tests of their vehicle during the available hours of the competition. No vehicle will be permitted to enter the practice track unless it has: a) passed Technical Inspection, b) passed the Tilt Table test and c) attempted to pass, at least once, the Brake & Noise Inspection test. Failure on the Brake & Noise test will require vehicle modifications, at Brake & Noise.

Each driver must understand and follow proper driving procedures at this facility. In addition, it must be understood that the Practice Track volunteers are in control of the facility and adherence to their direction is mandatory.

Only one car at a time will be allowed. At all times, drivers must be wearing proper safety equipment and proper safety rules must be maintained. Once signaled to begin testing, the driver is free to perform any test maneuvers he or she feels necessary to evaluate the vehicle (within the limits of the track perimeter). One volunteer will be the “official” at the track and coordinate the beginning and end of each team’s approximate 5 minute time limit. The official will use green and red flags or some other method of alerting the driver to the beginning and end points.

If during the course of dynamic testing the vehicle sustains some type of damage or significant mechanical breakdown, the vehicle will be required to exit the track, make the necessary repairs, and get reviewed again at Technical Inspection prior to participating in additional dynamics tests or events.

**Safety Guidelines:**

1. Only one car at a time. The next car will not be permitted to enter the area until the last one has completed its exit.
2. Up to two volunteers will be on hand to manage the operation of the practice track.
3. Never place yourself in the line of travel of any car. Stay well away from the “hot” areas, always at a safe distance behind the barriers.
4. Have fire extinguishers handy.
5. Use brooms and oil-dry as needed to keep the practice track clean and dry.
6. Any vehicle damage or contact must be reported to the event captain.
7. Do not permit spectators to sit or lean on the barriers surrounding the practice area which may be evaluated on the practice track.

## **EVENT DESCRIPTIONS**

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### **ACCELERATION (50 points)**

**Location:** Track Area

**Event Concept:**

The goal of the Acceleration event is to measure the vehicle's maximum acceleration capability by measuring the total time required for the vehicle to travel a straight distance of 75 m from a standing start on flat ground. The event is designed to focus on the vehicles engine performance and drivability, and on the suspension design characteristics for the ability to provide maximum tyre grip. **(NO "traction enhancing" agents may be used on the track surface. NO "burnouts" are allowed).**

**Event Format:**

Two drivers are allowed per car; two runs per driver. Each run consists of a driver completing 1 acceleration run. Acceleration times will be recorded for each run and any penalties will be added to the time for that given run. The fastest time of the 4 runs (including penalties) will be used to calculate the score for each car.

**Staging:**

A person holding a Green Flag will motion a car to approach the starting line, which is located approximately 0.3m from the timing line used for scoring. When the starter waves the green flag, the driver will accelerate to the end of the course. Timing will start when the vehicle crosses the first timing line, and ends when the vehicle crosses the finish timing line (75m from the first timing line).

After a driver's first run, they have the option of immediately taking a second run, or leaving the staging area and running later in the session. Each car must exit the staging area before changing drivers.

Cars found to be leaking fluid (oil/coolant) will not be allowed onto the staging area until the leak is rectified.

**Cars that are not in line by 11.45am will not be allowed to run. Cars that are in line will be allowed to finish the run for that driver but will not be allowed to switch drivers.**

**Penalties:**

- 2.0 second penalty per cone knocked down or out of position.
- DNF penalty for cars that go off course or return from the finish at an excessive speed.

No toolboxes and/or spare parts will be allowed in the queue area or staging lanes unless deemed necessary for starting the vehicle's engine.

## **EVENT DESCRIPTIONS**

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### **SKID PAD (75 points)**

**Location:** Pit Area

**Event Concept:**

The goal of the Skid Pad event is to measure the vehicle's maximum cornering capability by measuring the total time required for the vehicle to complete one left hand and one right hand circle. The event is designed to focus on the vehicles suspension design characteristics and tune-ability for maximum lateral grip, and minimize the effect of driver reflexes during transitional maneuvers.

**Event Format:**

Two drivers are allowed per car, two runs per driver. Each run consists of a driver completing 2 right-hand laps immediately followed by 2 left hand laps of the course. Lap times will be recorded for the 2<sup>nd</sup> lap of each right-hand and left-hand circle (the 1<sup>st</sup> lap of each is not timed).

**Scoring:**

Lap times will be recorded for the 2<sup>nd</sup> lap of each circle for a given run on the Skid Pad. These times will be averaged together and added to any penalties and used to calculate lateral acceleration for each run. The fastest average time (including penalties) from either driver during any of the 4 runs will be used to calculate a score for that vehicle.

**Staging:**

Each car's timing box will be checked with a wand before entering the final staging area. Stage your car in the appropriate line for either Driver 1 or Driver 2. This will help prioritize the running order. A person holding a Green Flag will motion a car to approach the starting line, which is located approximately 20m from the timing line used for scoring. When the starter waves the green flag, the driver will approach the Skid Pad and proceed onto the Right-hand circle. After completing 2 laps, the driver must continue onto the Left-hand circle and complete 2 more laps. After completing the second left-hand lap (the fourth lap in total) the driver will exit the Skid Pad. After a driver's first run, they have the option of immediately taking a second run, or leaving the staging area and running later in the session. Each car must exit the staging area before changing drivers.

**Cars that are not in line by 11.45am will not be allowed to run. Cars that are in line will be allowed to finish the run for that driver but will not be allowed to switch drivers.**

**Penalties:**

- 0.25 second penalty per cone knocked down or out of position.
- DNF penalty for cars that go off course.
- DNF for cars that run an incorrect number of laps.

No toolboxes and/or spare parts will be allowed in the queue area or staging lanes unless deemed necessary for starting the vehicle's engine.

## **EVENT DESCRIPTIONS**

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### **AUTOCROSS (100 points)**

**Location:**                      **Track Area**

**Event Format:**

1. The event area for the Autocross Event has two designated zones,  
**General line up area** This is the area where teams will line up ready to run.  
**Staging area**                      The area where cars are ready to run with the driver fully strapped in and is located adjacent to the start line. Once a vehicle enters this area it is under the direction of the event officials.  
  
Teams are **not** allowed to work on their vehicles in these areas.  
Driver changes are allowed in the designated driver change boxes.
2. The event will be run in two sessions with the times for both sessions counting.  
Your time will be your team's fastest corrected time from either session.  
The minimum time will be the lowest corrected time of the fastest team of the event in either session.
3. Each team can run a maximum of 2 drivers in each session.
4. Each driver can complete a maximum of 2 laps in each session  
(i.e. 4 laps in total per team per session, 8 laps in total per team for the event).  
Number of drivers per team is from 2 to 4, at the discretion of each team.
5. 1 car on the track at a time for the entire session, however organisers reserve the right to run multiple cars on track at a time in exceptional circumstances.
6. All cars must line up in the "General line up area" and be ready to move into the "Staging Area" when requested by the officials. Failure to do so will result in the car being sent out of the "General line up area". The car can re-enter the "General line up area" when ready, at the back of the queue.
7. No toolboxes will be allowed in the "General line up area", however hand tools required to adjust the vehicle for the second driver are permitted.
8. Up to four cars, ready to run, with driver fully strapped in, will be in the "Staging Area" at any one time.
9. Cars will be called up to the start line in order of the line up in the "Staging area".
10. Upon completion of the first lap, the driver will return to the "Staging Area".  
If the driver elects to immediately attempt their second run the officials will give them priority to move forward to the start line official.
11. If the team wishes to conduct a driver change, they move to the driver change area in the "Staging Area" and complete the driver change. (same rules as the Endurance event regards number of people, etc. but no time limit).
12. A car having completed a driver change joins the rear of the line in the "Staging Area".
13. Drivers not wishing to undertake their second lap, or a driver change, exit the event area and can re-join the event via the back of the queue in the "General line up area".
14. As a car exits the "Staging Area", the next car in the queue in the "General line up area" will be called into the "Staging Area".

## **EVENT DESCRIPTIONS**

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### **AUTOCROSS cont-**

#### **Session 1**

1pm - 2:50 pm (110 minutes)

1. Entry gate to the "General line up area" opens at **12:30pm**.
2. The first session concludes at **2:50 pm** (or earlier at the discretion of the organisers if all cars have run their 4 laps).
3. Cars queued but not having completed all four laps at the end of the first session, will be at the head of the queue for the second session.

