

RULE BOOK



PROFILE

BVRIT, with 110 acres sprawling Green Campus has been listed among the top Engineering Colleges in the state of Telangana, with very good infrastructure, academic programs, and initiatives beyond the University curriculum. BVRIT Narsapur campus developed an ATV and Go-kart tracks were built in BVRIT campus in an area of 2.15 acres. This Field has one ATV track of length 0.6 km and Go-kart track of length 0.55 km. ATV track contains endurance track of length 0.4 km with different types of obstacles and surface types. These tracks will be useful for students participating in different vehicle design competitions for testing their vehicles in simulated tracks before the competition.

IPEC is all set to explore boundless possibilities of the human mind. This event is an inter collegiate design competition for engineering students. The Competition includes designing, fabricating and validating a four wheeled vehicle driven by one driver. The vehicle would be capable to be driven by one driver on gasoline or Electric power. The vehicle would be evaluated for its design, performance, safety, durability and the teams compete against each other.



ELIGIBILITY

Student Status

Team members should be undergraduate or graduate students in a college or university of age 18years or above. Team members who have graduated during the seven (9) month period prior to the last date of competition remaineligible to participate. The student must have the following.

1. College I.D Card
2. Bonafied Certificate
3. Driving License (For Drivers)
4. Indemnity Bond
5. Medical Insurance (For Drivers)
6. Maximum No Member - 25

Additional Requirement

Each team is supposed to have a Faculty Advisor appointed by the college/university.

The Faculty Advisor is required to accompany the team to the competition and will be considered by competition officials as the official college/university representatively.

The Team should have at most 2 and at least 1 Driver , who should have a valid Driving License issued by State Government,and should have an insurance cover of at least the Event days

Vehicle Requirement

a. Vehicle Configuration

The vehicle must have four (4) wheels and should not be in a straight line. The must be capable of carrying one (1) person 190 cm(75") tall, weighing 113 kg.

b. Vehicle Dimensions

Wheelbase – 55 inches maximum

Track width – No restrictions

Weight – no restrictions

c. Frame Material & Cross Section Requirements

Frame Material Must be AISI or ASTM Grade Material Only, Teams must produce a certificate for the same and Bill of purchase. The minimum allowed cross section for Frame tubes is 25.4mm (1 inch) with a minimum allowable thickness of 0.65mm. The Recommended Cross section for a Frame is Round Tubes.

d. Driver Seat

Every team has to use proper Go karting Seat. The driver seat should be well cushioned and at least 1 inches away from the firewall. The seat lower part must be mounted with atleast 02 rigid mounting points and Upper part must be also mounted with atleast 02 rigid mounting points. Also, The bolts used for seat mounting must be above or equal to M8 with Grade satisfying 8.0 and above.

The seat must support the thigh and the entire torso (full width) of the driver

e. Bumpers (Front, Rear & Side)

Must be installed in the front, rear, left and right side of the vehicle such that they cover the tyres and protect them from any collision which may occur on the track. They must be made of steel tubes. Minimum OD 1 inch (25.4mm) and minimum wall thickness 1.65mm. Bumpers must have

proper accessibility for use as towing point or where temporary rope or harness can be tied for towing purpose.

f. Visibility Requirement

The engine compartment must be completely visible to examiners

g. Ground Clearances

With the driver aboard there must be a minimum of 25.4 mm (1 in) of static ground clearance measured from the lowest point (except tyres) of the vehicle, under the complete vehicle.

h. Fuel Tank and Its Position

Fuel tank must be mounted with a clearance of minimum 5 inch from the engine head. The teams using Briggs&Stratton or Honda GX series engines are excluded from this rule.

All types of Fuel tank must have a drip pan mounted in such a way that the fuel must get collected at a single point and drained outside the drip pan.

