



DESIGN AND BUILD

BURNOUT

General Rules for all the events:

- The cars and the drivers should be same throughout the fest.
- It's the responsibility of the race management team that everyone including the spectators are in their proper positions.
- It's advisable that the participants carry their own fuel.
- Driving off the track is strictly not allowed, taking shortcuts may lead to cancellation of the attempt.
- The number and/or duration of mains and heats may be altered due to weather conditions or time constraints.
- Intentionally driving the car out of track, where it may endanger the spectators will lead to disqualification.
- Taking reverse in competition is not allowed.
- Participants should report strictly one hour prior to the start of the event.
- Students should carry proof of identity issued by their institution.
- Judges and coordinators' decision will be final and binding to all.

BITS GOA GRAND PRIX (BURNOUT MAIN EVENT):

Round 1 - TIME TRIAL

Rules:

1. Two trials will be given to a participant. Best of two is selected.
2. Every time a cone is touched or the path is not followed a penalty of 0.5s is given which is added to the time taken by participant.
3. All the general rule applies.
4. For Any mechanical failure of the car one extra try will be given to the participant

Round 2 – BITS GOA GRAND PRIX RACE

Rules:

1. The number and/or duration of mains and heats may be altered due to weather conditions or time constraints.
2. All drivers are responsible for the actions of their pit crew.

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3. It is the responsibility of the race director, race management, and track crew's team to insure that everyone, including spectators, are in the proper places and not in danger at any time.
4. Any of the following actions by a driver or his pit crew may result in disqualification from the event:
 - Operating a car anywhere that endangers others.
 - Drinking alcoholic beverages, use of illegal substances or showing evidence of being under the influence of an illegal substance in the race or pit area.
 - Entering scoring areas or restricted areas without permission.
 - Assaulting another individual.
 - Using improper language or actions with directors, participants, or spectators
 - Using improper language, yelling, or actions with corner marshals.
 - Rough driving or intentional hacking.
5. Any driver who does not have complete control over his vehicle must immediately pull his car off the racing surface.
6. Any car that loses its body must pull off the track until a pit crew can secure the body back onto the car.
7. In case of a collision which results in the change of direction the driver responsible for the collision will be penalized with 50 points. The final decision on who the guilty person is would be decided by the Event Heads and Coordinators who would analyse the video evidence made at that point.
8. A pit area will be provided on the outside of the primary racing surface where repairs are allowed.
9. A driver's stand will be provided that gives all drivers an equal view of the track.
10. Turn marshals are not permitted to repair vehicles. Marshals will take disabled vehicles to the closest outer edge of the race track as soon as possible. When marshalling a vehicle, it should be returned to the point where it left the racing surface. Care must be exercised not to interfere with oncoming vehicles. Only the designated marshals are permitted to handle vehicles on the racetrack during a race. No one else may enter the racetrack to repair or retrieve a vehicle.
11. A vehicle running on the track has the right of way over a vehicle that has become disabled.
12. Students should carry proof of identity issued by their institution.

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2019
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COGNITIVE OVERDRIVE

Draws:

The sets will be decided on the bases of standings in time trials.

The sets will be as follows

- i. [1 5 9 13]- SET 1
- ii. [2 6 10 14]- SET 2
- iii. [3 7 11 15]- SET 3
- iv. [4 8 12 16]- SET 4

The race for these sets will have 3 laps each. The standings of the above sets will then race against each other for e.g.