#### **Session 2**

3:00pm - 4:30pm (90 minutes)

1. Notwithstanding the published start time, if session one concludes early (all cars having completed their allocated laps), session 2 will commence 10 minutes after session 1.
  2. The gate to the "General line up area" closes at **4pm**.
  3. All cars in the "General line up area" at 4pm will be given 2 laps, without a driver change.
  4. Notwithstanding item 3, if a vehicle is not ready to compete when instructed to, that vehicle will not be permitted further runs.
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## **EVENT DESCRIPTIONS**

### **ENDURANCE TRACK (300 points) AND FUEL ECONOMY (125 points)**

**Location:** Track Area

**Purpose:**

The goals of the endurance and fuel economy event are to test the durability of the vehicles and determine the fuel efficiency of the vehicles. The dual nature of the event can lead to compromises, as a corrected mileage of 26-litres/100 km is required to avoid penalties. The course layout and 22 km length of the event tests the vehicle's durability. **NOTE:NO REPAIRS OR WORK MAY BE PERFORMED ON THE VEHICLE DURING THE EVENT.**

**Description:**

The event is approximately 22 km, with two drivers completing approximately 11 km segments each. No refueling is allowed during the event. Each team is given three minutes to complete the driver change. Any additional time will count against the team. **There is no advantage to completing a driver change in less than three minutes.** The run order for the event will be based on the **Autocross** event, with the fastest vehicle running first, followed by the second fastest, etc. **If a team did NOT score in the Autocross event, the vehicle will run after the teams who did score in the Autocross, with the order based first on the finishing order of the Acceleration event, and then on the finishing order of the Skid Pad event.**

**Endurance Procedures:**

The team must have the **fully fuelled** (see Fuel Economy Procedures below) vehicle in the staging line at the appointed time with the first driver strapped in. Only one crew member and the other driver are allowed in the staging area for the vehicles. When there is a space for the vehicle on the course and the timing/scoring system is set, the first driver will be motioned to the starting line. An official will perform a safety check of the vehicle and the driver restraint system. The starter will stage the vehicle's front tyres on the starting line. When there is an opening on the track the starter will wave a green flag signaling the go-ahead for the driver to start. If the vehicle stalls, the driver **must wait for another green flag** before being allowed on the course.

On the last lap of the first driver, a chequered flag will be displayed and the vehicle will be directed to the driver change area. Only the second driver and one crew member will be allowed in the driver change area with the vehicle and the first driver. Once the vehicle has arrived in the driver change area the team has three minutes to get the second driver seated, belted in, and rolling out of the driver change area. Only adjustments to fit the second driver may be performed on the vehicle. **No other work is allowed.** When the second driver is ready the vehicle should be pushed to the starting line queue. An official starter will perform a safety check of the vehicle and the driver restraint system. The starter will stage the vehicle's front tyres on the starting line. When there is an opening on the track the starter will wave a green flag signaling the go-ahead for the driver to start. If the vehicle stalls, the driver **must wait for another green flag** before being allowed on the course.

Upon completing the last lap with the second driver, the chequered flag will be displayed and the vehicle will exit the course and will be directed to the Fueling Station. The vehicle is to be pushed to the Fuelling Station where the fuel economy will be calculated.

**Notes:**

- The vehicle will be expected to be ready for competition with the first driver at the team's start time. If the endurance event is running late, the vehicle is still expected to be ready when there is an opening for the vehicle on the course. If the vehicle is not ready when

## **EVENT DESCRIPTIONS**

### **ENDURANCE TRACK AND FUEL ECONOMY cont-**

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the official starter motions the vehicle to the starting line a two minute penalty will be assessed and the team will lose their time slot to run the event. (The team may be allowed to run after all the other competitors in the event if time permits.)

- The driver change will be scored as an extra long lap. It will be assumed by scoring that the change was completed in the required time unless notified otherwise. An official will be in the driver change area timing each vehicle and monitoring that no work is done to the vehicle other than the driver change. The official will keep track of each team's time and will notify scoring (EDS) if a team has exceeded the three minute limit (from time vehicle arrives in driver change area to time vehicle leaves area). There is no competitive advantage to changing drivers in less than three minutes.
- No toolboxes will be allowed in the queue area, staging lanes, or driver change area. (It is assumed only hand tools would be required to adjust the vehicle for the second driver.)
- If the vehicle leaves the course because of a mechanical/electrical problem of any type, the event is considered over for that vehicle and scoring will be notified. The vehicle will NOT be allowed to return to the track.
- The vehicle may be restarted if it stalls on the track.
- The driver may pull off the course to have belts re-tightened if necessary, though the additional time for this procedure will be counted.
- The driver may also pull the vehicle off course to remove any cones that may become trapped; though the additional time will count against the team.
- The lap times for the vehicle will be monitored. If the vehicle is not running within 133% of the fastest lap time run on the course (by the fastest car) the vehicle may be black-flagged and removed from the event. If this occurs with the first driver, the second driver will NOT be allowed to run, as the event will be considered over.

#### **Course Preparation:**

The Endurance course will be set up on Saturday night. The students are allowed to walk the course at any time; however, no additional time will be allotted before the 9.30 am start on Sunday.

**NO MOTORIZED VEHICLES ARE ALLOWED ON THE COURSE EXCEPT DURING THE EVENT ITSELF. VIOLATORS OF THIS POLICY MAY BE DISQUALIFIED FROM THE EVENT.**

#### **Fuel Economy Procedures:**

Calculation of fuel consumption will be made by the fuelling officials and will be based upon the weight of the fuel consumed. The vehicle starts the endurance event fuelled to the 'full' mark. After completing the event, the vehicle returns to fuel station and is refueled. The weight of the fuel consumed is determined by weighing a fuel container, filling the vehicle to the 'full' mark, and weighing the fuel container again. The weight of the fuel consumed is the difference of the two measurements. The 'full' mark is a clearly defined scribe line in the filler neck or sight tube as defined by Rule 3.5.3.3. The vehicle will be filled to this mark before starting the heat and again upon completion of the full 22-km distance. At the fuelling station it is critical that visibility of the scribe line in the fuel filler neck is very clear. Also, no shaking of the vehicle will be permitted during initial fill (prior to Endurance event) nor final fill (after the Endurance event).

**PAGE TO BE UPDATED**

**REGISTERED TEAMS AND STATIC EVENTS SCHEDULE**

CAR	UNIVERSITY NAME	Friday							
		TECH.		PRES.	DESIGN		COST		
		B	14:50	09:20	C	10:50	B	13:30	
		B	08:20	10:10	B	12:20	B	14:30	
		A	09:00	10:30	C	12:20	A	15:00	
		A	09:40	11:10	B	13:20	A	15:30	
		B	12:50	15:30	A	07:50	A	10:30	
		A	14:10	08:00	B	09:50	B	12:30	
		B	13:30	16:20	C	07:50	A	11:00	
		Thursday #3		12:40	B	14:20	A	08:00	
		A	11:00	13:20	A	15:20	A	08:30	
		A	14:50	08:40	A	10:50	B	13:00	
		Thursday #5		09:00	B	10:50	A	13:30	
		Thursday #2		17:40	A	09:50	A	12:30	
		A	11:40	14:00	C	15:20	A	09:00	
		A	08:20	09:40	A	12:20	A	14:30	
		A	13:30	15:50	B	07:50	B	10:30	
		Thursday #4		16:40	A	08:50	B	11:00	
		B	09:40	11:30	C	13:20	B	15:30	
		A	10:20	11:50	A	14:20	A	16:00	
		A	12:50	15:10	C	16:20	B	10:00	
		B	10:20	13:00	C	14:20	B	08:00	
		Thursday #1		17:00	B	08:50	A	11:30	
		Thursday #6		17:20	C	08:50	B	11:30	
		B	11:40	14:30	A	16:20	B	09:00	
		B	14:10	08:20	C	09:50	A	13:00	
			-	14:50		-	A	10:00	
		B	11:00	13:40	B	15:20	B	08:30	
		B	09:00	10:50	A	13:20	B	15:00	

**Technical & Safety Inspection Schedule:**

Friday inspection times are scheduled, however, a fourth inspection lane will operate during the day for return inspections. Teams scheduled for Thursday inspection will have priority in the fourth lane on Friday morning.

