

EMERGENCY INFORMATION

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:

0417-332-015 (Marissa Mascaro)

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

INDEX

CATEGORY	PAGE NO.
Emergency Information	1
Event Structure & Information	
Contact Information	3
Organisation Chart	4
Event Committee Responsibilities	5
Safety	6 – 7
Event Details	
Site Map	8
Schedule	
Wednesday	9
Thursday	9
Friday	10
Saturday	11, 12
Sunday	12, 13
Competitors Flow Chart	14
Event Descriptions	
Cost Event	15 – 16
Engineering Design	17 – 18
Presentation	19 – 20
Technical & Safety Inspection	21
Fuel & Tilt Table	22
Brake & Noise	23
Practice Track	24
Acceleration	25
Skid Pad	26
Autocross	27
Endurance Track & Fuel Economy	28 – 29
Teams	
Registered Teams	30
Team Static Event Schedule	31
Additional Information	
Motorcycle Dealers / Parts	32 – 33
Automotive Parts Suppliers	33 – 34

EVENT STRUCTURE & INFORMATION

CONTACT INFORMATION

F-SAE POSITION	NAME	COMPANY	CONTACT DETAILS
Event Manager	Marissa Mascaro	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 www.sae-a.com.au/fsae/index marissa@sae-a.com.au
Event Coordinator	Stephen Castles	Toyota	
Technical Advisor	C/- FSAE Rules Committee		
Clerk of Course	Robert Chadwick	Mitsubishi	
Assistant Clerk of Course	Rob Allen		

Vehicles outside of Formula SAE-A

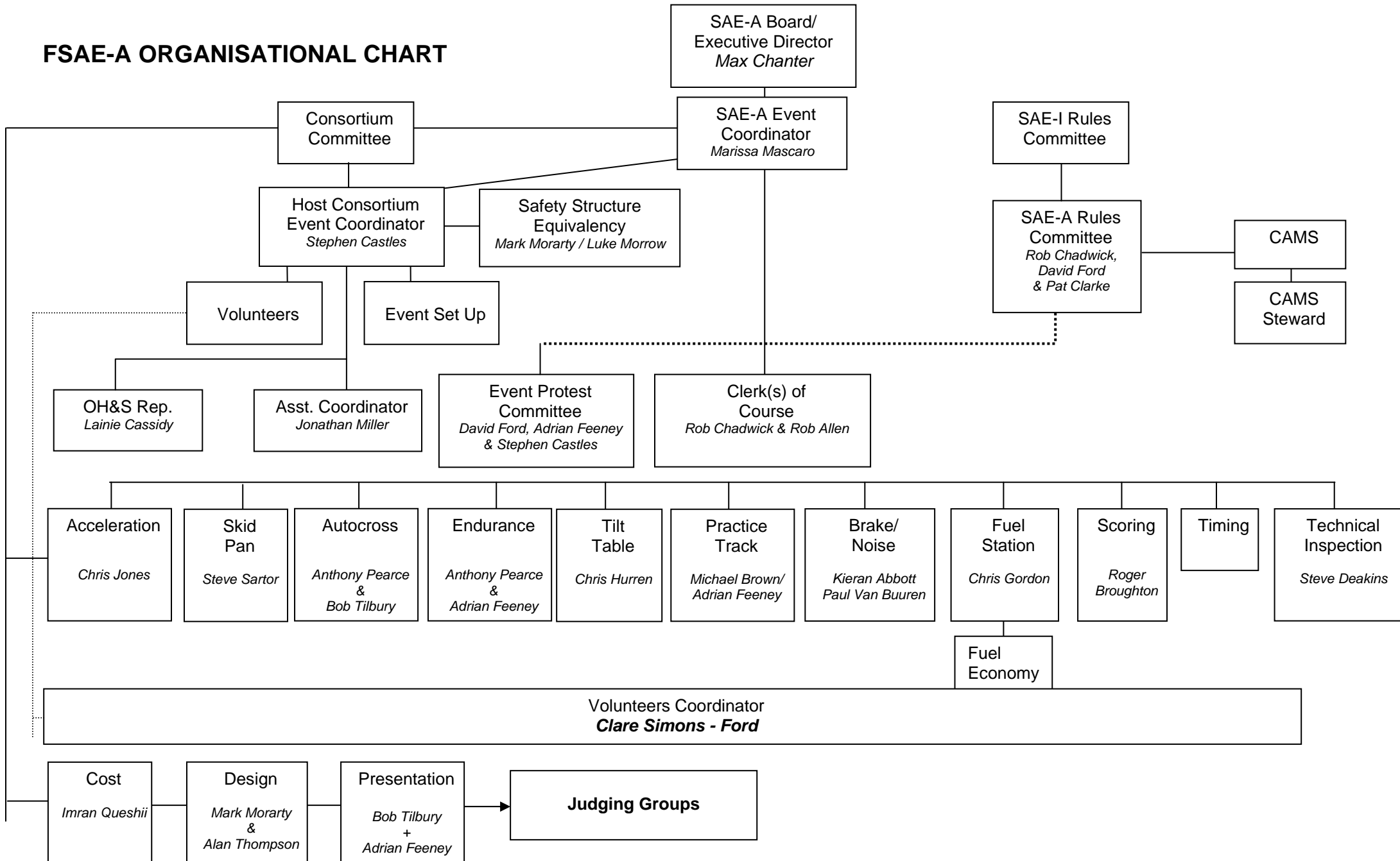
The intent of the Formula SAE-A is to focus on being an aid to the education of engineering students by providing a real world experience of – design; working in teams; working to schedules; applying computer analysis, design and simulation tools; establishing targets and costing a product.

