



KINGS MOTO CHAMPIONSHIP 2K18

KINGS

ENGINEERING COLLEGE



**DEPARTMENT OF MECHANICAL
ENGINEERING**

KINGS E-BIKE RULE BOOK



KINGS MOTO CHAMPIONSHIP 2K18

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SECTION A- PURPOSE

INTRODUCTION

The KINGS MOTO CHAMPIONSHIP-2K18 is an engineering level championship in which student pursuing engineering in any field especially mechanical and electronics can enhance their skill by participating in this event. This event comprises of the overall development of the student in the field of engineering in which student can learn the design, manufacturing and team management practices.

Our main aim is to look over the eco-friendly automobiles vehicles which will be the need for future generation

RULES OF CAMPUS

All the teams members and faculties participating in this event are requested to follow the rules and regulation of the college. If any team found not following the rules and regulations of the event as well as of college, the organizing team can disqualify the concern team at any instance without giving any explanation. If there will be any change in the rules and regulations, the organizing team will intimate the teams regarding the change through emails and website.

RIGHT TO IMPOUND

During the event, any registered team can be called for technical inspection and examination at any point of time. They will be questioned for any technical data related to the vehicle during the event from any team member.

BEHAVIOUR

All the members of each and every team will have to follow the rules laid by KEC during the competition and behave well with their other competent as well as organizing members. Any one of the team member fail to follow the rules or misbehave will get 20 % point reduction or elimination from the event for the concern team. Arguments with officials may result in team elimination from the event.



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QUERY /PROTEST

We know that each and every team is doing hard work and working for long hours to complete their dream of making their own vehicle. In the heat of competition, emotions speak and disputes can arise. So looking over all, KMC-2K18 organizing committee will settle all disputes and resolve all questions quickly and efficiently. If any team protests or spreads rumours in between, team will be disqualified and will be banned for the further competitions to be held at KINGS ENGINEERING COLLEGE (KEC). Details of misbehaving will be sent to the respective college/university officially from KMC-2K18 Organizing team.

PROCEDURE TO PUT UP THE QUERY

Team captain (only) will contact the organizing head of KMC-2K18 for the related query and will discuss the problem. Organizing team will further settle disputes and will answer the questions as soon as possible.

VALIDITY OF RULES

All the decisions during the EVENT will be taken by the Judges and Organising team only. Teams are requested to contact organising team for any clarification. All the rules are valid till the completion of the event and all is managed by the organizing head of KMC-2K18.

SECTION B- ADMINISTRATIVE REGULATIONS

SCHEDULE

ACTION	DATE
RULEBOOK PUBLISHED	03 rd January 2018
REGISTRATION START	03 rd January 2018
REGISTRATION CLOSE	15 th February 2018
DOCUMENT SUBMISSION	24 th February 2018
EVENT DATE	2 nd March 2018



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EVENT REGISTRATION:

Team Registration is open on our website

<http://www.kingsengineeringcollege.in/events.html>

Facebook Page : KINGS Moto Championship 2k18

Twitter Page : Kings Moto Champion 2k18

STEP BY STEP DETAIL OF REGISTRATION:

- Register your team online on our website for the respective event

<http://www.kingsengineeringcollege.in/kebc18-about.html>

Registration fee for each team is INR 3,600/- (three thousand six hundred only) and this registration fee will not be refunded in any case.

- Once the team has been registered, the payment should be done through following methods

1 - Demand Draft for **Rs.3,600** in favour of

Kings Engineering College

Payable at Chennai

- Send the original DD, undertaking form and copy of the online registration form (attested by HOD/Dean/Principal/Vice Chancellor of the respective College/University) to the address below:

The Organizer

kingsmotochampionship2018

Kings Engineering College

Opposite to Hyundai Motors,

Chennai – Bangalore Highway

Irungattukottai Village, Sriperumbudur Taluk,

Tamil Nadu – 602 117

- All the correspondence should take place only from the Team captain's e-mail id.



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TEAM REQUIREMENTS

TEAM NAME: Every team should define an attractive name to the team.

