Schools Marine Challenge
Rules and Regulations

The following Rules and Regulations are for the Schools Marine Engineering Challenge. The Rules and Regulations are designed to enable the teams to compete on a reasonably level playing field, whilst encouraging technical innovation, without being too restrictive

No kits are allowed. This would be in direct conflict with the spirit and aims of the competition.
The organisers will be happy to give their interpretation of any aspect of the rules should the need arise, during the build phase as well as on Race Day, reflecting the spirit of the competition.

Hull Design
All schools are encouraged to design a hull and if possible manufacture one for each of the electric and IC classes. This is a demanding challenge and you have the option of being supplied a hull to use or base ideas on if full manufacture is not possible.
The solar class lends itself to vacuum forming and does not have a hull supplied. The electric class can be a 500mm LOA thus permitting vacuum formed hulls in most school sized machines.

Age
The competition is open to all pupils up to the end of year 11, with a strict upper age limit. No sixth form student teams to participate, however skills and knowledge gained by using older pupils as mentors is to be encouraged.

There are three categories:
1. Internal Combustion
2. Solar Challenge
3. Electric

Judging
We shall incorporate a judging element during the last round of visits to your school in late spring or early summer we will want to hear and see how you have engineered your boat such that we can fairly award marks for these sections prior to Race Day. On Race Day the judges will look and ask questions about the criteria but it will be very much the topping up and confirming of the previously awarded marks. To enable this to happen it is important that your boats are in a state that clearly shows your design and engineering even if the boat is not complete and ready to run.

Schools Marine Challenge
Rules and Regulations

I.C Formula

In brief, craft are to be approximately 850mm LOA, scratch built. Stock components may be used, but not bought in pre-assembled craft or complete assemblies such as powertrain.
Craft will be scrutinised prior to and on Race Day to ensure they have been 'scratch built' and the following guidelines have been followed:

Engine

Supplied by the organisers
- Craft may only be powered by one engine, but the engine may be modified provided it remains identifiably the same.

Cooling

No restrictions
- Any cooling configuration may be used.

Hull

Hull provided or scratch built
School designed hulls will gain more marks in this section of the marking criteria
- There are no restrictions on format or construction, from mono to multi hulls of any type. The aims are as for full sized craft, to reduce drag, be stable, fuel efficient and carry the designed load.

Drive Train Gearing

No restrictions
- Craft may only be driven by water based propulsion, i.e no airscrew systems in this class.

Radio

Radio gear will be allocated by the organisers. This is the only radio gear that can be used on Race Day. Prior to Race Day the choice is left to participants. Specific control measures will be released to schools to ensure no frequency overlap problems occur.

Fuel

No restrictions

Dimensions

Inclusive of all aerodynamic features, but not stern drives etc

All in mm	Maximum
Length	850
Beam	No restrictions
Height	No restrictions

Weight

There are no weight restrictions

Schools Marine Challenge
Rules and Regulations

Electric Formula

Craft are to be a maximum of 650mm LOA, scratch built. Stock components may be used, but not bought in pre-assembled craft or complete assemblies such as powertrain. Craft will be scrutinised prior to and on Race Day to ensure they have been 'scratch built' and the following guidelines have been followed:

Hull Hull provided or scratch built as for IC class
School designed hulls will gain more marks in this section of the marking criteria

Motor No brushless motors allowed. You can use more than one motor, but no more than 3. Motor supplied or any similar of your choice.

Power supply Single 7.2 v six cell pack supplied by the organisers. No series or parallel arrangements between packs allowed.

Drive Train No restrictions

Radio Radio gear will be allocated by the organisers. This is the only radio gear that can be used on Race Day. Prior to Race Day the choice is left to participants. Specific control measures will be released to schools to ensure no frequency overlap problems occur.

Dimensions Inclusive of all aerodynamic features, but not stern drives etc

All in mm	Maximum
Length	650
Beam	No restrictions
Height	No restrictions

Weight There are no weight restrictions

Schools Marine Challenge
Rules and Regulations

Solar Formula

Craft are to be a maximum of 450mm LOA, scratch built. Stock components may be used, but not bought in pre assembled craft or complete assemblies.
This criteria is to allow schools to engineer the most efficient way of propelling a boat using only the energy from the sun. Any configuration of power plant may be used. Development of more efficient propulsion systems will enhance performance, if alternative motors or solar panels are used they must be identified and costed. This is to ensure that whilst the higher plane technologies can be investigated they must be compared to 'supplied' components in terms of cost and efficiency.

Motor

- Craft may be powered by one; or more than one motor.

Solar Panels - No restriction on number. Must be carried by the craft

Cooling No restrictions
- Any cooling configuration may be used.

Hull No restrictions
- There are no restrictions on format or construction, from mono to multi hulls of any type.

Drive Train Gearing No restrictions

Control Free running using a overhead guide wire. See build guide for details.

Fuel N/A See dull day contingency below

Dimensions Inclusive of all aerodynamic features, but not stern drives etc

All in mm	Maximum
Length	450
Beam	No restrictions
Height	No restrictions

Dull Race Day Contingency

In the event of a 'dull' Race Day artificial lighting will be used. If this proves insufficient each team will be issued with ONE numbered 'AA' cell per boat. The race will then be run with the craft still using their solar panels but enhanced by the 'AA' cell.

Schools Marine Challenge
Rules and Regulations

Race Day

The overall winner will be the team gaining most points from a combination of race results (30 points max) and scrutineering (100 points max). There are a total of 130 points on offer. In the event of a tie the team with the most race points will win.

Craft Identification Numbers will be allocated by the organisers and must be easily identifiable throughout races.

Scrutineers will also look for safety features and to ensure that boat construction is designed for racing rather than damaging other competitors' craft.

I.C Craft
All races are time trials; the race winner will be the team completing the most laps within the allocated time.

The format consists of three 10 minute races anticlockwise around a rectangular course. The course has a straight of approx 80 metres and sides of 40 metres. Each race consists of up to 12 boats at a time.

1. All competitors in a particular heat are lined up in the pits where they are given approximately ten minutes to start and test run their boats. A countdown is given where boats can be on the course at the end of the countdown the race is underway.
2. Each completed lap is recorded by the official timekeeper. At the end of the race, the boat with the most laps is the winner of that round, in the event of two or more craft completing the same number of laps, 'first past the post' will be used to determine places.
3. The best total lap scores from all the rounds in a particular class are the winners.
4. Teams may restart and work on their boat during the race so long as they do not hinder the other competitors and they are not seen to gain an advantage when the boat is placed back in the water.
5. All craft brought to Race Day must have been built as part of the engineering challenge. Only one craft may be used per race (ie a damaged craft cannot be swapped in mid-race) but different craft can be entered for different races.

Electric Craft
As for I.C with the following changes:
The format consists of three 7 minute races anticlockwise around an elliptical course, the length being approximately 80m.
Teams may use a pit stop strategy if they wish. As well as essential repairs, batteries may be replaced during the race.

Solar Craft
Free running over a distance of 10m
Three rounds with either the same or different craft competing, craft may not be swapped within a round.
The winner will be the boat completing the course in the least amount of time

Points will be awarded as follows:

Position	1st	2nd	3rd	4th	5th	6th	7th	8th
Points	10	8	6	5	4	3	2	1