M-KART ENGINES



Engine Type- Single Cylinder, Four Stroke, Air- cooled

Type of Fuel –Petrol

Maximum Capacity - 150cc,

Maximum power -15bhp

E-KARTMOTOR

Maximum Rated Power : 1KW
Maximum RPM : ~ 3600 RPM
Battery capacity: 60Ah/48v DC
Maximum Peak Torque : 30 Nm
Maximum DC Voltage : 48V



a.Exhaust

The teams have permission to do changes with the exhaust system of the engine. The Exhaust must be well protected with insulation.

NOTE- SMOKE FROM ENGINE, EXHAUST, BATTERY OR ANY OTHER PART OF VEHICAL WILL NOT BE ALLOWED DURING THE STATIC OR DYNAMIC EVENT.

b.Transmission

Teams have flexibility to use any kind of transmission for the vehicle motion. Care should be taken that all the transmission parts are covered by sheets which can withstand the vibrations of the moving parts. All Rotating parts must be covered with finger guard to avoid any human finger/body parts getting rolled up with it.

c.Brakes

The brake system installed must be capable of stopping the vehicle in a straight line without losing control during the brake test. Electronic braking systems are strictly prohibited. In case of brake mechanism bleeding ports for disc caliper should be upside to that of piston mechanism of caliper. There should be no leakage from the tandem master cylinder (TMC) or reservoir.

Rear both wheels must be locked completely during panic brake test and vehicle must not drift more than 30 degrees of straight like in both left and right direction.

d.Firewall

Firewall should be made in such a manner that driver's body parts are not affected by the engine heat at any time during the dynamic/static condition. There should be min 2 inches minimum of clearance between the firewall and the engine.

e. Steering Control

The steering system must have positive steering stops from locking up either in RH or LH turning. The stops prevent the tires from contacting suspension, body, or frame members during the track events. Allowable total steering system free play is limited to 7 degrees, measured at the steering wheel. Steer-by-wire or electronic steering is prohibited.

f. Push Bar

Off track vehicles must be pushed at a normal walking pace by means of a "Push Bar"

g. Floor Tray/Belly Pan

The cockpit must be fitted with a belly pan over the entire length of the cockpit, so that the driver cannot contact the ground and is protected from debris while seated normally. Belly pan material must be metal, fiberglass, plastic, or similar material. Maximum gap allowed in Floor tray is 10mm.

h. Fasteners

All fasteners used in the systems must be captive; defined as requiring NYLON locknuts, cotter nuts or safety wired bolts (in blind applications). All bolts used in the system must meet SAE grade 5 or metric grade M8. All threaded fasteners used in the vehicle must have at least 2 threads showing past the nut.

Electrical Requirements

a. Kill switches

The electrical system must include at least two kill switches. The kill switches must deactivate the engine ignition. The kill switch must not deactivate the brake light.

a. The cockpit switch must be located in the cockpit within the easy reach of the driver.

b. The external switch must be mounted on the driver's right side of the vehicle the switch must be within easy reach of track workers, the switch must be mounted rigidly, with no sharp edges nearby.

b. Wires & Harness

Selection of wire diameter/cross-section must be done according to the current in the circuit. All wires and harnesses must be fastened securely to the vehicle structure that prevents coming off in static and dynamic conditions.

c. Brake Light and Light

The vehicle must be installed with a brake light red in color which is clearly visible from the rear.

Head lights must be there for night racing. (LED Allow)

d. Battery

Teams can use any type of battery but maximum allowed voltage is 48V and maximum allowed current is 60Ah.

Any kind of battery can be used for the purpose but it should not cause harm to team mates any other individual at the time of event.



Kill switches



Brake Light

Safety Requirements

a.Driver's Equipment

The following are the minimum requirements and restrictions that will be enforced through technical inspection, at any stage of competition. A SFI Rated Driver suit, SFI Rated Shoes, Neck Support, Balaclava Socks, Gloves with Manufacturing date less than 03 Years is only allowed. Full face Helmets of ISI and above Grade is Allowed.

- **Underclothing-** It is strongly recommended that all drivers wear fire resistant underclothing (long pants and long sleeve t-shirt) under their approved driving suit.

Note: 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.