TEAM LOGO: Every team should have an attractive team logo

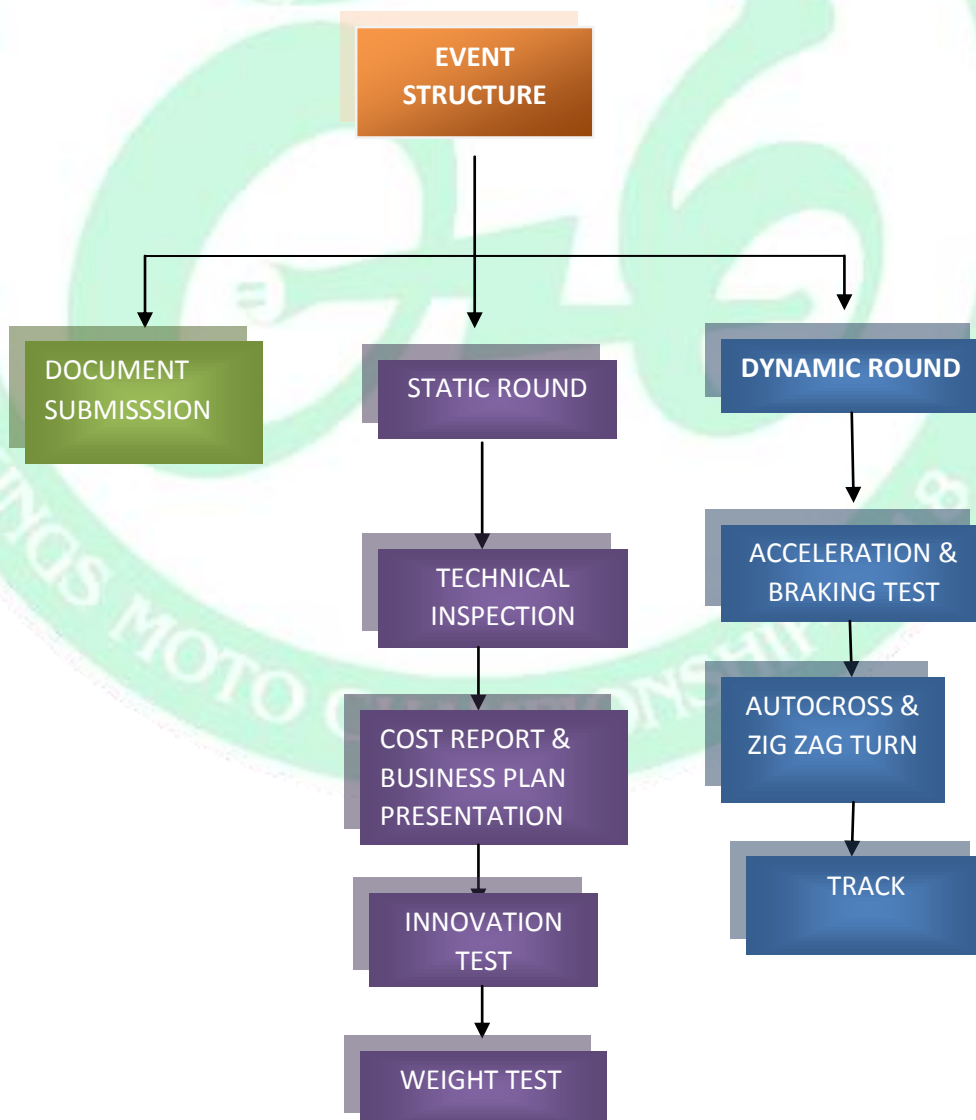
TEAM CAPTAIN: Every team requires a Team Captain.

DISCIPLINE: Every team member must be a undergraduate /diploma student or pass out student (If approved by their respective college/University).

RIDER: Every team must have minimum two riders; riders must be minimum 18 years old. The riders should have a valid driving license and life insurance. The organising committee can verify the documents at any time during the event.

TEAM MEMBER: Every team requires **Maximum of 6 Members**

NOTE: Multiple teams can participate from the same college/university in KINGS MOTO CHMPIONSHIP-2K18 but every team should have different team name and all the data given in the section "Team Requirements".