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

- 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

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 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.

Power

Each pit bay will be supplied with power.

All electrical equipment must have affixed current test labels.

Each pit bay can draw a maximum of 5 amps.

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. All fuel containers must be DOT approved. Waste oil is to be taken to the fuel station for disposal.

Fire Extinguishers

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

Vehicle Modifications

No unapproved modification to the vehicle after it has been through tech inspection. Metal joining is available at the Kangan Batman TAFE welding tent.

Flagging

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

Behaviour

Alcohol, drugs and firearms have no place at this gathering. Rollerblades, scooters, bicycles and self propelled vehicles 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.

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

EVENT DETAILS

SCHEDULE

WEDNESDAY

Time	Event	PA	Site
7:30	Gates open		
TBC			Fuel Delivery
TBC			Generators & Electrician Arrive
TBC			Bins arrive
TBC			Toilets Arrive
TBC			Set up and placement of Toilets
TBC			Set Out Directional & Safety Signage
11:00			Sound system set-up commence
12:00			Bin and Toilet Check
12:00			Consortium/Sponsor reps set up display tents
13:30			Track sweeping (Endurance Track)
13:30			Set up Chairs and Tables
19:00			Security Arrives
20:00			Gates Closed

SCHEDULE

THURSDAY

Time	Event	PA	Site
7:30	Gates open		
8:00			Generators refuelled & 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 <i>"Registration will commence at 10am"</i>	
10:00	Team Registration begins	<i>"Registration is now open"</i>	
11:30	Volunteers lunches arrive		
12:00			Catering arrives for set up
12:30	Officials/Volunteers Lunch		
13:00		<i>"The Team Briefing is at 3:00pm"</i>	Set-Up of all Static Events, Design, Scrutineering, Presentation, Fuel station, Tilt test, Noise and Brake test
	Technical Inspection Open	<i>"Technical Inspection is now open"</i>	
13:50		<i>"The team briefing is at 3:00pm"</i> <i>"The drivers briefing is at 4:00pm"</i>	
14:30			Timing to set up equipment
14:50		<i>"Drivers briefing is at 3:00pm"</i>	
15:00	Team Briefing	<i>"Team briefing has now started"</i>	Welding tent set-up
16:00	Drivers Briefing	<i>"Drivers briefing has now started"</i>	
16:30	Registration Closes	<i>"The Gates will be closed at 7:00pm"</i>	Bin and toilet check
16:45	Radios returned to officials centre		
16:50			Generator turned off
17:00	Technical Inspection Closes	<i>"Technical Inspection is now closed"</i>	
17:00			
19:00			Security on site
19:00			
19:30			Gates Closed