## **APPENDIX 1**

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### **REGISTRATION KIT**

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***For Further Information Contact:***

***Michela Bartels***

Society of Automotive Engineers - Australasia  
Suite B - Level 2  
70 Dorcas Street  
Southbank Vic 3006

Tel: +61 3 9696 5190

Fax: +61 3 9696 5865

E-mail: [formulasae@sae-a.com.au](mailto:formulasae@sae-a.com.au)

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### **EVENT INFORMATION**

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Welcome to Formula SAE-Australasia! We appreciate your expression of interest to register a team for this year's competition.

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### **KEY DATES**

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Registration Opens	27 <sup>th</sup> June, 2011
Registration Closes	29 <sup>th</sup> July, 2011
Structure Equivalency Form to be submitted by	9 <sup>th</sup> September, 2011
Pre-Event Design Reviews to be submitted by	30 <sup>th</sup> September, 2011
Impact Attenuator Data to be submitted by	30 <sup>th</sup> September, 2011
Cost Report to be submitted by	14 <sup>th</sup> October, 2011
Event	15 <sup>th</sup> Dec. - 18 <sup>th</sup> Dec. 2011

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### **REGISTRATION FEE**

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The registration fee for all teams competing in this year's competition is

**AU\$4,180 (inc GST).**

This registration fee is non-refundable. *Please note:* your registration into the FSAE-A competition will not be confirmed until payment of the registration fee has been made. If you request an invoice please note that your team's registration will not be confirmed until payment has been received.

At the discretion of the organizers, the number of competing teams will be capped to work within the facility's on site capacity. Successful applications will operate on a first in first served basis for those teams who have completed the registration documentation and paid their registration fee up to the due date, after that a ballot system will apply if required.

## **SAE-A MEMBERSHIP**

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As outlined in the Rules for the competition **all** participants in Formula SAE-A **must** be a member of SAE-A or their local SAE association. SAE-A student memberships are priced at \$55 (including GST). Attached you will find a membership application form for new members. Please note any membership applications received after the due date will incur a late fee of \$15. Any renewals not paid by the due date will also attract a \$15 late fee.

Students who are renewing their membership do not need to complete the application forms. They should pay on the renewal notices and reminder statements already sent to them or they can contact the SAE-A office direct on Tel: 03 9696-5190 to arrange payment.

## **ADMISSION TICKETS**

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At the time of publishing this kit it is the intention of SAE-A to not charge for admission tickets at this year's event.

## **EQUIPMENT**

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Teams are required to provide their own maintenance equipment and parts. The exceptions are the Fuel Station and welding equipment which will be provided on site. Prior to being brought to the competition any electrical equipment being used on site by teams will need to be tested and have the appropriate electrician's tag with a valid expiration date.

## **SITE ACCESS**

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The site will be accessible from **7.30am to 7.00pm** each day of competition. There will be strictly no admittance prior to or after these hours. Outside of these hours the site will be patrolled by security. Teams are encouraged to leave their vehicles on site each evening. If a team wishes to remove their vehicle they are required to obtain written approval from the Clerk of Course and also to be re-scrutineered the next morning. The event organizers reserve the right to amend the opening and closing time for operational reasons.

## **PIT AREA**

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SAE-A will sponsor all teams by providing a covered space of 5m x 5m for their pit area free of charge. Each pit will also have one power outlet supplied. Teams are advised to utilise this power source appropriately and to take into account other users. Equipment such as pie warmers and fridges are not deemed necessary items and will be asked to be removed from pit tents.

Teams will be able to park trailers and team cars nearby to these pit bays. Entry into your pit tent will be limited to competing members of your team and any authorized faculty members; at no time should members of the general public be admitted to a team's pit area. There will be strictly no smoking or BBQ/Cooking facilities operational in the pits. Closed toe shoes must be worn at all times in your pit area. No animals (including dogs) are allowed.

## **INSURANCE**

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SAE-A is pleased to advise that CAMS will once again be assisting with the appropriate event permits and insurances through Formula SAE-Australasia Inc. In accordance with CAMS rules ALL drivers are required to obtain Level 2S CAMS licenses at a cost of \$100 per driver. If drivers could complete the license application/renewal form (available from [www.cams.com.au](http://www.cams.com.au)) and return it DIRECTLY TO CAMS before the due date it will ensure enough time for the processing and distribution of licenses.

As per the SAE-A rules all drivers are required to have appropriate individual medical insurance in addition to their CAMS licenses.

All competitors will be required to sign a Disclaimer Statement; copies are available on request. Individuals concerned about covering themselves for personal injury should arrange their own cover in advance of the event.

## **TRAVEL & ACCOMMODATION**

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Teams are responsible for coordinating their own travel and accommodation bookings. Our recommendation is to pursue accommodation in Werribee or Hoppers Crossing or alternatively the trip from Melbourne is only a 25 minute drive.

Some websites that may assist in accommodation bookings include:

Werribee Tourism Association – [www.werribee.org.au](http://www.werribee.org.au)

Tourism Victoria – [www.visitvictoria.com.au](http://www.visitvictoria.com.au)

RACV – [www.racv.com.au](http://www.racv.com.au)

## **ON SITE FACILITIES**

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Food facilities will be available on site for purchase from Friday to Sunday. You may also like to take your own food onto the site. Please note that if you plan to take your own food and drink, there is strictly no alcohol allowed on site. In addition to alcohol no animals, scooters (motorised and non), skateboards, go-peds, BBQ's and bikes will be allowed anywhere on site.

## **OFF SITE FACILITIES**

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A comprehensive list of facilities available in the neighbouring areas such as parts suppliers etc. are included in the event handbook.

## **INQUIRIES**

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If you have any inquiries about registration or the event in general please contact SAE-A on Tel: +61 3 9696-5190, Fax: +61 3 9696-5865 or E-mail: [formulasae@sae-a.com.au](mailto:formulasae@sae-a.com.au).

## **REGISTRATION CHECKLIST**

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Please complete the following forms and return to SAE-A by the due date

- ◆ Registration Form – Faculty Advisor and Team Leader contact information
- ◆ Team Members details
- ◆ FSAE-A Order & Payment Form
- ◆ SAE-A Student Membership application and renewal forms

**REGISTRATION FORM**

*Held under the International Sporting Code of the FIA and the National Competition Rules of the Confederation of Australian Motor Sport Ltd. (CAMS)*

School Name: \_\_\_\_\_  
*(as it will appear in all promotional material & programs)*

Requested Car Number: \_\_\_\_\_

Fuel Type  
(98 Pulp, E85, Electric) \_\_\_\_\_

**Please note:** Teams will be generally assigned the same vehicle number as in previous years, or when they last competed. Teams competing for the first time can indicate a number preference (3 digits maximum) but may be assigned a different number by the organisers to ensure compatibility and avoid confusion. The assigned numbers will be advised following the close of Registrations.

Please **circle** your preferred postal mail recipient:

Faculty Advisor                      Team Leader

**FACULTY ADVISOR INFORMATION**

Advisor Name & Title: \_\_\_\_\_

Department: \_\_\_\_\_

Address: \_\_\_\_\_

City, State,  
Postcode, Country: \_\_\_\_\_

Telephone: \_\_\_\_\_

Fax: \_\_\_\_\_

E-mail: \_\_\_\_\_

**TEAM LEADER INFORMATION**

Name: \_\_\_\_\_

Department: \_\_\_\_\_

Address: \_\_\_\_\_

City, State,  
Postcode, Country: \_\_\_\_\_

Telephone \_\_\_\_\_

Fax: \_\_\_\_\_

E-mail: \_\_\_\_\_





**FSAE-A REGISTRATION ORDER FORM**

TAX INVOICE

ABN 95 004 248 604

Team Name:

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**Registration Fee AU\$4,180 including GST**

YES( )

*2% surcharge is applicable for all VISA & MASTERCARD credit cards*

*3% surcharge is applicable for all AMEX credit cards*

**Type of Vehicle**

98 Pulp ( )

Electric ( )

E 85 ( )

If you are registering more than one vehicle (i.e. 98 Pulp & Electric or E85) you must pay two registration fees.

