

## Formula Student

- International student design competition
- Design, build & race single seater formula 1 style car
- 600cc motor cycle engine with intake restrictor
- Competition judging criteria include design quality, costing, static & dynamic tests culminating with a four hour endurance race
- Students from a variety of disciplines involved including engineering, marketing, business, IT, finance etc.
- Funding mainly through industry sponsorships
- AIESEC supports this project with marketing & business student teams
- NMMU plans to enter the Formula Student Germany competition in Aug 2010



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## Driver training begins in earnest

On Friday 19 June we had an opportunity to test the driving skills of our "formula students" at the FI Outdoor Karting race track. The students broke up into teams of three and challenged each other to a 45-minute endurance event, where each team had to plan their own race strategy with pit stops and driver changes.



Andre Labuschagne our champion driver showing how its done

the first opportunity to drive a racing car on a track and many practical lessons were learnt to stand us in good stead when designing and building our own formula student car. It also gave us an opportunity to see who will be in the running for the driving seat in Germany in 2010.

In addition, FI Outdoor Karting has offered us full use of their racing track to test our formula car and will also train our drivers on some of their high performance racing karts!



After many collisions and other mishaps, car number 10 emerged victorious due to the superior driving skills of Andre Labuschagne, Heinrich Kritzinger and Trevor Stroud, proving once again that experience always wins over youthful exuberance!

The fastest driver from each team then competed in a four-lap sprint race and our champion driver, once again in car no. 10, was Andre.

For many of our students, this was



## Ergonomics: It all starts with the driver...



Realising that the car design all develops around the position of the driver's body, feet, hands and head, the formula student team constructed a full scale wooden mock-up of the racing car's seating position. Once all the potential drivers were happy with the seat angle, steering wheel height and foot position, the entire structure, including driver (modelled by Zerwick Kruger) were scanned, creating a 3D digital representation, which could be imported directly into the CAD model. The frame design has taken a huge leap forward allowing the positioning of the main roll hoop and engine on the CAD model. The suspension team is now working on optimising the suspension geometry.

## It runs! Engine started for the first time



The team recently purchased a Honda CBR 600 motor cycle engine which will be the powerplant for the formula student car, and installed it on the engine dynamometer in the NMMU Engineering Department workshop. After struggling with various electronic issues, the team under the leadership of Hiten Parmar successfully ran the engine. Due to the inlet restriction requirement in the rules, a unique intake manifold has to be designed and a unique engine management system developed. The engine team is now setting up the measurement equipment on the engine dynamometer in preparation for the engine ECU mapping process.



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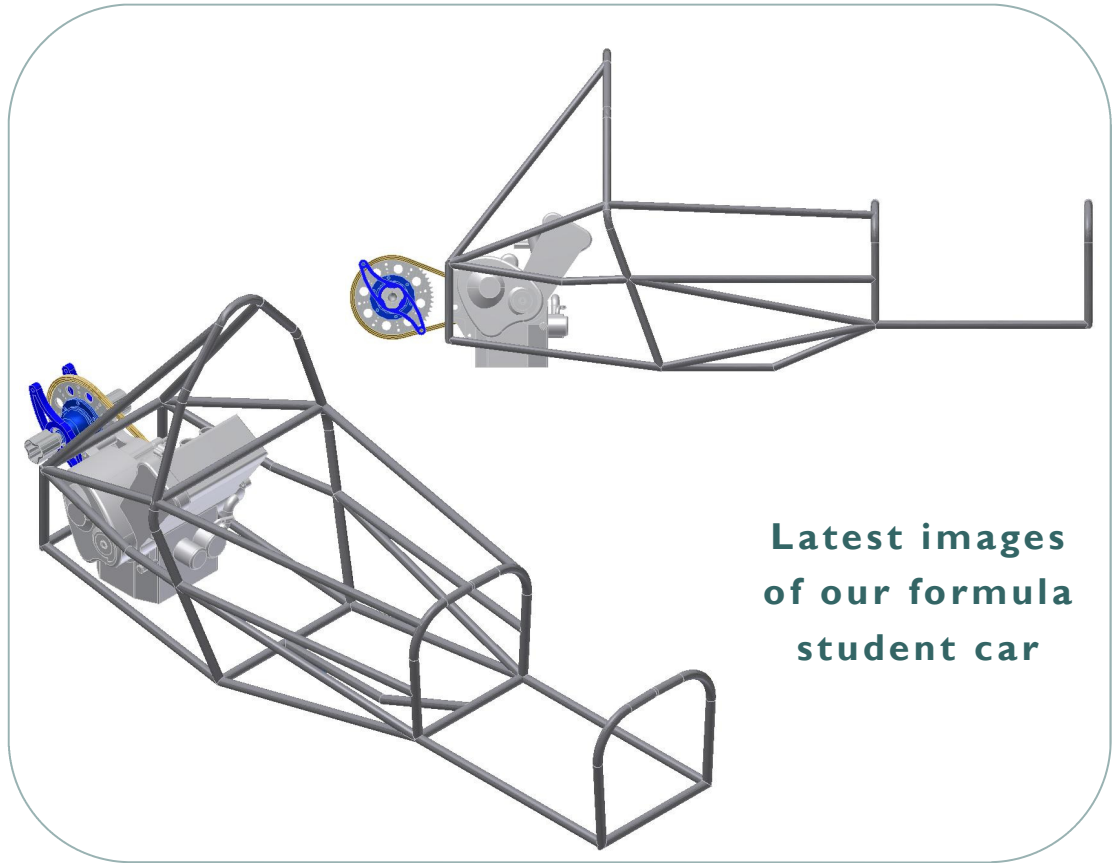
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Latest images  
of our formula  
student car

## Key industry sponsorships lined up for NMMU Racing

Our list of industry sponsors is growing daily as more companies are exposed to this exciting project.

- **VW Racing:** technical support and a host of components including wheels, steering rack, steering wheel & pedals.
- **Continental Tyres:** 4 sets of purpose built tyres & potential television media exposure
- **Dana Spicer Axles:** rear differential
- **General Motors:** test facility use
- **FI Outdoor Karting:** race track use & driver training
- **Terry Moss Racing:** technical support
- **AIESEC:** student society that provides business & marketing support by mobilising students on campus



**Benedikt** looking slightly concerned at the prospect of racing a go-kart with his South African colleagues

## Farewell Benedikt Fauser

Benny arrived at NMMU in February 2009 from Reutlingen University on an exchange programme set up between our engineering faculty and his university in Germany.

He was put to work designing the intake manifold for our formula student car, which according to the rules must contain a 20mm restrictor after the throttle body to limit engine performance. Using Catia CAD software he designed the intake with four ram

tubes connecting the engine to the plenum chamber. The tube lengths can be tuned on the engine dynamometer to achieve the optimum balance between low speed response and high speed power. A venturi design was used to eliminate turbulence through the restrictor and the throttle body is mounted just above the driver's head, where the intake can receive the cleanest airflow.

Benny has now handed his design over to the team for final tweaking

and manufacturing of the parts. Once the engine is fully functional on the engine dynamometer, our new intake manifold will be put through its paces.

Our formula student team will certainly miss Benny who became a good friend, spending many evenings around a glass or two of beer! We wish Benny all the best for the future and hope to see him in Germany in 2010!