EVENT DETAILS

SCHEDULE

FRIDAY

Time	Event	PA	Site
7:00	Gates open	PA Sound check	
7:30	Presentation Judges Briefing & Sign In Design Judges Briefing & Sign In	<i>"The Presentation event commences in 15 mins"</i>	Generators started
7:45	Distribution of radios and stop watches Officials Sign In and collect meal tickets	<i>"The Design Event commences in 15 mins"</i> <i>"The first three teams proceed to weighing by 7:50"</i>	Set up volunteers meals area for morning tea/coffee
8:00	Officials/Volunteers Briefing Design event begins Presentation event, Design event and Cost begins		
8:20			
8:30	Cost event begins		Ambulance arrives on site
8:40		<i>"The Fuel station, Scrutineering, Tilt test, Noise and Brake test area will open at 9:00am"</i>	
9:00	Scrutineering Open Fuel station open Tilt table open Noise/Brake test area open Practice Track Open	<i>"The Fuel station, Scrutineering, Tilt test, Noise and Brake test and Practice Track are now open"</i> <i>"Drivers Briefing will commence in 30 mins"</i>	
9:30	Drivers Briefing		
11:30			Volunteers lunches arrive
11:15		<i>"The practice track will be closed at 12:30pm for lunch"</i>	
12:30	Practice Track closed Fuel station closed Tilt table closed Scrutineering Closed Officials/Volunteers Lunch	<i>"The static events and practice track are now closed"</i>	
12:45		<i>"The practice track and scrutineering events will re-open at 1:00pm"</i>	
13:00	Judges and Officials back to events Scrutineering Open Practice track open Fuel station open Tilt table open Noise/Brake test area open	<i>"The practice track and scrutineering events are now open"</i>	
15:00		<i>"Tilt table, noise and brake, fuel station & practice track will close for the day at 4pm"</i>	
16:00	Practice track closed Fuel station closed Tilt table closed	<i>"Tilt table, noise and brake, fuel station & practice track are now closed"</i> <i>"Warning the scrutineering will close at 5:00pm"</i>	Set up Acceleration Set Up Skid Pad
16:05	Scores to be collected and passed into scorers tent		
17:00	Scrutineering closed Release scores for Cost Event	<i>"The Autocross/Endurance Marshalls briefing will now commence at the Start/Finish Line"</i> <i>"The Scrutineering tents are now closed"</i> <i>"The scores have now been released for the Cost Event and are posted in the Admin tent. - The protest period for this event is now open and will close at 6.00pm"</i>	
17:30			Ambulance leaves site
18:00		<i>"The protest period for the cost event results is now closed"</i>	Toilets checked Rubbish bin collection
19:00			Security on site
20:00	Gates closed		

