

GROUP PROJECT BRIEF

Programme:	BSc/HND Motorsport/ Automotive Engineering		
Module/Unit:	GROUP PROJECT & CAE		
Lecturer:	A. Gibson	Internal Verifier:	T. Tudor

Project Title:	Design of independent rear suspension system for LocoBlade race car
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- The Locoblade race car is being developed for use in circuit racing. Currently the car utilises independent suspension at the front of the vehicle whilst the rear suspension takes the form of a de Dion layout as shown below.



- The brief is that in groups of 5 students you are to:
 - Research suspension layouts and requirements and then critically review the current rear suspension system on the LocoBlade race car.
 - Design a ‘retro-fit’, fully independent, rear suspension system for the vehicle which requires minimal modification to existing chassis structure.
 - Document and justify the project and designs
- The project/solution should:
 - Include a detailed **time plan** with tracking
 - Be designed to integrate into the existing chassis with **minimal modification**.
 - Be designed to **complement the front** suspension system’s geometry
 - Be **structurally sound** given the car will corner at a maximum lateral acceleration of 1.5G and will weigh 500Kg with a front, rear weight split of 55:45. Require proof calculations.
 - Include **justification** of chosen geometry. Maximum static camber of -2.0 Degrees
 - Include **detailed designs** for each component in the system along with manufacturing drawings.
 - Include a **3D assembly model** to show the installed system. A 2D assembly drawing is also required.
 - Include **material specifications** and justifications for each component.

- Include **costings** for the suspension system components and required modifications
- A more ambitious project may include:
 - An investigation into ways to make the suspension rising rate such as the design of a push/pull rod system for damper actuation.
 - Optimisation of camber control given that the tyres to be used produce maximum lateral force at 1.8 degrees negative camber.
 - An investigation into ways to make the suspension system adjustable so handling and/or tyre usage can be tuned.
 - Include a physical model (balsa wood or welding rod) or prototype parts of the suspension system.
- Each group will be allocated a project supervisor who you should meet with weekly
- The groups should also meet without the supervisor at least once a week where minutes should be taken and progress reviewed.
- Assessments:
 - Initial Oral examination Viva 1 (30%) : Week Commencing 27/11/2017
 - Final Oral examination Viva 2 (20%) : Week Commencing 30/04/2018
 - Final Report (50%) 23/04/2018 - **This will include peer assessment**