- a) 1st position of all SETs will race against each other and so on
- b) The race of these sets will have 5 laps each .
- c) Point distribution for each race is:
1st - 150 2nd - 125 3rd - 100

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DRAG RACE (BURNOUT STRAIGHT ROAD SPRINT EVENT):

Rules:

1. Participants should report strictly one hour prior to the start of the event.
2. Preparation time of forty-five minutes will be given before the start of the event.
3. The draws are to be announced thirty minutes prior to the start of the event.
4. No practice runs or trials of any sort for this event. Participants may warm up their cars on the outside of the drag strip or in the run off areas.
5. Absolutely no rolling starts, cars will start the Drag from a standstill.
6. Any challenge or appeal with regard to any decision made by the organizing party will only be entertained if submitted as a formal written document.
7. All drivers are responsible for the actions of their pit-crew/teammates.
8. Change of driver at any point during any event will result in a disqualification.
9. Change of RC car at any point during any event will result in a disqualification.
10. Any discrepancy or spot ruling that may be required to be made by the organizing party will be done as they see fit, and their ruling is final and not subject to appeal.
11. A driver's stand will be provided that gives all drivers an equal view of the track.
12. Participants should carry proof of identity issued by their institution.

Draw:

1. Based on the standings of the Sprint the contestants will be arranged into sets of four from fastest to slowest times.
2. Each set of four participants will include four races in the following order:
 - i. 1st and 2nd place.
 - ii. 3rd and 4th place.
 - iii. Winner (i) and Winner (ii)
 - iv. Loser (i) and Loser (ii)

Points:

1. Points to be accorded for only one case out of three:
 - i. Winner: 25 points.
 - ii. Loser: 10 points.
 - iii. DNF: 0 points

Note :

- DNF stands for Did Not Finish
- Drag Race is Burnout's special STRAIGHT SPRINT race.

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TRAILBLAZERS

Trailblazers is an RC plane flying competition.

Rules:

1. Participants should report strictly one hour prior to the start of the event.
2. Each team can have a maximum of four members.
3. It is open for both students and professionals.
4. This competition will consist of 3 rounds.
 - Manoeuvres
 - Drag race
 - Stunts and passes
5. Participants have to bring a plane built from scratch and meeting the constraints mentioned for each round. Planes should be electrically powered. No other fuel is allowed.
6. No ready to assemble planes are allowed.
7. The arena provided will be an open field of approximately 50m radius.
8. Teams have to come up with a design which can perform better for all the rounds as no change of parts is allowed for different rounds.
9. Changes in schedule will be made depending on weather condition.
10. Any discrepancy or spot ruling that may be required to be made by the organizing party will be done as they see fit, and their ruling is final and not subject to appeal.

Round 1: Manoeuvres

This would be the first round of the competition. In this round, the plane will be tested according to the constraints mentioned below. The flyer has to fly the plane through a series of hoops, positioned to test his manoeuvre skills. Marking scheme The marking will be done on both the time taken and the total number of hoops passed successfully. For every successful pass the team gets 20 points and on finishing, an additional $\{ 1/(\text{time taken (mins)}) * 200 \}$ points will be given.

Additional Instructions

- The thrust to weight ratio of the plane should be 1:1 or less.
- It is not mandatory to cover every hoop; points will be awarded only for the successful passes.

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Round 2 : Drag Race

The name itself says about the round. In this round every plane will have to cover a simple path in the minimum time possible. Points will be awarded according to the ranking in the race. There are no constraints except that the flyer has to use the same plane for all 3 rounds (changing wing is not allowed). The marking will be relative: 200 points for the 1st and 0 for last, on a linear basis.

Round 3 : Acrobatics.

In this round, flyers will have to perform 3 - 4 acrobatic moves from a list of 6 pre-defined stunts. In this round, timeouts are allowed (optional) between each stunt performed. The flyer or his teammate has to intimate the event managers/judges before performing any stunt. Every successful stunt earns the team 75 points. The list of stunts:

- Cuban 8 :- 5/8s of a loop to the 45 degree line, 1/2 roll, 3/4s of a loop to the 45 degree line, 1/2 roll, 1/8s of a loop to level flight (half of the Cuban Eight is called a "half Cuban Eight", and the figure can be flown backwards, known as a "Reverse Cuban Eight").
- Immelmann turn:- 1/2 looping up followed by half a roll. There should be no pause between the end of the looping section and the start of the roll to erect flight.
- Bell tail side: - 1/4 looping up, straight vertical (full power) until the aircraft loses momentum. The aircraft falls backwards, tail first, until the nose drops through the horizon to a vertical down position. 1/4 loop (push or pull) to recover to level flight.
- Stall turn or hammerhead:- 1/4 loop (pull or push) to vertical, as momentum/airspeed decreases, rudder is applied and the aircraft rotates around its yaw axis, the nose falls through the horizon and points towards the ground, a momentary pause is made to draw the vertical down line, and 1/4 loop to level flight. This figure is sometimes called a stall turn which is a misnomer because the aircraft never actually stalls.
- Split S:- Essentially an Immelmann in reverse. Half roll (from erect to inverted) followed by positive pitch to give a half loop. Converts altitude to airspeed, and reverses direction.
- Rolling loop :- involves 3 roll in a inner or outer loop 1 before start next in mid of loop (bottom or top of loop) and third immediately at the end of loop

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MORTAR KOMBAT

Task:

Design and build a spud gun. Use it to compete in different challenges, adhering to the rules and regulations of the game.

Model Specifications and Rules:

1. You may use a spud gun made of PVC, built from scratch by your team and bring it during the event.
2. Use of metallic pipes are prohibited.
3. Your gun should work using electric sparks for ignition of the gas chamber.
4. You should not use LPG, CNG, vaporized fossil fuels for aiding the ignition of gas chamber. Deodorant and perfumes are allowed.
5. Your gun should use paper, potato, or clothes only as ammo.
6. Decide the dimensions of your spud gun keeping in mind the arena and rules of various rounds
7. Your team must consist of maximum 5 members.
8. Maximum length of the spud gun should be 3 meters
9. For all rounds, a line will be marked on the arena, behind which the team members have to stand while shooting the target(s).
10. Participants should report strictly one hour prior to the start of the event.
11. Participants should carry proof of identity issued by their institution.
12. Any discrepancy or spot ruling that may be required to be made by the organizing party will be done as they see fit, and their ruling is final and not subject to appeal.

Event Structure:

1. The event consists of three rounds. Teams qualifying in a round will progress to subsequent rounds.
2. The rounds have been designed to accommodate every aspect needed to build a spud gun like design and accuracy.

Round 1:

Objective: Shoot a stationary target above the ground.

Task:

- Use the spud gun designed by your team to shoot a target kept at a height of about 10 meters above the ground.

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- The target will be a square with concentric circles on it.
- Hitting the innermost circle will fetch most points and the outermost carries the least.
- Not hitting the target will get zero points.
- Maximum number of shots - 3 Time limit – 2 minutes per shot

Points:

- Point for this round will be given based on your accuracy.
- Innermost circle: 100 points
- Middle circle: 70 points
- Outermost Circle: 50 points
- Outside all circles, but within the square: 30 points.
- Hitting the circumference of any circle will fetch the points for the outer one.
- Points achieved from each shot will be added to the total points.

Round 2:

Objective: Shoot the targets kept on the ground at different levels. Points vary from target to target.

Task:

- The targets will be arranged in three levels in the form of an equilateral triangle with the apex facing away from you.
- Farther the target, more the points.
- Targets along the same level will have the same points.
- There are no restrictions on the number of shots in this round. The teams can shoot as many times they need in the prescribed time limit. Time limit – 6 minutes.

Points:

- First level carry 50 points
- Second level carry 100 points
- Third level carry 200 points.
- Points achieved from each shot will be added to the total points.

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Round 3:

Objective: Shoot a moving target suspended from a height.

Task :

- Use the spud gun designed by your team to shoot a target suspended from a height of about 10 meters above the ground.
- The target will have concentric circles on it.
- Hitting the innermost circle will fetch most points and the outermost carries the least.
- Not hitting the target will get zero points. Maximum number of shots - 3 Time limit- 2 minutes per shot

Points:

- Point for this round will be given based on your accuracy.
- Innermost circle: 200 points
- Middle circle: 150 points
- Outermost Circle: 100 points
- Outside all circles, but within the square: 50 points
- Hitting the circumference of any circle will fetch the points for the outer one
- Points achieved from each shot will be added to the total points.