EVENT DETAILS

SCHEDULE

SATURDAY

Time	Event	PA	Site
7:30	Gates open	PA Sound check <i>"The Drivers Briefing will be held at 8:30 at the front of the administration tent"</i>	Generators refuelled & started Bin check
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		
8:30	Event officials to their posts Gate(s) open for line up Drivers briefing	<i>"The fuel station will open at 8:45am"</i> <i>"The practice track will open at 9:00am"</i> <i>"The dynamic events this morning will start at 9:00am"</i> <i>"Driver Briefing has commenced"</i>	Ambulance arrives on site Check correct setup for Acceleration/Skid pad event
8:45	Fuel station open	<i>"The fuel station is now open"</i>	
9:00	Practice track open Acceleration / Skid pan gate open Scores released for presentation	<i>"The practice track is now open"</i> <i>"The gate for the Acceleration and Skid Pan events is now open"</i> <i>"The results of the Presentation Event have now been posted in the Admin tent – the protest period for this event will now commence and conclude in an hours time".</i>	
9:15	Start Acceleration and Skid pan events	<i>"The acceleration & skid pan events have now started"</i>	
10:00	Protest Period closed	<i>"The protest period for the presentation event has now closed."</i>	
11:30			Volunteers lunches arrive
11:30		<i>"The acceleration and skid pan event gates will close at 11:45am"</i> <i>"The practice track will close at 12:00pm"</i>	
11:45		<i>"The Acceleration and Skid Pan events will close in 15 minutes"</i>	
12:00	Practice track closed End of Acceleration / Skid pan events Design Event Finalists Announced Officials/Volunteers lunch	<i>"The Acceleration and Skid Pan events have now finished and the practice track is now closed"</i> <i>"Design Event Finalists and their Finals presentation time have been posted in the Admin tent"</i>	
12:05	Collect scores from the event & return to scorers tent	<i>"The Autocross track will be available for drivers to walk at 12:30pm"</i>	Mark out track with cones for Autocross event
12:30	Track available for drivers to walk the autocross track Gates open for line up Event officials to their posts	<i>"The practice track will open at 1:00pm"</i> <i>"The Session 1 of Autocross event will commence at 1:00pm"</i>	
13:00	Practice track open Autocross gate open	<i>"Gates for the Autocross event and Practice Track are now open"</i>	
13:15	Start Autocross event	<i>"The Session 1 of Autocross event has now started"</i>	
14:30	Autocross gate closes	<i>"The gate will close on Session 1 of the Autocross event in 20 mins"</i>	
14:50	Autocross gate opening	<i>"The gate will open for Session 2 of the Autocross event in 10 mins"</i>	
15:00	Start Autocross event	<i>"The Session 2 of Autocross has now started"</i>	
15:40		<i>"The gate will close on Session 2 of the Autocross event in 20 mins"</i>	
16:00	Autocross gate closes		
16:20		<i>"The Autocross event will end in 10 minutes"</i>	
16:30	End of Autocross event Design Finals	<i>"The Autocross event has now finished"</i> <i>"The practice track & fuel station will close at 5:00pm"</i> <i>"Design Finals will commence in 30 mins"</i>	

16:35	Collect scores from the event & return to scorers tent		
17:00	Release scores for events up to conclusion of day 2	<i>"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"</i>	
	Practice track closed	<i>"The practice track and fuel station are now closed"</i>	
	Fuel station closed		
	Design Finals Commence		
17:30	Radios returned to officials centre		Ambulance leaves site
18:00	Protest Period Closed	<i>"The protest period has now closed for the Skid Pan, Acceleration and Autocross events"</i>	Generators turned off
			Toilets checked
			Rubbish bin collection
19:00			Security on site
			Teams left site
20:30	Design Finals conclude		Gates closed

