



TUKSBAJA

2021 Prospectus

Faculty of Engineering,
Built Environment and
Information Technology

Fakulteit Ingenieurswese, Bou-omgewing en
Infligtingtegnologie / Lefapha la Boetšenere,
Tikologo ya Kago le Theknolotši ya Tshedimošo



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

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.



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

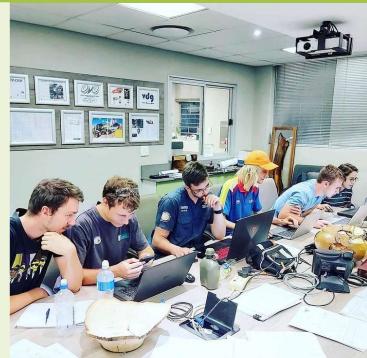


Engineering

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 SPONSOR US?

Even though on the surface it seems like TuksBaja's goal is to build cars and race over obstacles, the main objective is to improve future engineers' abilities and place them in positions where they are better prepared for industry.

Members are taught how to apply their theoretical knowledge and are privileged to get the opportunity to identify where and how concepts taught in class occur in a tangible environment. Time management and prioritization are essential skills members of TuksBaja develop and hone. Strict deadlines have to be adhered to to ensure the success of the team while members strive for academic excellence in their studies.



By investing in TuksBaja, you are investing in the future of engineering students and in turn, the future of the engineering industry.



Sponsoring TuksBaja also provides marketing opportunities as the team will provide generous exposure to their sponsors on the TuksBaja social media pages and at their race events. Moreover, significant sponsorship will add your company's branding onto the cars.



By supporting TuksBaja your company will be promoted as one that is committed to supporting innovation, further education, and enhancing student design teams. Your support will help mould a new generation of engineers with excellent technical skills and a solid foundation in solving real engineering problems.



HOW YOU CAN HELP US

TuksBaja has big ambitions for the future but realises that the team needs resources to reach these goals, therefore we are immensely grateful for any form of sponsorship that is given. The team has considered what is most needed to ensure a successful 2021 season and the prosperous future of the club. The team has listed some of their larger projects that require substantial resources that might interest you. General items that the team needs assistance with has been provided as well. Any monetary donations would also be greatly appreciated. The team is thankful for your investment in the club.

The team is currently working on the following large projects:



Prototype Car

TuksBaja has aspirations of adding a new prototype car to the collection. This car will be an improvement from the previous car designs as it will have four-wheel drive. From previous experience in building new cars, the team estimates the costs of the prototype vehicle to be R250 000.



Prototype 4x4 System

The Baja SAE® competition has added a new design requirement to the competition that has to be met from 2022. This requirement entails the use of 4x4 systems on the vehicles. The team is currently working on designs for the system and has made a rough estimate of the cost to manufacture and produce it as R50 000.



Brake Systems

The team has identified the current brake system design on all of the cars as a problem area that will greatly improve the performance of the cars once it has been redesigned and applied.

The team would also appreciate any help you could offer with any of the following items:



Tools



Raw Material such as Aluminium and Steel



Workshop Consumables



Branding Merchandise



Monetary Donations

Money sponsored to TuksBaja is spent on components for the cars, raw material from which in-house-manufactured components can be produced, equipment, entry fees for competitions and other consumables. The team is able to issue 18A Tax Deduction Certificates for monetary donations.

CONTACT US



Team Captain

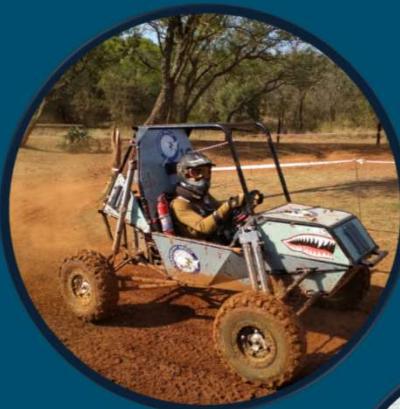
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