One vehicle per form. (i.e. 2 cars, 2 forms)

**PAYMENT DETAILS**

We wish to pay by:

( ) Credit card      ( ) Cheque – *payable to SAE-A*

Card type              VISA / AMEX / MASTERCARD (*please circle*)

Cardholder's Name

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Card Number

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Expiry Date

---

Signature

---

( ) Invoice Required

*Invoice will be sent addressed to nominated mail recipient.*

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Please complete the above form and return by the due date to:

**Society of Automotive Engineers, Australasia**

**Suite B/Level 2**

**70 Dorcas Street**

**Southbank Vic 3006**

**Phone: + 61 3 9696 5190**

**Fax: + 61 3 9696 5865**

E-mail: [formulasae@sae-a.com.au](mailto:formulasae@sae-a.com.au)

# Join Now ! Student Membership - 2011



## APPLICATION FOR STUDENT MEMBERSHIP OF THE SOCIETY OF AUTOMOTIVE ENGINEERS – AUSTRALASIA

Full Name:..... Gender: .....

Mailing

Address:.....

Tel: (Residential)..... Date of Birth:.....

Mobile:..... E-mail:.....

Are you involved in Formula SAE-A this year?  Yes  No Year of Course Completion\_\_

**CURRENT EDUCATION**

Course of Study	Course Year (E.g.: 1 <sup>st</sup> year)	University

**EDUCATION HISTORY - OTHER (Degrees, Diplomas, Apprenticeship, Training Courses)**

Standards / Qualifications	Year Completed	University/TAFE

**MEMBERSHIP IN OTHER PROFESSIONAL SOCIETIES**

Society / Institute	Year	Grade

**PAYMENT**

- Please find enclosed cheque/money order payable to SAE-A.
- Please charge the total amount above to the following credit card.
- Mastercard       Visa       American Express

**\*\*NB:** A credit card surcharge of 2% will apply to the total transaction if payment is made by Visa or MasterCard or 3% if payment is made by American Express

Credit Card No: \_\_\_\_\_ Expiry Date: \_\_\_\_\_

Name on Card: \_\_\_\_\_ Signature: \_\_\_\_\_

I affirm that the information given herein is true and apply for membership of the Society of Automotive Engineers – Australasia in the grade of Student.

**Signature**..... **Date**.....

- **The \$55.00 (including GST) membership fee should accompany this form. SAE-A is waiving the standard application processing fee (\$25) for 2011 students. Please note that a \$15.00 late fee will apply for students joining after 1<sup>st</sup> August 2011.**

Please return this application form to:

SAE-A  
Suite B/Level 2, 70 Dorcas Street, SOUTHBANK VIC 3006  
Fax: (03) 9696 5865

**2011 Team Contacts**

Please list the Faculty member and team leader that you want to receive information and notices about this year's Formula SAE-A competition.

**University Name:** \_\_\_\_\_

**Faculty Contact**

Name: \_\_\_\_\_

E-mail: \_\_\_\_\_

Mobile: \_\_\_\_\_

**Team Leader Contact**

Name: \_\_\_\_\_

E-mail: \_\_\_\_\_

Mobile: \_\_\_\_\_

Add additional Faculty and Team Member contacts on the back of this sheet or by emailing [formulasae@sae-a.com.au](mailto:formulasae@sae-a.com.au)

**Team Hotel Information**

**Each team is required to provide SAE-A with their hotel information.**

**This information is for use in the event of an emergency or if SAE-A staff need to contact your team.**

University Name: \_\_\_\_\_

Hotel: \_\_\_\_\_

Room #(s): \_\_\_\_\_

Phone Number: \_\_\_\_\_

Mobile Number: \_\_\_\_\_

## **DISCLAIMER**

### **EXCLUSION OF LIABILITY, RELEASE AND ASSUMPTION OF RISK COMPETITORS AND/OR DRIVERS**

#### **For Competitors**

I/We being the competitor/s of the vehicle described on this Entry Form wish to enter that vehicle for the above event.

#### **For Competitors and Drivers**

I/We being the competitor/s and/or driver, certify that the particulars on this form are true and correct in every particular, to the best of my/our knowledge and belief.

I/We declare that I/we have read and understood the Supplementary Regulations issued for the event, and agree to be bound by them and the provisions of the National Competition Rules of the Confederation of Australian Motor Sport Limited ("**CAMS**").

In exchange for being able to attend or participate in the event (including entering the event), I agree:

- to release CAMS and Australian Motor Sport Commission Ltd, promoters, sponsor organisations, land owners and lessees, organisers of the event, their respective servants, officials, representatives and agents (collectively, the "**Associated Entities**") from all liability for my death, personal injury (including burns), psychological trauma, loss or damage (including property damage) ("**harm**") howsoever arising from my participation in or attendance at the event, except to the extent prohibited by law;
- that CAMS and the Associated Entities do not make any warranty, implied or express, that the event services will be provided with due care and skill or that any materials provided in connection with the services will be fit for the purpose for which they are supplied; and
- to attend or participate in the event at my own risk.

I/we acknowledge that:

- the risks associated with attending or participating in the event include the risk that I may suffer harm as a result of:
  - motor vehicles (or parts of them) colliding with other motor vehicles, persons or property;
  - acts of violence and other harmful acts (whether intentional or inadvertent) committed by persons attending or participating in the event; and
  - the failure or unsuitability of facilities (including grand-stands, fences and guard rails) to ensure the safety of persons or property at the event.

- motor sport is dangerous and that accidents causing harm can and do happen and may happen to me.

I accept the conditions of, and acknowledge the risks arising from, attending or participating in the event and being provided with the event services by CAMS and the Associated Entities.

I understand that this disclaimer is not intended to exclude any valid claim I may have under the CAMS Personal Insurance Scheme.

Competitor's signature: ..... Date: .....

Driver/s signature: ..... Date: .....

.....  
.....

*For persons under the age of 18 years the following parent/guardian consent must be completed.*

**PARENT/ GUARDIAN CONSENT – PERSONS UNDER 18 YEARS OLD**

I ..... of [Address] ..... am  
the parent/ guardian\* of the above-named ("the minor") who is under 18 years old. I have read this document and understand its contents, including the exclusion of liability and assumption of risk, and have explained the contents to the minor. I consent to the minor attending/ participating in\* the event at his/her own risk.

Signed..... Date.....  
Parent/Guardian\*

\* Delete whichever does not apply

## **APPENDIX 2**

### **SUPPLEMENTARY REGULATIONS**

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**FORMULA SAE INC CLUB MEETING  
VICTORIA UNIVERSITY DRIVER TRAINING FACILITY  
CAMS PERMIT NUMBER – XXXXXX  
SUPPLEMENTARY REGULATIONS  
CHAPTER 1 STANDARD REQUIREMENTS**

#### **1. EVENT TITLE DATE & VENUE**

The event shall be known as "Formula SAE-A" and will be held on

**15<sup>th</sup> – 18<sup>th</sup> December 2011**

at the Victoria University Driver Training Facility, Werribee, Victoria.

#### **2. EVENT DESCRIPTION**

The event will be a national speed event. Formula SAE-A competition is for SAE student members to conceive, design, fabricate and compete with small formula style race cars. The restrictions on the car frame and engine are limited so that the knowledge, creativity and imagination of the students are challenged. The cars are built with a team effort over a period of about one year and are taken to the annual competition for judging and comparison with other vehicles from universities in Australia and around the world. The end result is a great experience for young engineers in a meaningful engineering project as well as the opportunity of working in a dedicated team effort.

#### **3. ORGANISATION & STATUS**

- a) The meeting 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.
- b) The event shall be a Formula SAE Inc Club Meeting run under F-SAE Rules plus F-SAE-A Rules Addendum.
- 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](http://www.cams.com.au)

#### **4. ADMINISTRATION AND EVENT STAFF**

Organiser/Promoter:	Formula SAE Inc Suite B – Level 2 – 70 Dorcas Street, Southbank, VIC 3006
Organising Committee:	SAE-A, Consortium Sponsors
Steward of the Meeting:	Appointed by CAMS
Clerk of Course:*	refer previous section of event handbook
Assistant Clerk(s) of Course:*	
Credentials Officer:	
Chief Scrutineer:*	
Asst Chief Scrutineer:*	
Chief Medical Officer:	
Chief Timekeeper:*	
* Judges of Fact	

#### **5. CIRCUIT DETAILS**

Length:	Approx 750 m
Direction:	Autocross – clockwise Endurance – Anti-clockwise
Track Density:	Formula SAE Cars      6

## SUPPLEMENTARY REGULATIONS cont-

### 6. ENTRIES

The entry fee and deadline dates are as specified in the body of this document and should be sent to Formula SAE Inc, Suite B – Level 2 – 70 Dorcas Street, Southbank, 3006

Each Competitor must hold a CAMS Competition Licence or must receive an authorisation to compete from CAMS prior to the event;

### 7. ELIGIBLE VEHICLES

For vehicles complying with the regulations as outlined in the F-SAE Rules plus F-SAE-A Rules Addendum.