SCHEDULE

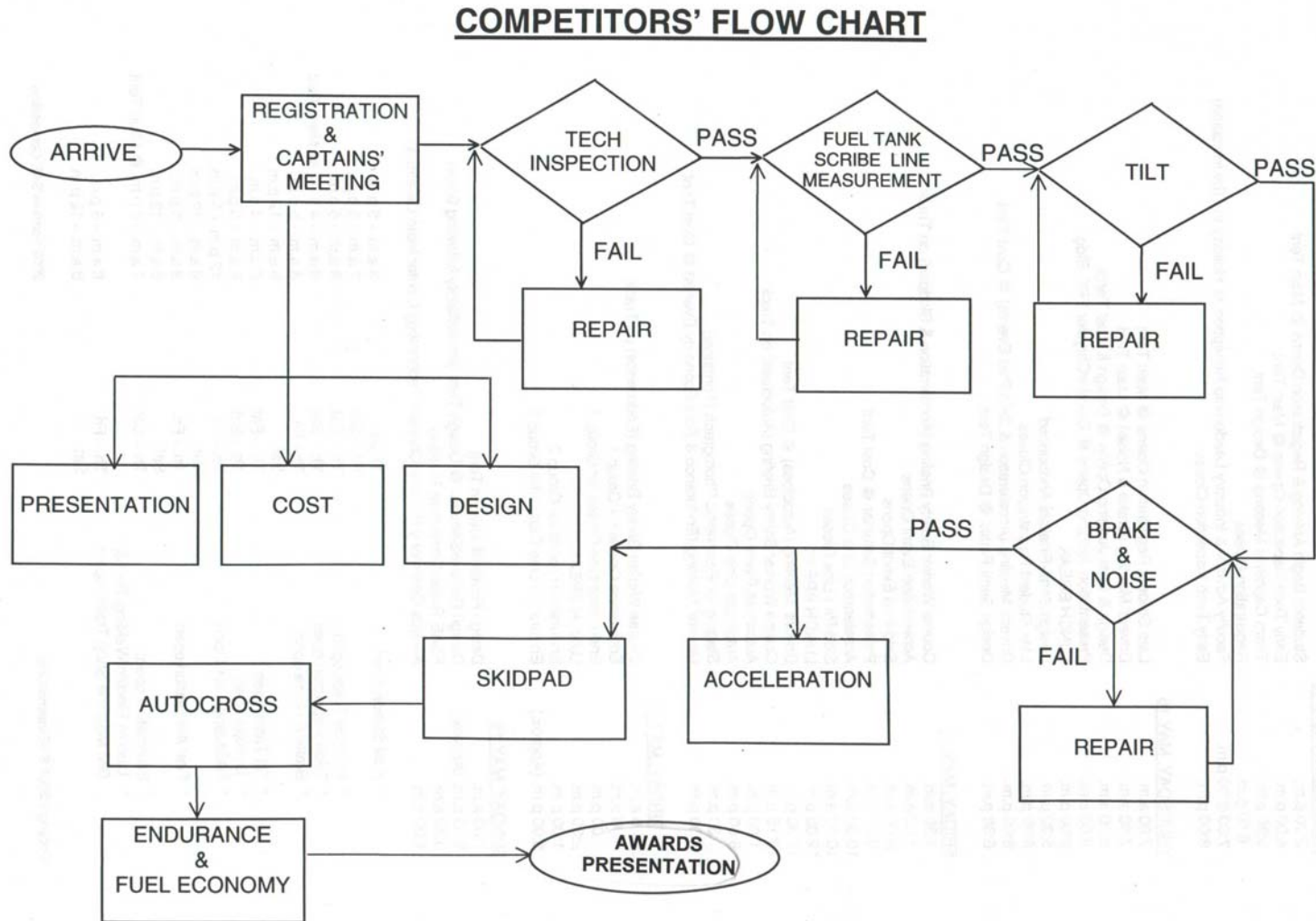
SUNDAY

Time	Event	PA	Site
7:30	Gates open	PA Sound check	Generators started 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	<i>"The Drivers Briefing will be held at 8:30 at the start /finish area"</i>	
8:15		<i>"The fuel station will open at 8:30am"</i>	
8:30	Event officials to their posts Fuel station open Drivers briefing	<i>"Drivers Briefing has commenced"</i>	Ambulance arrives on site
8:45		<i>"The Practice Track & endurance events will open at 9:00am"</i>	
9:00	Practice track open Heat 1 - Endurance gate open	<i>"The practice track is now open"</i> <i>"The gate for the endurance event is now open"</i>	
9:15	Start First heat of endurance / fuel economy event	<i>"The endurance event has started"</i>	
10:00	Protest Period Closed	<i>"The protest period for the Design Event is now closed"</i>	
11:00		<i>"Warning, the endurance event will be closed at 12:30pm. You must have completed your run"</i>	
11:30		<i>"The practice track will be closed at 12:30"</i>	Volunteers lunches arrive
12:00	Design Event Results released Endurance gate closed	<i>"The Design Event results have now been posted in the Admin tent – the protest period for this event will now commence and conclude in an hours time"</i> <i>"The endurance gate for Heat 1 is now closed"</i>	
12:05	Collect scores & penalty sheets and return to scorers		
12:30	Practice track closed	<i>"The practice track is now closed"</i>	
12:30	Finish first heat of endurance / fuel economy event Officials/Volunteers Lunch	<i>"The first heat of the endurance event is now closed"</i>	
12:45		<i>"Practice Track and the endurance event Gate will open in 15 minutes"</i>	
13:00	Practice track open Heat 2 - Endurance gate open	<i>"The practice track and the gate for the 2nd heat of the endurance event are now open"</i>	
13:15	Start second heat of endurance / fuel economy event	<i>"The 2nd heat of the endurance event has now started"</i>	