- **Neck Support-** The use of neck support is mandatory.

b.Fire Extinguisher

Each team must have at least two (2) nos. of 1 kg ABC type fire extinguishers. One present at the pit at all times and one with a team representative accompanying the kart throughout the event and one mounted on the kart.

- **Chain Guard-** Every vehicle should be equipped with proper chain guard. It should restrict accidental contact of any person standing outside. It should be mounted properly any un-usual sound is not acceptable.





Shoes



Gloves



Neck support



Chain Guard



Helmet



TYRES



Teams must use standard go-karting tyres. Acceptable tyre size for front is 10x4.5-5(all dimensions in inches) and for rear tyre 11x7.1-5.

Technical Inspection

Some Standards have been set in the technical inspection sheet. Every team has to fulfill each and every Standard, failing to which the team may be disqualified. Before coming for the event make sure you fulfill all the requirements mentioned in the technical Inspection Sheet. 2 Attempts of Clearing the T.I would be given for one team. During it the team has to bring their design, CAE and cost report as the design and cost evaluation would be done during TI itself.

Brake test

The vehicle must cross 100 feet within a desired time (say 8 seconds) and just after crossing the line is allowed to apply brake (The Vehicle cannot decelerate in between the lines of the Runway). Rear both wheels must be locked completely during the brake test and vehicle must not drift more than 30 degrees of straight like in both left and right direction. 3 attempts to clear this test would be given for a Team.

Acceleration Test

The vehicle acceleration abilities would be tested in this event. There would be two lines 50m apart on a straight Track. The vehicle has to cross the Second line in minimum time. Time would start just after the front wheel crosses the start line. 2 continuous attempts would be given to a team.

Skid Pad

The kart has to draw the figure of '8' in this dynamic event. The kart has to start with the right turn and would have to complete lap (of figure 8) for every attempt of Skid-Pad. 2 continuous attempts would be given to a team.

Auto cross

The kart has to cross the poles in zig-zag direction. There would be total 6 pole the first pole would be kept at the start line and the crossing would be counted from the start between first and second pole. 2 continuous attempts would be given to a team.

Endurance

The Endurance track would be showed during the event only. Each teams have to complete the 20 min in pre-endurance the team making the maximum laps in given time would be given the maximum marks. from this top team select to main endurance.

MARKING & SCORING

Events	Maximum Marks
Dynamic Event	
Acceleration Test	100
Auto-cross Test	100
Skid-Pad Test	100
Main Endurance	300
Total	600

RULES AND ORGANIZATION AUTHORITY

a. Authority of Rules

The IPEC Rules are the responsibility of the Go-kart Technical Committee and are issued under the authority of IPEC. Official announcements from the Go-kart Technical Committee shall be considered part of rules and shall have the same validity as these rules even if these not initially included in the rulebook and communicated later on.

Ambiguities or questions concerning the meaning or intent of these rules will be resolved by the Go-kart Technical Committee only.

b. Penalties

Organizers have the right to modify the penalties listed in the various dynamic event descriptions to better reflect the design of their event courses, the course lengths or any special conditions unique to the site. The standard dynamic event penalties in these rules are default values that will be applied unless there is a change by the organizer.

c. Right to Impound

Go-Kart Technical Committee reserves the right to impound any on-site registered vehicle at any time during the competition for inspection and examination by the organizers, officials and technical inspectors.

d. General Authority

AIRC organizers reserve the right to revise the schedule of the competition and/or interpret or modify the competition rules at any time and in any manner that is in their sole judgment, required for the efficient and smooth operation of the event.

e. Indemnity Bond

All on-site participants and faculty are required to bring a notarized indemnity bond to be submitted at the time of registration on-site. All the members and faculty to be present on-site are required to sign the indemnity bond.

Registration Fee*

Registration Fee for IPEC 2k23 event will be **Rs.17,500/-**

*The registration fee needs to be paid in full during the initial registration online

If the event gets cancelled due to government rules and regulations, then full registration fee will be refunded

