London Bus Analyser-Modéliser-Résoudre-Communiquer

The link below will lead you to a video presenting the certification criteria of London buses.

http://www.laboiteverte.fr/tests-de-renversement-des-bus-anglais-de-londres/

Before a Double Decker can be commercialized, the bus manufacturer has to bring the proof that the technical requirements and specifications have been complied with.
What we are interested in here concerns the capacity of the vehicle to not overturn. The bus must be able to lean on one side by at least 30° without any risk of overturning.
You task consists in designing a model that establishes the link between this overturn angle and the various physical and technological elements that should be taken into account.

You will propose a precise modelling approach including an analysis of the system, hypotheses to be justified, setting up a model, a justified application of theorems, a problem solver and a result.
Then you will make an assessment of the numerical values corresponding to the physical quantity and you will check if the requirement can be verified.

Finally you will propose the usual recommendations to be followed should the bus drive on roads with an important bank.

Your work can be completed with a SolidWorks digital model if you've got time to do it. The presentation will be performed in groups, and it should include text, images, drawings, calculus development and results. It must be digitally processed and entirely written in English.