2009 Formula SAE-A

15:00		<i>"Warning the endurance event will be closed at 4:30pm. You must have completed the event by 4:30pm"</i>	
15:15		<i>"The practice track will close at 3:30pm"</i>	
15:30	Practice track closed	<i>"The practice track is now closed"</i>	
16:30	Endurance gate closed	<i>"The gate for endurance heat 2 is now closed"</i>	Trade displays commence pack up
17:00	Finish second heat of endurance / fuel economy event Collect scores & penalty sheets & return to scorers	<i>The 2nd heat of the endurance event has now finished</i>	Commence removal of supplies from track including, cones, bunting, tools, tilt table, so on Dorian Timing to remove timing equipment
17:30	Pack-up of teams from pit area Radios returned to the officials centre Preliminary Endurance Scores released		Ambulance leaves the site Display cars are removed from site Furniture to be packed up and stored PA system to be packed up and removed Grandstands removed
17:45	Awards Presentations begin	<i>"The awards presentations will now commence in front of the Administration tent"</i>	
18:45			Generators turned off & leads collected
19:30			All cars and people off site – Gates Closed

COMPETITORS' FLOW CHART



EVENT DESCRIPTIONS

COST EVENT

Event Captain: Imran Queshi
Location: Workshop facility

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 limited production. 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 Bill of Materials and a detailed process description. 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 event can be divided in to three separate sections - the cost report itself, visual inspection, and process discussion.

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 using established manufacturing practices and the application of "Lean Manufacturing" principles. The report will follow the guidelines set forth in the published rules. From this analysis the judges (in 9 distinct areas of expertise) will determine if all parts and processes were included and if unreasonably low (determined by the experience of the judges) - the judges will add penalties if there are errors, items omitted, or have costs below reasonable estimates at a rate equal to twice the cost error. We have eight teams that review each and every book based on their expertise. The costs and penalties will then determine the cost score. The report score will be given based on the quality of the report and its overall presentation. The report score ranges from 0 to 25 points. The price score will be awarded based on the following formula:

$30 \times (25,000 - P_{\text{your}}) / (25,000 - P_{\text{min}})$	30 Points	Lowest Cost – Each of the participating schools will be ranked by total adjusted retail cost from the BOM and given a 0-30 point based on the formula on the left. P_{your} is the adjusted cost of the lowest car. If your P_{your} is greater than \$25,000US, the car will be disqualified from the event.
	30 Points	The Cost Report – written, professional presentation of the cost data- The report will score will be given based on the quality of the cost report, its accuracy and thoroughness. The range for the report score is 0 – 30 points.
	20 Points	Event Day / Visual Inspection – The Cars will be reviewed for part content and manufacturing feasibility. 0 - 20 points
	20 Points	Event Day / Manufacturing Process – The teams must be prepared to discuss in detail the manufacturing processes for 2 items chosen at random from the list in Section 4.3.5 0 – 10 points per item
Total	100 Points	

The Visual Evaluation:

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

The focus of the cost event this year is the process of building the vehicle and the components contained therein. At the time of check-in at our event, the designated representative from the team will draw a random lot from two separate containers to determine which two commodity process areas of the vehicle the team will be discussing in detail. In addition to these two randomly drawn areas, the team will also be discussing the principles of "Lean Manufacturing" and their overall process of the vehicle. 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. This discussion of the process can only help the student's team. If this appointment is missed the team will sacrifice the twenty points for this portion of the event.

