

# UP RACING

April 2021



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## Welcome

This month we have welcomed the new Team and Vice Team Lead, Tom Forrest and Will Grover, for UPR-14. With both Tom and Will returning from placements it will be exciting to see what they can bring to the team with the lessons they have gained in their year out.

We have also had some Preliminary Design reviews over the easter break which allowed us to see the progress that has been made and where improvements need to be implemented for us to achieve the best result.

## This month:

- Design – Suspension, Steering and Brakes
- Preliminary Design Review
- Vice Team Lead 2021/22
- Team Lead 2021/22

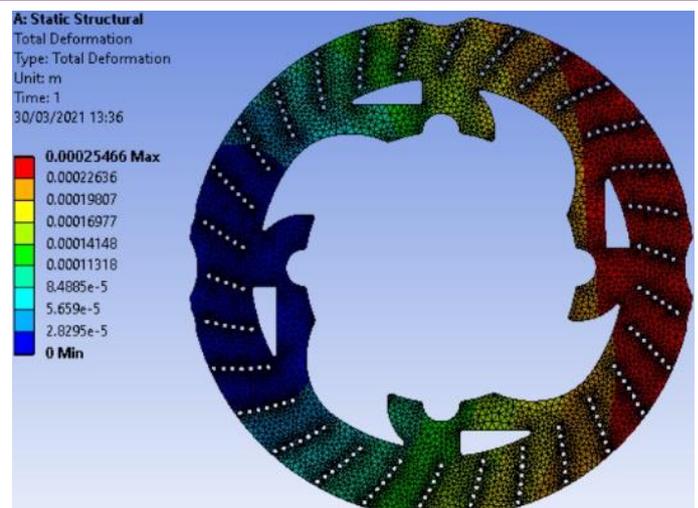
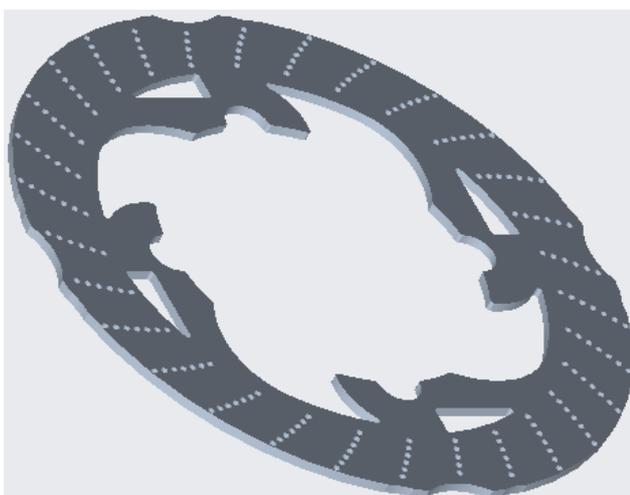
## Design – Brakes

*The braking system this year has seen a shift from exotic and high-performance carbon ceramic discs to more reliable and suitable steel discs. This is mainly due to steel discs being better suited to the car's racing profile and provide greater ease when it comes to maintenance and use.*

*However, for this switch, a justification for the material and design choice was necessary. This involved the research and consolidation of previous year's work and calculations as a starting point. The CAD model of the discs also had to be updated to make for easy adjustments and potential design changes. After which, FEA and thermal analysis could be conducted and the results interpreted in order to validate all design choices.*

*With the current goal being to take these results, refine the design and testing parameters for an improved FEA analysis and then continue this repeated approach until satisfactory justification is acquired. This is mainly due to the complex maintenance and use of the carbon ceramic discs and that the performance gains were either never fully realised thanks to the racing profile of the car or negligible in its overall performance.*

*-Tom Hayes – Suspension, Steering and Brakes Member*



# Design Review

Over the Easter break the team conducted a set of Preliminary Design reviews (PDRs). These reviews gave us the opportunity to check that all parts were being designed with the rules and individual specifications in mind. The reviews took place over 3 days, with each member presenting their part to the leadership team for review. I would like to thank all members of the team who gave up time in their holidays to come along and present or review, I would also like to thank Kevin Falck for sitting in and offering expert industry advice while looking over our designs.

The PDRs are just one part of the design process which we are constantly working to improve, and we are hoping to conduct a more in-depth Critical Design Review in the coming weeks. This will allow us to bring all the systems in the design together to ensure they all work as one.

-Duncan Codd ~ Design Lead



## Vice Team Lead 2021/22

I learnt about Formula Student back in 2016 during a school visit to the University of Portsmouth. As an avid automotive enthusiast, I immediately gained interest in the team and strived to be a part of it. I was given the opportunity within the Chassis Design division to develop the rear bulkhead design for UPR-12 in 2019. As a Product Design and Innovation student, I felt lucky to have been given this opportunity as it exposed me to design problems in engineering that I was used to solving from a different perspective. I gained many useful skills through working with a great array of students from a variety of courses and backgrounds.



This year I am on Industrial placement with Bucher Municipal. Working as an Undergraduate Mechatronics Engineer, focusing on designing and prototyping solutions for municipal utility vehicles and sweepers. Working in industry has further developed my skills in CAD, time management and engineering practices. As Vice lead, I want to share the knowledge and experience I have picked up along the way and ensure students can benefit by being part of a friendly, inclusive, and enthusiastic team environment.

I look forward to returning next year, meeting new and familiar faces, and I hope that despite the challenges we have faced this previous year, we can be competitive and deliver a successful car for UPR-14.

-William Grover ~ Vice Team Lead 2021/22

# Team Lead 2021/22

Will and I are very excited to have been given the opportunity to lead the UPR-14 team next academic year. Using the experience gained from 3 years on the team and a placement year with Ricardo, I hope to use what I have learnt to direct the team to competing in Formula Student Class for 2021/22.

With the current UPR-13 team working hard in Concept Class to design the single seater race car and prepare for the cost and business events, we are already looking to be in a good starting position next year. We hope to use the judge's feedback this July to finalise the designs to be ready for manufacture, improve on cost and further develop the business presentation. We plan to begin manufacture as quickly as possible by finishing designs early next academic year. This should give us more time to test the car to improve our ability to enter a reliable car that can compete and finish all dynamic events whilst further improving our performance in the static events. I look forward to working with the new and returning members of the team in 2021/22 to continue the fantastic learning experience that our Formula Student team offers.

-Tom Forrest ~ Team Lead 2021/22



## A message to our Sponsors and Supporters

With the year we have had we are now more grateful than ever for your continued support and without it none of this would be possible. Your products, services and assistance really do make this car and team a success, something we are extremely grateful for. We are now an established team of 13 years which is a fantastic achievement and something to be proud of. We always strive to improve and be better than the last year and as a team we are extremely excited for the year ahead and hope you are as well.