### 8. LAPS

For the Endurance event, each driver will complete 16 laps. For the Autocross, each driver will have the opportunity of completing 2 laps.

### 9. AWARDS

In accordance with SAE-A statement.

### 10. SCRUTINY

Documents will be checked in the officials centre on the Thursday of the event. These must be completed prior to scrutiny.

- (a) All drivers' apparel (helmets, overalls, gloves etc) must be presented for inspection and approval, and comply with CAMS Schedule D of the current CAMS Manual (for more information please contact the organiser/promoter).
- (b) Race numbers, advertising signs and functioning timing transmitters must be in position on the vehicle **BEFORE** scrutiny.
- (c) No vehicle may participate in any session unless it has passed a safety check by the scrutineers.
- (d) Any vehicle which, after approval, is dismantled or modified in any way which might affect the safety of the vehicle or raises questions as to its eligibility, or is involved in an incident having similar results, must be submitted for re-scrutineering approval.
- (e) Any vehicle that is to be removed from the circuit area (including at night time) may only do so with the approval of the Clerk of Course and must be presented to scrutiny prior to continuing in the competition.
- (f) Any vehicle or driver may be prohibited from practice or the event for safety reasons.
- (g) The Clerk of the Course may require any vehicle involved in an incident to be stopped and checked during any competition.

### 11. LICENCE REQUIREMENTS

Competitors in events must hold the minimum of a current public roads licence with photo and 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 prior to participating in the event.

### 12. DRIVERS BRIEFING

Attendance is compulsory and failure to be present and **SIGN ON** at the Drivers Briefing will result in a 50 point penalty, unless negated by the stewards of the meeting in exceptional circumstances.

### 13. AUTOMATIC TIMING

The organisers utilise an automatic timing system, which requires each **Formula SAE-A Car** to be fitted with a Data 1 transmitter. The teams have the responsibility of providing an area away from metal that the transmitter can be located in safely and securely. Data 1 Transmitters may be available for hire. Enquiries should be directed to the event organiser/promoter.

## **SUPPLEMENTARY REGULATIONS cont-**

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### **14. RE-RUNS**

Re-Runs are allowed at the sole discretion of the Clerk of Course. Usually, re-runs are approved only in the event of timing equipment failure.

### **15. GARAGES & PRIVATE PRACTICE**

Each team will be provided with a 5x5m Pit tented area. Power will be provided in each pit bay. The allocation of Pit bays will be decided by a lottery draw.

### **16. FLAGS**

Flags will be as per current CAMS Manual of Motor Sport, Appendix H.

### **17. PITS**

- (a) Smoking is not permitted in the pits at any time during the meeting.
- (b) Any person entering the pits must have the appropriate pass and must be attired in accordance with Article 4 of Schedule D of the CAMS 2008 Manual of Motor Sport.
- (c) No person under the age of 16yrs will be permitted in pit lane.
- (d) No equipment may be placed on the pit wall during the event.
- (e) A speed limit of **10kph** will apply in pit lane at all times. If this limit is exceeded during the events, the Clerk of Course may apply a point penalty and/or the driver may be referred to the Stewards of the Meeting.
- (f) Reversing in pit lane is forbidden

### **18. CREDENTIAL ALLOCATION**

All Teams will be allocated passes as per their nominated team members.

### **19. COMPETITION**

The cars are judged in a series of static and dynamic events including: technical inspection, cost, presentation and engineering design, solo performance and track endurance performance. The competition will be determined by the aggregate score of each team, including any penalties, over the following:

#### Static Events

- Presentation
- Engineering Design
- Cost Analysis

#### Dynamic Events

- Acceleration
- Skid-pan
- Autocross
- Fuel Economy
- Endurance

### **20. GATE TIMES**

#### **Site opening times**

Thursday of the event.

Open 7:30am

Close 7:00pm

### **21. CANCELLATION, ABANDONMENT & POSTPONEMENT**

The promoters reserve the rights to postpone, cancel or abandon the event in accordance with NCR 59 of the current CAMS Manual.

## **SUPPLEMENTARY REGULATIONS cont-**

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### **22. FUEL**

Only commercial grade pump fuel will supplied by the organisers is allowed to be used in the event(s). Fuel must comply with Schedule G of the current CAMS Manual.

### **23. INSURANCE**

Insurance will be provided in accordance with Appendix I of the CAMS Manual.

### **24. ANTI DOPING POLICY**

During any competition, consumption of alcoholic beverages in the paddock, pits or any other portion of the competition venue under the control of the officials is expressly forbidden until all practice or competition activity is concluded for each day. Any driver or crew member who is found to be affected by alcohol on the day of the event or practice therefore shall not be permitted to participate. Refer NCR 145A.

In addition, the persons concerned will be subject to the Articles of the Procedure for Alcohol Testing and CAMS Drugs in Sport Policy. Competitors, crews or officials may be tested for alcohol or other drugs at any time during the event(s). This regulation serves as the required 24-hour notice to Competitors, Crew and Officials.

### **25. PROTESTS**

Protests must be lodged in accordance with Part XII of the current CAMS Manual as well as the FSAE-I rules

### **26. NOISE**

Vehicles must be adequately muffled to comply with noise restrictions.

**APPENDIX 3**

**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																																													
<b>General; Covering A1</b>	<b>6</b>	<p><b>ORGANISATION &amp; STATUS of the SAE-A Event</b></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&amp;S and Risk Management Policies, which can be found on the CAMS website at <a href="http://www.cams.com.au">www.cams.com.au</a></p>																																													
<b>A1.4.1</b>	<b>7</b>	<p><b>Event Scoring -</b> 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: 20%;">Static Events:</td> <td style="width: 40%;">Presentation</td> <td style="width: 10%; text-align: right;">50</td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> </tr> <tr> <td></td> <td>Engineering Design</td> <td style="text-align: right;">200</td> <td></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> <td></td> </tr> <tr> <td>Dynamic Events:</td> <td>Acceleration</td> <td style="text-align: right;">50</td> <td></td> <td></td> </tr> <tr> <td></td> <td>Skid-Pad</td> <td style="text-align: right;">75</td> <td></td> <td></td> </tr> <tr> <td></td> <td>Autocross</td> <td style="text-align: right;">100</td> <td></td> <td></td> </tr> <tr> <td></td> <td>Fuel Economy</td> <td style="text-align: right;">125</td> <td></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> <td></td> </tr> <tr> <td>Total Points:</td> <td></td> <td></td> <td style="text-align: right;">1,000</td> <td></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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<b>A4.5</b>	<b>10</b>	<p><b>Driver’s Licence and Competition Licence</b></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>																																													
<b>A7.10 B1.1</b>	<b>15 22</b>	<p><b>On-Site Team Registration – Added Requirement</b></p> <p>At the On-Site Registration, all teams must submit a completed copy of the</p>																																													

<p><b>B4.8</b></p>	<p><b>39</b></p>	<p>Technical Inspection Check List as a primary self evaluation by the Team. This must be signed by <b>both the Team Captain &amp; the Faculty Advisor</b>.</p> <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>
<p><b>A4.2</b></p>	<p><b>10</b></p>	<p><b>Student Status - Clarification</b> The reference to “college” means a tertiary education college.</p>
<p><b>A4.3</b></p>	<p><b>10</b></p>	<p><b>Society Membership - Delete US words and add the following:</b></p> <p>Formula SAE-A is open to teams from Australia/NZ Universities &amp; 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. Proof of membership, such as membership card, is required at the competition. Students can join SAE-A online at: <a href="http://www.sae-a.com.au">www.sae-a.com.au</a>.</p>
<p><b>A4.7</b></p>	<p><b>10</b></p>	<p><b>Medical Insurance - Delete US words and add the following:</b></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>
<p><b>A4.8</b></p>	<p><b>10</b></p>	<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><b>Onsite Registration of Individual Team members– Document Copies Required</b> All participating team members <b>must</b>, 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><b>Onsite Registration of Individual Team members– Document Copies Required (cont’d.)</b></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>