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 Lean Mfg.:	4 to 5 minutes
1 st Random Area Concentration:	10 Minutes
2 nd Random Area Concentration:	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 (Appendix A-3).

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.

Tips for a Good Cost Report:

- Follow the rules - put the items and processes where the guidelines tell you to put them
- Include an EBOM (Electronic Bill of Material) on disk (3.5 in MS Excel) that follows the format in Appendix A-5.
- Receipts should be no older than three years
- Catalogue pages used should be no older than three years as well.
- If using catalogue pages, please highlight the parts purchased, so we don't have to guess what parts were used
- Be careful to detail the processes that are asterisked in the rules (Appendix A-4)
- 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
- The retail limit for the vehicle **US\$25,000**
- Don't forget to include labour costs as well as set-up times and jiggling - this is one of the biggest areas where we find problems. Remember that you must account for every person used in the manufacturing process. If you must - err on the high side rather than cut yourself short.

EVENT DESCRIPTIONS

ENGINEERING DESIGN

Event Captain/s: Mark Morarty / Alan Thompson
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 a 'sneak peek' into 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. It is not currently being mandated exactly how this should be accomplished. 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 a time TBC (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 by 7:00am to prepare 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, and 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 expert roving judges and the event captain.

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 this person 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 group will be entitled to recommend, **AT MOST**, two to three vehicles to send on to the next round. 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.

EVENT DESCRIPTIONS

PRESENTATION

Event Captain/s: Bob Tilbury /Adrian Feeney
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, longer presentations may be penalized.
- 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.

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.

A team of six 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:

$$\text{PRESENTATION SCORE} = 75 * P_{\text{team}} / P_{\text{max}}$$

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.

EVENT DESCRIPTIONS

TECHNICAL & SAFETY INSPECTION

Chief Scrutineer/s: Steve Deakins

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:

Teams can choose to attend technical inspection at the designated tent area within the pit compound at any time during the advertised opening times.

With you, you must have:

- The car (obviously),
- Copies of any Safety Structure Equivalency forms.
- Your Tech. Form
- All the helmets you plan to use in the event
- All the drivers' suits and other safety gear
- The tallest driver on the team must be in attendance for roll bar height and egress checks.

If/when you pass the Tech. 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.

If you pass Tech. Inspection, the Tech. Form will be retained by the Tech 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 Tech. again.

EVENT DESCRIPTIONS

FUEL AND TILT TABLE

Station Manager: Fuel Station – Chris Gordon
Tilt Table – Chris Hurren
Tilt Table – On access road at front of pits

Description:

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

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 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. (May be obtained at fuel station).
6. Keep a fire extinguisher handy.

EVENT DESCRIPTIONS

BRAKE AND NOISE

Event Captain: Keiran Abbott
Paul Van Buuren
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 tech 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.

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 tech crew and turned in at the tech 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. Penalties may be assessed if the sound level exceeds the mandated maximum. 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.

Safety guidelines for the Brake & Noise area:

1. Only one car at a time in B & N 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 hay bales 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 station manager(s).
-

EVENT DESCRIPTIONS

PRACTICE TRACK

Event Captain: Michael Brown
Adrian Feeney

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 tech 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 Tech 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. Two (2) 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 are (station) manager.
7. Do not permit spectators to sit or lean on the barriers surrounding the practice area which may be evaluated on the Practice Track, prior to re-test

EVENT DESCRIPTIONS

ACCELERATION

Event Leader: Chris Jones

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 tire grip. **(NO "traction enhancing" agents may be used on the tires or 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 0.3 m (1.0 feet) 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 drivers 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

SKID PAD

Event Captain: Steve Sartor
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 2nd lap of each right-hand and left-hand circle (the 1st lap of each is not timed).