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SECTION C- TECHNICAL REQUIREMENTS

E - BIKE

BATTERY AND MOTOR

TYPE & MAXIMUM OPERATING CRITERIA	24 VOLT(12X2) OR 36VOLT(12X3) OR 48VOLT(12X4) (15, 20 &24 A) 26.4 V (24 V System), 39.6 V (36 V System), 52.8 V (48 V System)
TYPE OF MOTOR	Less than 1000 Watts Brushless DC motor or DC motor with brush

CHASSIS AND SUSPENSION

Frame	Any
Front suspension	Any
Rear suspension	Any

DRIVE

Transmission type	Belt/Chain
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WHEELS and TYRES

Wheel Type	Alloy or Spokes
Wheel Width (Front/Rear)	Less than 16 inch diameter
Tyre	Tube or Tubeless



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BRAKES

Front	Drum / Disc
Rear	Drum / Disc

OTHERS

Starter	Electric
Top Speed	50 Km/hr

DIMENSIONS

Wheel Base	Maximum 1250 mm
Overall Height	Maximum 1200 mm
Overall Length	Maximum 1800 mm
Overall Width	Maximum 750 mm

SAFETY GEARS FOR RIDER

It is compulsory for the rider to wear rider suit, shoes, hand gloves and safety pads (All should be SFI rated). Further information is given below:



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DRIVING SUIT

The rider must wear driving suit of SFI rating of minimum single layer. Without driving suit, team will not be allowed to drive the vehicle in the competition. Driving suit will be checked during TI(Technical Inspection). Any alternatives like leather jacket or other than rider suit will not be permitted.

DRIVING GLOVES

Leather gloves with extra foam are acceptable.

KNEE AND ELBOW PADS

Pad should properly cover the joints of Arms and Legs.

NECK SUPPORT

The neck support must be a full circle (360°) and SFI rated. Horseshoe collars are not allowed. Simpson, RCI, G Force, Deist or Leaf Racing Products supply neck collars that meet this requirement.

HELMET

A well- fitting closed face helmet that meets one of the following certifications and is labelled as such Snell K2000, K2005, K2010, M2000, M2005, M2010, SA2000, SA2005, SA2010-SFI 31.2A, SFI 31.1/2005- FIA 8860-2004, FIA 8860-2010. Open faced helmets are not allowed. All helmets to be used in the competition must be presented during Technical Inspection, where approved helmets will be marked. The organizer reserves the right to impound all non-approved helmets until the end of the competition.

SHOES

Fire resistant shoes made from acceptable fire resistant material must be certified to the standard and labelled such as: SFI 3.3, FIA 8856-2000.

NOTE: Sport shoes/Canvas shoes/Leather shoes/Industrial safety shoes are not allowed at any point of the event.



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UNDERCLOTHING

If you do not wear fire resistant underclothing, it is strongly recommended that you wear cotton underclothing (t-shirt and long underpants) under your approved driving suit.

OTHER ACCESSIBILITIES:

The following mentioned accessories are mandatory and must be included in their vehicles. They are:

- First Aid kit
- Tail light
- Horn

SECTION D- DOCUMENTS AND ONLINE REPORT SUBMISSION

DOCUMENT AND REPORT SUBMISSION:

This comprises the submission of report & promo video of their design and fabrication of their vehicle. It is mandatory that the teams must submit the report and promo video of their vehicle **on or before: 24th February 2018**

The teams have to mail the following document:

- Complete CAD file
- Chassis design and simulation testing
- Safety and ergonomics
- Suspension design
- Steering design
- Braking system
- Innovation
- Gantt chart
- Cost report
- DFMEA
- DVP



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SECTION E- STATIC ROUND

S.NO	EVENT NAME	POINTS
1	Technical inspection and Design	200
2	Business plan and Efficient Cost Report Event	100
3	Innovation test	50
4	Weight test	50
	Total	400

TECHNICAL INSPECTION (T.I)

The objective of Technical Inspection round is to determine the ability of the bike and to analyze the vehicle whether it meets the requirements and restrictions of KMC2K18 rules.

- Each Bike must pass all parts of Technical Inspection and testing before being permitted to participate in any dynamic event. The exact procedures and instruments employed for inspection and testing are entirely at the discretion of the Chief Technical Inspector.
- Bikes must be presented for technical inspection in finished condition, (i.e) fully assembled, complete and ready-to-run. Technical inspectors will not inspect any bike presented for inspection in an unfinished state.



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The inspection will determine whether the vehicle satisfies the requirements and restrictions of the event KINGS MOTO CHAMPIONSHIP-2K18 rulebook.

- **Riders Presence:** Both the riders must be present at technical inspection with their valid licenses and life insurances. Without rider, Technical inspection will not be started.
- Carry the original documents of vehicle like RC book, bike insurance(if any)

Note: Driving the vehicle on the track other than the time of competition is strictly prohibited; teams who violate this rule, points will be reduced accordingly.