<b>A5</b>	<b>11</b>	<b>Faculty Advisor</b> Additional paragraph A.5.4 to US words.
<b>A5.4</b>		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.
<b>A6.9.1</b>	<b>12</b>	<b>Second Year Vehicles</b> - Clarification on extent of change. Replace the US Rule words with the following.  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.  The penalties per A6.9.2 apply.
<b>A7.5</b>	<b>14</b>	<b>Registration Limits for SAE-A Event</b>  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.
<b>A7.6.2</b>	<b>14</b>	<b>Registration Fees</b>  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.
<b>A7.7</b>	<b>14</b>	<b>Withdrawals.</b>  Any teams registered for the Australasian competition <b>must notify the organisers</b> via telephone or via <a href="mailto:formulasae@sae-a.com.au">formulasae@sae-a.com.au</a> <b>as soon as any decision is made to withdraw</b> in order to allow other teams the opportunity to compete. 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).
<b>A7.10</b>	<b>15</b>	<b>Formula SAE Australia Registration.</b> Added clarification.  When teams arrive at the FSAE-A venue and register, <b>both the Team Captain and the Faculty Advisor</b> must be present and be able to identify themselves as

		being those nominated in those roles at the initial online registration.
<b>B3.0</b>	<b>23</b>	<p><b>Vehicle Structure – Alternative Frame Rules</b></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>
<b>B3.8</b>	<b>26/27</b>	<p><b>Structural Equivalency and Structural Equivalency Form (SEF)</b></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. See further under <b>paragraph 3.19</b>.</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>
<b>B3.8.5 (c)</b>	<b>27</b>	<p><b>Acknowledgement</b></p> <p>SEF’s submitted for vehicles entered into the Australasian event will be acknowledged within 2 working days of receipt.</p>
<b>B3.9.5</b>	<b>28</b>	<p><b>95th percentile male template</b> - 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 <b>will not be allowed to compete in any dynamic events until modified to ensure compliance</b>.</p>
<b>B3.19.3</b>	<b>31</b>	<p><b>Front Bulkhead Support</b></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>
<b>B4.3.2</b>	<b>38</b>	<p><b>Heat Protection (Added requirement)</b></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.
<b>B7.3.3</b>	<b>46</b>	<p><b>Brake Over-Travel Switch</b> (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> 
<b>B7.4</b> <b>B7.4.3</b>	<b>46</b>	<p><b>Brake Light - Added clarification 7.4.3</b></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>
<b>B8.9.1</b>	<b>48</b>	<p><b>Fuel Rail</b></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>
<b>B9.1</b>	<b>51</b>	<p><b>Fuel</b></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 <b>must</b> 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>
<b>B9.7.3</b>	<b>53</b>	<p><b>Venting:</b> (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>

<b>B15</b>	<b>57</b>	<b>Transponders</b>
<b>15.2</b>		Transponders will be used for timing at Formula SAE-A and will be supplied at the event by the organisers.
<b>B16.3</b>	<b>49</b>	<b>Logos/Decals (added Requirement)</b>  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.
<b>B17.1.a</b>	<b>59</b>	<b>Safety Helmets</b>  In addition to the US or British Standards listed, helmets conforming to Australian Standard AS 1698 or CAMS Schedule D are allowed.
<b>B17.6</b>	<b>60</b>	<b>Underclothing</b>  Replace the US wording "It is strongly recommended that all competitors wear --" with "All competitors <b>must</b> wear ----"
<b>B17.14</b>		<b>Fire Extinguishers</b>  In line with Formula Student, Aqueous Film Forming Foam (AFFF) Fire Extinguishers are not permitted at the Australian event.
<b>C3</b>	<b>79</b>	<b>Article 3 - Cost &amp; Manufacturing Event.</b>  As vehicles are costed using tables and "generic dollars" the exact US rules and use of tables apply with no exchange rate calculations required.
<b>C3.8.1a</b>	<b>83</b>	<b>Cost Report</b> 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).
<b>C3.8.1.b</b>	<b>83</b>	<b>For the Australasian event, a hard copy is mandatory and timely submission of the hard copy is a key element of the judging process.</b>
<b>C5.2.4</b>	<b>93</b>	<b>Design Report</b>  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.
<b>C5.8</b>	<b>95</b>	<b>Design Event. Penalty for Late Submission or Non-Submission - delete US words and add the following;</b>  <b>Non-Submission;</b> 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><b>Late Submission:</b> 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><b>Note:</b> Confirmation of receipt will be given by email.</p>
<b>C5.9</b>	<b>95</b>	<p><b>Penalty for Unsatisfactory Submissions</b> - 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>
<b>Article 4</b>	<b>103</b>	<p><b>Driver Limitations</b></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>
<b>Article 7</b> <b>Article 8</b>	<b>108</b> <b>110</b>	<p><b>Autocross Event/Endurance &amp; Fuel Economy</b></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.</p> <p>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>
<b>D8.7.1</b>	<b>111</b>	<p><b>Endurance &amp; Fuel Economy</b></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.</p>
<b>D8.12.2</b>	<b>112</b>	<p>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>
<b>D9.3</b> <b>D9.4</b>	<b>117</b>	<p><b>Information and Command Flags.</b></p> <p>The specific flags to be used at the Australasian Event will be clarified at Team and Driver Briefings at the Event.</p>
<b>Article 10</b> <b>D10.7.3</b>	<b>118</b>	<p><b>Trash Clean Up (added Clause)</b></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.</p> <p>Any costs incurred beyond this amount, will be billed to the team.</p>
<b>Article 11</b>	<b>119</b>	<p><b>General Rules</b></p> <p>The following general clarification is given to cover all events regarding</p> <p><b>External Equipment and Work on Vehicles</b></p> <p>All vehicles must be capable of start, stop, restart and idle in <b>all dynamic events</b>, 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</p>

		<p>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, <b>unless specific clearance for any work, or use of auxiliary equipment, has been obtained from the officials controlling that event.</b></p>
<p><b>Article 13</b> <b>D13.1.6</b></p> <p><b>D13.6</b></p> <p><b>D13.7</b></p>	<p><b>120</b></p>	<p><b>General Pit Rules (additional Requirements)</b></p> <p>(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.</p> <p>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.</p> <p>No open vehicle fluid containers are allowed in the pit area.</p>

## Electric Vehicles Only;


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

### Formula SAE-A Electric – 2011

Subject	References	Commentary
<p><b>General</b></p>	<p><b>Formula Student</b> <b>Germany Electric,</b> <b>2011</b></p>	<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><b>5.3 Activating the tractive system.</b> <b>7.1 - 7.30 Electrical Rules</b> <b>8.1 - 8.3 Technical Inspection.</b></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><b>NB: Use of Energy Meters (7.27) and electric vehicles</b></p>

<p>7.21.3</p>	<p><b>Mechanical Configuration</b></p>	<p><b>competing in the economy aspects of the competitions is under investigation for the 2011 Australasian event and will be further advised</b></p> <p><b>This clause is modified and supplemented by the more specific Formula Hybrid Rules</b></p> <p><b>Energy Storage Container Mechanical Configuration</b></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"> <li>• 20g static load in both the for/aft and side to side directions</li> <li>• 8g static force in the vertical direction</li> </ul> <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"> <li>• Mechanically robust.</li> <li>• Fireproof</li> <li>• Providing an insulating material (e.g., electrical Nomex sheet) between live electrical parts and any inner conductive portions of the container.</li> </ul> <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><b>Energy Storage Container Mechanical Configuration (Cont'd.)</b></p> <p>The container must be prominently labelled with high voltage signs, A sticker with an area of at least 750mm<sup>2</sup> 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 style="text-align: center;">  </div> <p>Systems capable of venting H<sub>2</sub> 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><b>Energy Storage Container Cockpit Barrier</b></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**

<p><b>Cost Tables</b></p>	<p><b>C 3</b></p>	<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 “<b>EV Cost Look Up Table</b>” has been created and posted on the SAE-A Formula website for use by EV teams.</p>
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<b>Scoring</b>	<b>Various</b>	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 <b>“EV Event and Scoring Method”</b>
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**APPENDIX PDA - 1**

**Action Deadlines for 2011 Formula SAE Australasia**

See [www.sae-a.com.au/fsae/index.htm](http://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](mailto:formulasae@sae-a.com.au)

On-line from SAE-A: [www.sae-a.com.au/fsae/index.htm](http://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](mailto: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](mailto: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](mailto: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

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**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](mailto:formulasae@sae-a.com.au)

## **APPENDIX 4**

### **ELECTRICAL VEHICLE RULES**

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#### **Amendments for FSAE-A**

**(to be read in conjunction with the FSAE-A Rules)**

#### **Static Events**

##### **Technical Inspection**

- as per section 7 of FSE 2011 rules.  
See <http://www.formulastudent.de/electric/rules-important-documents/>

##### **Brake and Noise**

- as per FSAE-A rules except delete noise requirements.

