

WHAT IS BAJA?

TuksBaja is the Baja SAE® team of the University of Pretoria, facilitated by the EBIT faculty. Baja SAE® is an intercollegiate competition that challenges teams of engineering students to build and design a small single-seater off-road vehicle. The designs have to comply with rules set out by the Society of Automotive Engineers (SAE). Vehicles are put to the test at annual competitions on rough terrain tracks with steep rocky hills and muddy pools.

The goal of the competition is to teach hands-on design, manufacturing and management skills. The competition requires a design that is highly competitive on the track and feasible for mass production purposes. Teams are challenged to consider how their designs can be profitable in the sales event of the competition.

Engineering students are better prepared for industry by being introduced to practical and theoretical engineering problems. They are taught how to be well-rounded engineers by maintaining a balance between the demands of everyday life and passion-driven projects.



TEAM



The University of Pretoria Baja SAE® team, TuksBaja, consists of a group of enthusiastic students voluntarily spending their time on designing, manufacturing, maintaining and improving the cars and advancing their skills. The team is diverse and have members from different engineering disciplines. Members are faced with solving engineering problems and gain hands-on practical experience. A learning environment is cultivated where members can thrive. Eager first years are mentored by experienced senior and post-grad students. The club is led by the team captain and guided by advisors who are lecturers at the university.

DEVELOPMENT

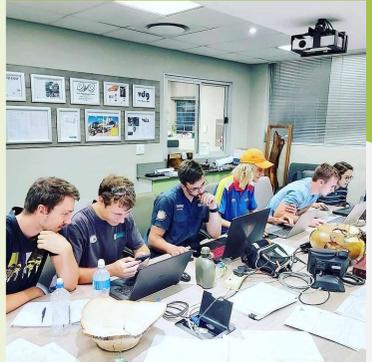


Engineering

At TuksBaja, members get the opportunity to apply theoretical knowledge gained in class on practical engineering problems. Members are taught to work on large machinery such as lathes, milling machines, CNC machines, etc. This allows the students to improve their understanding of the manufacturing processes and to be more considerate towards future co-workers. Skills are practised and advanced. TuksBaja's members improve their skills by following a process of conceiving ideas, transferring ideas into designs, implementing designs and putting designs into operation.

Business

As part of the competition teams have to sell their design for mass manufacture by a fictitious firm. It requires the team members to consider how the cars' designs can be utilized as a product in a profitable business. Engineering students are pushed out of their comfort zones and taught to contemplate how investments can be returned, businesses should be structured and products should be sold. Presentations have to be given whereafter judges, who are currently employed in industry, get the opportunity to ask the teams questions concerning the car and business strategies.



Leadership

Every year, a new captain and vice-captain of the TuksBaja team is appointed. It is an honour to be selected as only the most dedicated, hard-working, and experienced members are chosen. Furthermore, one team member is allocated to each car to act as the car captain. At the beginning of each season members are assigned to a car and will report to their car captain. This structure ensures that operations run smoothly within the team. Captains learn to take on responsibility and how to lead and motivate their teams.

MISSION AND VISION



Our mission is to compete at every competition we enter with a vehicle that is well designed, expertly manufactured, and thoroughly tested. We strive for our vehicles to be in the finest mechanical condition, be presentable in a show room and perform well in all events. We pride ourselves on our customizable, high performance designs. Our strategy is to win the competition by working professionally, showing good sportsmanship, and achieving consistent results.

We strive to be an engineering team that can compete professionally and on an international level. Our strengths have been proven locally on an annual basis and are now being tested in the spotlight of the international stage.

COMPETITION

The competition is comprised of dynamic and static events.

Static events:

- Design
- Business
- Prototype cost
- Manufacturing

Dynamic events:

- Acceleration
- Hill climb or traction
- Land manoeuvrability
- Suspension or Rock Crawl
- Endurance



OUR ACHIEVEMENTS

2020

Baja SAE® Arizona	16 th (out of 100)
Baja SAE® Arizona Cost Event	7 th

2019 South African Competition

Overall place	Acceleration	Top Speed	Skid pull	Manoeuvrability	Endurance
1 st - Car 17	2 nd	3 rd	1 st	1 st	2 nd
2 nd - Car 10	1 st	1 st	-	2 nd	1 st
3 rd - Car 70	3 rd	5 th	2 nd	5 th	3 rd
5 th - Car 2	4 th	4 th	3 rd	-	4 th

CARS



CAR 41

Car 41 is TuksBaja's newest car, previously known as Car 10. The car was designed to compete in the international Baja SAE® competition hosted in the United States of America in 2020. This year final year engineering students will conduct tests on this car for their final year projects at the University of Pretoria.



CAR 17

Car 17 is the second newest car at TuksBaja. The Car was constructed in 2019. It is known for its manoeuvrability and power. Car 17 has performed well in the last South African competition and brought home the gold medal for the team.



CAR 70

Car 70 has been a reliable asset to the team. It is easy to handle and incredibly fun to drive. The car was designed and produced in 2016 by the team members. Car 70 has competed in Kansas in 2017.



CAR 2

TuksBaja's oldest car is Car 2. It was designed and manufactured in 2015. This car is often allocated to the first-year team members of the club to aid them in gaining knowledge on the workings of the components and maintenance of the vehicles.

WHY SHOULD YOU JOIN TUKSBAJA?

There are so many opportunities being part of the TuksBaja team can offer you, listed below are just a few:



Improve your engineering abilities

Being part of TuksBaja offers you the opportunity to participate in a hands-on learning environment that will challenge your engineering abilities by applying the theoretical knowledge you gained in class to real-world problems.



Meet new people and make new friends

We know, we know, it sounds intimidating as we engineering students are a socially awkward bunch, but trust us, it's great! At TuksBaja you will get to meet like-minded people and make new connections with people from different disciplines and year-groups than your own.



Participate in track days and competitions

Every now and then we get to have some fun! Hard work is rewarded during competitive and adventure-driven track days and competitions. Definitely be prepared to be pushed back into your seat and splashed by some mud.



Follow your passion

If you have ambitions of joining the automotive industry, there is no better place to start gaining experience than at TuksBaja. Start learning from fundamental applications and work your way up. If you work hard, your designs might even be added to the cars to improve its performance.

Now that I've got your attention, I guess the real question is, are you up for the challenge?



HEAR FROM OUR ALUMNI

Quentin Booyen (2016 Baja first year, 2017 Captain):

The knowledge and skills that I have gained from my time at TuksBaja far exceeds those I originally intended to gain. I joined TuksBaja to satisfy my passion for motorsport, while getting some insight into manufacturing techniques and technologies.

What started off as a mere curiosity quickly turned into the best lessons in Design, Manufacturing and Project management, I could have ever hoped for.

Although the engineering curriculum covers most of these principles in various levels of detail, it was only when I had to implement them at TuksBaja that I truly understood it.



Lauric Hilhorst (2018 Captain):

TuksBaja provided a space for me to develop practical skills above and beyond what I was taught in my degree. It gave me a chance to develop interpersonal and management skills that I have benefitted greatly from in my career so far. The friends I made at TuksBaja also helped get me through the worst that my degree threw at me. I hold the experience gained from my time at TuksBaja in very high regard.





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