Scoring:

Lap times will be recorded for the 2nd 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 drivers 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

AUTOCROSS

Event Captain: Anthony Pearce
Bob Tilbury
Location: Track Area

Event Format:

- 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.
- The event will be run in two sessions with the times for both sessions counting.
T_{your} will be your team's fastest corrected time from either session.
T_{min} will be the lowest corrected time of the fastest team of the event in either session.
- Each team can run a maximum of 2 drivers in each session.
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
- 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.
- 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.
- 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
- Up to four cars, ready to run, with driver fully strapped in, will be in the "Staging Area" at any one time.
- Cars will be called up to the start line in order of the line up in the "Staging area".
- 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.
- If the team wish 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)
- A car having completed a driver change joins the rear of the line in the "Staging Area".
- 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".
- 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".

Session 1

1pm - 2:50 pm (110 minutes)

- Entry gate to the "General line up area" opens at **12:30pm**.
- The first session concludes at **2:50 pm** (or earlier at the discretion of the organisers if all cars have run their 4 laps)
- 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)

- 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.
- The gate to the "General line up area" closes at **4pm**.
- All cars in the "General line up area" at 4pm will be given 2 laps, without a driver change
- Notwithstanding item 3, if a vehicle is not ready to compete when instructed to, that vehicle will not be permitted further runs.

EVENT DESCRIPTIONS

ENDURANCE TRACK AND FUEL ECONOMY

Event Leaders: Anthony Pearce
Adrian Feeney
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 refuelling 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 tires 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 checkered 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 tires 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 checkered 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 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)

TEAMS

REGISTERED TEAMS 2009

1	University of Western Australia
3	University of Newcastle
4	University of Wollongong
7	Edith Cowan University
8	University of Adelaide
10	RMIT University
11	University of Melbourne
12	Iran University of Science and Technology, Arak Branch
13	Swinburne University
14	Curtin University of Technology
15	UNSW @ ADFA
18	VNR Vignana Jyothi Institute of Engineering & Technology
21	Tokyo Denki University
22	University of Sydney
25	University of Waikato
41	University of Queensland
46	Queensland University of Technology
47	University of Auckland
59	University of Technology Sydney
66	Monash University
72	University of South Australia
77	King Mongkut's Institute of Technology Ladkrabang
89	PEC University of Technology
63	University of New South Wales

STATIC EVENTS SCHEDULE

CAR	UNIVERSITY	PRES.	DESIGN		COST	
66	Monash University	08:00	C	09:50	B	13:30
47	University of Auckland	08:20	A	10:50	A	13:30
11	University of Melbourne	08:40	B	10:50	B	14:00
3	University of Newcastle	09:00	C	10:50	A	14:00
22	University of Sydney	09:20	A	12:20	B	14:30
14	Curtin University of Technology	09:40	B	12:20	A	14:30
10	RMIT University	10:10	C	12:20	A	08:00
21	Tokyo Denki University	10:30	A	13:20	B	08:00
72	University of South Australia	10:50	B	13:20	B	08:30
12	Iran University of Science and Technology, Arak Branch	11:10	C	13:20	A	08:30
15	UNSW @ ADFA	11:30	A	15:20	A	09:00
1	University of Western Australia	11:50	B	14:20	B	09:00
8	University of Adelaide	12:40	C	14:20	A	09:30
77	King Mongkut's Institute of Technology Ladkrabang (KMITL)	13:00	A	14:20	B	09:30
18	VNR Vignana Jyothi Institute of Engineering & Technology	13:20	B	15:20	A	10:30
89	PEC University of Technology	13:40	C	15:20	B	10:30
63	University of NSW	14:00	A	07:50	B	11:00
4	University of Wollongong	14:20	B	07:50	A	11:00
41	University of Queensland	14:50	C	07:50	B	11:30
59	University of Technology Sydney	15:10	A	08:50	A	11:30
25	University of Waikato	15:30	B	08:50	A	12:00
13	Swinburne University	15:50	C	08:50	B	12:00
7	Edith Cowan University	16:10	A	09:50	A	13:00
46	Queensland University of Technology	16:30	B	09:50	B	13:00

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

Yamaha City
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

Motorcycle City
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

Scoota City
303 Elizabeth Street, Melbourne
Ph: 03 9602 3119

AUTOMOTIVE PARTS SUPPLIERS

Marlows 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