##### **Tilt Table**

- as per FSAE-A rules.

##### **Cost**

- teams to submit cost report as per Internal Combustion engine teams and so  $P_{\min}$  &  $P_{\max}$  score will be calculated based on all teams participating. The other cost points for presentation and cost reduction will also be rated per the same process as for IC engine teams.

##### **Presentation**

- teams to deliver Presentation report as per IC engine teams and so  $P_{\max}$  score will be calculated based on all teams participating.

##### **Design**

- teams to submit Design report as per IC engine teams and scoring will be done as per the IC rules, except the Electric Vehicles will not participate in the Design Final.

## **Dynamic Events**

### **Acceleration**

- teams will participate as per IC engine teams and so  $T_{\min}$  score will be calculated based on all teams participating

### **Skid Pad**

- teams will participate as per IC engine teams and so  $T_{\min}$  score will be calculated based on all teams participating.

### **AutoCross**

- teams will participate as per IC engine teams and so  $T_{\min}$  &  $T_{\max}$  scores will be calculated based on all teams participating.

**Endurance** (teams will participate as per IC engine teams and so  $T_{\min}$  &  $T_{\max}$  scores will be calculated based on all teams participating.

### **Fuel Economy (zero points)**

- EV teams will not be competing for points in this event as the organisers are unable to satisfactorily measure energy consumed. Should this situation change, teams will be so advised

Note that once all the scores are tallied, the teams will be graded into the 2 vehicle categories:

- Internal combustion (including PULP and E85) and
- Electric

• **APPENDIX 5**

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**Team Briefing Notes**

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**THURSDAY**

- **Safety.**  
*For all activities at the FSAE-A event, safety is number one, of the competitors, officials, spectators, i.e. anybody,*
- **Safety is #1.**
- **Daily driver briefings.**  
*We will have a briefing every day.  
We will cover the specific requirements for that day and the events of that day.  
The daily briefings are Compulsory for ALL drivers.  
If you cannot make a briefing, see us before hand and arrange a special briefing.*
- **FSAE-A Event Handbook**  
*The FSAE-A Event Handbook, is the bible. Make sure all your team know it inside out.  
If in doubt, refer to the handbook.*
- **Starting the vehicle.**  
*Driver suited/helmeted and strapped in  
Or  
Vehicle 100mm off ground ON SECURE STANDS.*
- **Moving the vehicle.**  
*In the pit/paddock areas, the vehicles must be pushed and only at walking pace.  
The engine must not be running.  
A Fire extinguisher must accompany the vehicle.  
Driver seated on board and in control of the steering and brakes.*
- **Fuel in pit bays.**  
*You are only allowed what is in the vehicle and it must be the event fuel.  
No jerry cans/drums allowed in your pit bays.  
If you have a container of fuel, you shouldn't. Put it into your road vehicle for the duration of the event.*
- **Wrist Bands.**  
*All drivers are required to wear the provided wrist bands.  
Officials at the start of each event will be asking to see them and recording the colour.  
This identifies each driver.  
In the event of a vehicle incident the wrist band will be removed and cannot be replaced until medical clearance is obtained.*
- **Blood alcohol**  
*The level, for the entire team, whilst onsite, is ZERO!*
- **Tyres.**  
*You can only use the tyres that were tech inspected and relevant to the declared track conditions.*
- **Timing.**  
*Timing is being done using the Dorian timing system. This requires the fitment of a transponder to your vehicle. These will be issued as required. They must be mounted as instructed.  
If you don't fit the transponder, or it is not mounted correctly and you don't record a time, that is your problem. Make sure yours works.*

## **Team Briefing Notes cont-**

### ***THURSDAY cont-***

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*At the end of the weekend, ensure your transponder is returned and checked off. If not, you will be invoiced for it.*

- **Re runs**

*A re run will only be granted if a run is affected by outside circumstances, and the team is adjudged to have been significantly disadvantaged.*

- **Break downs.**

*If your vehicle breaks down during any of the events, your crew cannot attend the vehicle, irrespective of where it is, unless they are given specific permission by the Event Captain or Clerk of Course. Penalties will be applied if teams enter an event area without permission.*

- **Event Gates.**

*All events have prior to it, an event gate. This gate will close prior to the actual close of the event.*

*Please read the event schedule as the closure of the event gate is a fixed time. Those inside the gate will get a run, but not be able to change drivers. Those outside the gate will not get a run.*

- **Vehicles leaving site**

*No FSAE-A vehicles are to leave site at anytime without my permission.*

- **Safety is #1.**

*When the vehicle returns to site, a safety check must be done at tech inspection before re-entering the competition.*

- **Organisers**

*Every effort is made by the organisers, who are all volunteers, to ensure all competitors, officials and spectators enjoy the event.*

*We are here to assist. Please do not abuse!*

- **Protests**

*If you have a gripe come and talk to one of the key officials.*

*If you then want to take it further, we have a protest committee but to do so costs you points.*

*- think about it*

*- discuss it.*

- **Q&A**

## **Team Briefing Notes cont-**

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### **FRIDAY**

- **Activities:**

*Today's activities are,*

- *Tech/safety inspection*
- *Fuel Station*
- *Tilt Table*
- *Noise testing*
- *Brake testing*
- *Practice track*

- **Tech/Safety Inspection.**

*This will be on a first come first served basis. Once you have passed Tech Inspection, you can then move through fuel, tilt, noise and finally brake testing. Successful completion of all will result in a complete scrutineering sticker. You can then and only then move to the practice track.*

- **Practice Track.**

*Flags will be used to start/stop.*

*Green Go*

*Red Stop*

*No team members are allowed on the test track unless the event captain provides the OK's.*

*The time each vehicle has will be limited to give everybody a fair go.*

*The order in the line up will determine the running order.*

*Do not start the vehicle until on the track and you have been given the event captain's OK.*

- **Starting the vehicle.**

*Driver suited/helmeted and strapped in.*

*Vehicle 100mm off ground ON SECURE STANDS.*

- **Moving the vehicle.**

*Walking pace*

*Fire extinguisher*

*Driver seated on board and in control of the steering and brakes.*

- **Q&A**

## **Team Briefing Notes cont-**

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### **SATURDAY**

- **Activities:**

*Today's activities are,*

*Am*

- *Acceleration*

- *Skid pad*

*Pm*

- *Autocross*

- **Skid Pan.**

*Teams are to line up in the form up area.*

*When called forward, your driver is to be ready to go. If they are not, the next vehicle will be called.*

*Engines may only be started within the barrier area.*

*Once started, move directly to the starting point.*

*The officials will give you the signal to start when safe to do so.*

- **Safety is #1.**

- *At the completion of the run, the driver can elect to immediately take their second run. If so the officials will direct the vehicle to the starting point.*

*The officials will give you the signal to start when safe to do so.*

*If the driver elects not to take the second run, the team leaves the area and if they desire, rejoin the back of the line.*

- **Acceleration Event**

*Teams are to line up in the formation area.*

*When called forward, your driver is to be ready to go. If they are not, the next vehicle will be called.*

*Engines may only be started upon approval by the officials.*

*Once started, move directly to the starting point.*

*The officials will give you the signal to start when safe to do so.*

- **Safety is #1.**

- *Upon crossing the finish line, the driver is to immediately slow to walking pace and complete the lap.*

*At the completion of the run, the driver can elect to immediately take their second run.*

*If so the officials will direct the vehicle to the starting point.*

*The officials will give you the signal to start when safe to do so.*

*If the driver elects not to take the second run, the team leaves the area and if they desire, rejoin the back of the line.*