DESIGN EVALUATION

The objective of the design evaluation is to analyze the vehicle prior to the design report submitted by the team. It is mandatory for all the teams to bring **3 copies** of their report in order to attend the design evaluation round.

QUESTIONNAIRE

There will be a questionnaire round and any of the team members will be questioned by the judges. Questions will be related to manufacturing and other technical aspects of the bike. Engineering practices of the teams will also be evaluated.

COST REPORT

Cost report includes the description of each and every component used in the vehicle with cost price. In this, the teams will be judged upon the way of presentation of the cost report with document and the method they have used to reduce the overall cost of the vehicle.

BUSINESS PLAN

The objective behind it is, if a team wants to open an industry to sell the product then how the team is going to convince the customer to sell more and more products by giving the sales description regarding their vehicle. The teams have to



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show proper layout of the company and the fabrication plan they are going to use for the mass production of the vehicle. Teams have to present as like they are the official of the company.

Note: After going through both best marketing presentation and the cost presentation the team will be presented with the overall Best cost and business plan winner.

BEST INNOVATION TEST

All the innovations done in the vehicle will be tested. Points will be awarded on the basis of concept, effectiveness and working of the innovation. Judges can ask questions regarding innovations from any team members.

- Teams using innovation should properly mount it on the vehicle and it should be in working condition during the complete event.

WEIGHT TEST

In this round weight of the vehicle will be measured and the vehicle with light weight will get the “Light Weight Award”.



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SECTION F-DYNAMIC ROUND

S.NO	EVENTS NAME	POINTS
1	Braking Test	100
2	Acceleration Test	100
3	U-turn	100
4	Auto Cross	100
5	Track	100
TOTAL		500

ACCELERATION AND BRAKING TEST

- **Brake test** : It is a mandatory process, without passing this test vehicle will not be allowed to proceed.
- The vehicle has to accelerate at its maximum speed along a 100m track and then to apply the brake and stop the vehicle in the next length of track i.e. 15 m.
- **Acceleration test**: The time taken by the vehicle for covering 100 m length will be considered to determine the acceleration of vehicle.

AUTO CROSS TEST

There will be two (2) pairs of concentric circles in a figure of eight pattern. The centre of these circles will be 2m apart. The inner circles will be 2.5m in diameter, and the outer circles will be 4.5m in diameter. The driving path will be the 2m path between the inner and outer circles. A lap is defined as travelling around one of the circles from the start/stop line and returning to the start/stop line.



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PROCEDURE

The track is laid and the bike will enter the track perpendicular to the figure eight. They must take one full lap on the right circle to establish the turn and the bike must move on to the left circle to complete the lap. This completes one lap and will be timed. Immediately upon finishing the circle the lap will be completed, and the bike will exit the track. The bike will exit at the intersection moving in the same direction as entered.

ZIG ZAG TURN

- The objective of the Zig Zag Turn test is to measure the Handle bar ability on a Turning surface while making a constant- Zig Zag Turn, and checking the rider's ability to control the vehicle.
- When signalled, ride to the right of the first cone, to the left of the second, and so on.
- Weave past all ten cones without touching or skipping a cone or putting a foot down.
- Based on the rider's performance, points will be awarded.

TRACK

The race is to check the performance and efficiency of the vehicle on road. The track will be provided for teams to perform efficiently. The vehicle will be made to run on the track and time of lap will be taken in to account.

Note: There should be no reckless or aggressive driving. Signals and flags should be followed. If not, penalty will be given and accordingly points will be reduced.



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SECTION G- AWARDS AND PRIZE MONEY

The Award ceremony will be hosted at the end of the day. The winner of respective categories will be awarded with KMC-2K18 trophy and the respective cash prizes. Prize money will be distributed in following categories.

Note: The prize amount will be increased based on the number of participants.

S.NO	CATEGORY	PRIZE MONEY (INR)
1	CHAMPION	WORTH 3 LAKHS
2	RUNNER UP	
3	BEST RIDER	
4	BEST INNOVATION	
5	BEST AUTO CROSS	
6	BEST ACCELERATION & BRAKING	
7	COST & BUSINESS PLAN	
8	LIGHT WEIGHT AWARD	
9	SPECIAL AWARD	