



## Introduction

Welcome to the 2009/2010 Formula Student (FS) season with the University of Birmingham. 2010 will once again see UBRacing take on teams from around the world at FS competitions in the UK and Germany. We'll be aiming to build on the 2009 campaign, which saw the team bounce back from a disappointing competition at Silverstone to record the best result in the team's history at Formula Student Germany.

I'd like to take this opportunity to thank all of our sponsors and technical partners for their continued support – we could not operate without you.

**Robin Langhorn**  
2009/2010 Team Manager

## '08-'09 Review

The 2009 competitions, Formula Student UK (FSUK) and Formula Student Germany (FSG), could not have been in greater contrast for UBRacing. The summer began with a disappointing UK competition finishing with the team down in 57th of 82 entrants. After an intense period of testing prior to Germany, we bounced back to finish 19th of 78 teams in Germany, 3rd UK University and 2 places higher than our previous best result in the competition.

After 2008's success, all but one of the key members of the team left, either through graduation or leaving for industrial placement years. A small and young team of predominantly third-year students set ambitious technical targets for the new season, aiming to make significant developments in the weight and power of the car. With hindsight, perhaps we were too ambitious with our goals, falling behind schedule and leaving us without the vital testing time before Silverstone. However, the result in Germany illustrated clearly the progress made – our focus this year is on consolidating the technical gains made in 2009, including re-using many components to allow an early build-finish and maximum testing time.

Highlights from FSG:

- 12kg (5%) weight reduction over 2008
- 6% improvement in acceleration time
- Design – 16 place improvement over 2008
- Presentation – 21 place improvement over 2008
- Cost Analysis – 33 place improvement over 2008
- Acceleration – 19 place improvement over 2008
- 1 of just 29 teams to finish the endurance event



## 1st Year Intake

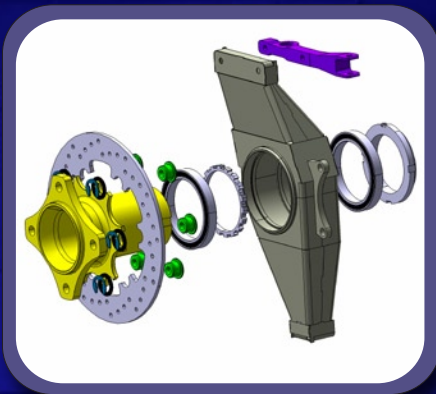
The start of a new year at the University saw a big recruitment drive to boost numbers. All of the senior members of this team are final-year students, and so effective mentoring and training of the team's younger members is vital for future success. We have been very impressed with the new recruits, with a core of 10 first-years already showing the classic symptoms of being bitten by the Formula Student bug. They have conducted chassis stiffness tests on the last 3 UBRacing cars in order to help with the design of the new chassis.

## Final Year Projects

Five final-year Masters students are basing their final year research projects on the FS car. Tom Witcomb will be focussing on Vehicle Dynamics improvements using SIMPACK, a multi-body simulation tool, for which the team has been sponsored this year.

Alex Coignac-Smith is working on our engine dynamometer facilities, updating our sensor and data-acquisition capabilities to make best use of our McLaren TAG-400 ECU and the new dyno funded by Perkins Engines and the University last year. Tying-in with Alex's work on the dyno, Danny Fennell will be looking at gas-flow through the engine, specifically looking at valve events and the exhaust manifold, following on from the major developments in our intake manifold last year.

Jake Wallis and Gary Upton are basing their research on the drivetrain, with Gary exploring ways to decrease the inertia of the gearbox, including a feasibility study into the use of polymer gears. Meanwhile, Jake will be responsible for the final drive and differential, with particular focus on developing an actively-controlled differential.



## Testing

On the 29th of October UBRacing conducted its first test session of the season at Bruntingthorpe Proving Grounds. Car 14 was equipped with our data logger to enable Gary Upton to collect gearbox temperature data for his final year project, and lateral g-force was logged to assist with Tom Witcomb's suspension development. With the data successfully gathered, attention turned to giving those who were involved with last year's car but who hadn't yet driven it the chance to have a go. Special mention should go to Gary for taking it upon himself to test the car's cone-destruction abilities!

## Prescott Hillclimb

We were delighted to be invited to take part in a demonstration of Formula Student cars during the Autumn Classic event at Prescott Hillclimb on the 26th-27th September. Danny Fennell and Alex Coignac-Smith took Car 14 on 5 runs up the hill over the course of the weekend, with the car running faultlessly on its first outing since Formula Student Germany. Log on to [www.ubracing.co.uk](http://www.ubracing.co.uk) to see a video of one of the runs up Prescott.

Thank you for reading, please visit [www.UBRacing.co.uk](http://www.UBRacing.co.uk) for the latest team news and updates