- **Autocross**

*The autocross event will use the same form up area as the acceleration event.*

*Please read the rules and the event description very, very carefully.*

*There are 2 sessions.*

- **Flags**

*The flags being used are,*

- *Green*            *It is safe to proceed*

- *Yellow*           *There is danger ahead.*

*Slow down, look for the officials and follow their directions.*

*If an official directs you off course, you will not be penalised.*

- *Red*               *Stop immediately at the next safest point.*

- *Black*            *Pull immediately into the pits.*

## **Team Briefing Notes**

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### **SATURDAY CONT**

- *Chequered flag*      *End of your lap.*
- **Cones.**  
*All cones, around the circuit and after the finishing line, can be counted. If you hit any, they will be deducted from your score. Pay particular notice to the ones after the finish line.*
- **Exiting the track.**  
*Once you have finished you lap, immediately slow down to walking pace and exit the track. Move at walking pace to the stop point or as directed by the officials. Clearing the track quickly is important for your safety as there will be other vehicles also completing their lap.*  
*At the completion of the lap you have the choice of making your second run but you must immediately indicate this to the officials.*
- **Tyres.**  
*You can only use the tyres that were tech inspected and relevant to the declared track conditions.*
- **Re runs**  
*A re run will only be granted if a run is affected by outside circumstances, and the team is adjudged to have been significantly disadvantaged.*
- **Q&A**

- **Team Briefing Notes**

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- **SUNDAY**

- **Activities.**

*Today's activities are,*

- Endurance
- Fuel economy

*The event is held over 2 heats.*

- **Drivers.**

*Each driver can only drive in one of the heats.*

*I.e. you need a total of 4 drivers.*

- **Driver change**

*After crossing the timing line, you are on the organisers' time.*

*The officials will direct the driver to the driver change location.*

*This time does not count.*

*Once the vehicle enters the driver change location, your time starts.*

*Once your driver has been changed, you will be directed to start the vehicle by an official.*

*If it starts before 3 minutes has elapsed, you will be moved to the starting area.*

*After the start of the vehicle, you are once again on the organiser's time*

*This time does not count.*

*The Scrutineers are judges of fact.*

*If anything untoward is observed, you will be eliminated.*

- **On Track**

*If you stall on track, stay in the vehicle, look for the directions of the officials, we allow 1 lap to restart the vehicle provided it is safe to do so. Safety is #1.*

*If the vehicle does not start after 1 lap, you will be eliminated and pushed to a safe location.*

*As per the rules, there is to be no contact between vehicles.*

*If there is, it will be immediate disqualification.*

- **Passing**

*If shown the blue flag, you must pull into the next passing lane and allow the faster vehicle(s) past you. At the exit of the passing lane will be a flag marshal.*

*Only go when shown the green flag.*

- **Flags**

*The flags being used are,*

- **Green**            *It is safe to proceed*
- **Blue**            *There is a faster vehicle catching you. Pull into the next slow lane.*
- **Yellow**        *There is danger ahead.*  
*Slow down, look for the officials and follow their directions.*  
*If an official directs you off course, you will not be penalised.*
- **Red**            *Stop immediately at the next safest point*
- **Black**         *Pull immediately into the pits.*
- **Chequered flag**    *End of your run*

- **Q&A**

## **APPENDIX 6**

### **ADDITIONAL INFORMATION** **MOTORCYCLE DEALERS/PARTS**

- 4 Wheel Motorbikes/ATV's  
116 Watton Street, Werribee  
Ph: 03 9741 3555
- 4 Wheel Motorbikes/ATV's  
Unit 1, 6 Wallace Avenue,  
Hoppers Crossing  
Ph: 03 8368 2525
- Advantage Motorcycles  
359 Old Geelong Road,  
Hoppers Crossing  
Ph: 03 9360 0006
- City West Yamaha  
Units 9 & 10, 393 Old Geelong Road,  
Hoppers Crossing  
Ph: 03 9369 8684
- Teamone Motorcycles  
357 Old Geelong Road,  
Hoppers Crossing  
Ph: 03 9369 6963
- Werribee Motorcycles  
88 Old Geelong Road,  
Hoppers Crossing  
Ph: 03 9748 6949
- City West Yamaha  
Unit 33, 640-680 Geelong Road,  
Brooklyn  
Ph: 03 9314 1155
- YamahaCity  
329 Elizabeth Street, Melbourne  
Ph: 03 9602 2354
- BMW Motorcycles  
130 City Road, Southbank  
Ph: 03 9686 1999
- Spot On Motorcycles  
423 Elizabeth Street,  
Melbourne  
Ph: 03 9329 8222
- Bike Barn  
323 Elizabeth Street, Melbourne  
Ph: 03 9602 4269
- Performance Motorcycles  
329 Elizabeth Street, Melbourne  
Ph: 03 9602 2577
- Cosway Motorcycles  
384 Elizabeth Street,  
Melbourne  
Ph: 03 9663 4565
- Harley Heaven  
339 Elizabeth Street,  
Melbourne  
Ph: 03 9602 5833
- Peter Stevens Motorcycles  
339 Elizabeth Street,  
Melbourne  
Ph: 03 9602 5833
- Modak Motor Cycles  
299 Elizabeth Street,  
Melbourne  
Ph: 03 9602 1229
- MotorcycleCity  
478 Elizabeth Street,  
Melbourne  
Ph: 03 9663 1200
- Ray Quincey Used Motor Cycles  
Cnr 415 Elizabeth & A'Beckett Streets,  
Melbourne  
Ph: 03 9326 6700
- Road Rocket  
489-491 Victoria Street,  
West Melbourne  
Ph: 03 9329 7600
- ScootaCity  
303 Elizabeth Street,  
Melbourne  
Ph: 03 9602 3119

## **ADDITIONAL INFORMATION** **AUTOMOTIVE PARTS SUPPLIERS**

- Marlow's Auto Parts & Accessories  
215 Derrimut Road,  
Werribee Plaza Shopping Centre  
Ph: 03 9748 0055
- Autobarn  
1/194-210 Old Geelong Road,  
Hoppers Crossing  
Ph: 03 9748 8477
- Autopro  
7 Old Geelong Road,  
Hoppers Crossing  
Ph: 03 9749 5413
- Motorco Parts  
455 Old Geelong Road,  
Hoppers Crossing  
Ph: 03 9931 0811
- S & M Auto Mart  
7 Old Geelong Road,  
Hoppers Crossing  
Ph: 03 9749 5413
- Super Cheap Auto  
Shop 5, 283 Old Geelong Road,  
Hoppers Crossing  
Ph: 03 9748 7277
- Super Cheap Auto  
Werribee Plaza Shopping Centre  
Cnr Heaths Rd & Derrimut Road,  
Hoppers Crossing  
PH: 03 9748 0055
- Bunnings Pty Ltd  
163-179 Old Geelong Road,  
Hoppers Crossing  
Ph: 03 9974 5222
- Werribee Radiators  
Factory 3, 115 Elm Park Drive,  
Hoppers Crossing  
Ph: 03 9748 9255
- The Bicycle Superstore  
Shop 2, 76 Old Geelong Road,  
Hoppers Crossing  
Ph: 03 8742 7022
- Goldcross Cycles  
428 Old Geelong Road,  
Hoppers Crossing  
Ph: 03 9369 9556
- Quick Fit Tyre Service  
2/57 Old Geelong Road,  
Hoppers Crossing  
Ph: 03 9974 6411
- Beaurepaires  
153 Old Geelong Road,  
Hoppers Crossing  
Ph: 03 9748 8300
- Bob Jane T-Marts  
43 Heaths Road,  
Hoppers Crossing  
Ph: 03 9748 7022
- Bridgestone Tyre Centres  
309 Old Geelong Road,  
Hoppers Crossing  
Ph: 03 9748 0400
- Road Star Tyres  
3 Dunlop Road,  
Hoppers Crossing  
Ph: 03 9369 8485
- Beaurepaires  
92 Watton Street,  
Werribee  
Ph: 03 9741 8500
- Ensign Tyre, Brake & Exhaust  
2/28 Watton Street,  
Werribee  
Ph: 03 9731 1422
- Goodyear Auto Service Centre  
11 Bridge Street,  
Werribee  
Ph: 03 9741 3215
- Tyrepower  
333 Princes Highway,  
Werribee  
Ph: 03 9742 3044
- Kmart Tyre & Auto Service  
Werribee Plaza Shopping Centre  
Cnr Heath & Derrimut Roads,  
Hoppers Crossing  
Ph: 03 9749 1732
- G&D Cycles  
22 Station Place,  
Werribee  
Ph: 03 9749 2482
- Ted's Cycles  
39 Watton Street,  
Werribee  
PH: 03 9749 8688