

Assignment Guidance Notes

Some general guidance intended to assist in understanding the intent of the assignment brief. This document should not be taken as an exhaustive list of all that is required, but merely as some pointers that may be useful. Everything contained here has been discussed during lectures.

Primary Intent of Assignment

The main intent of the assignment is to critically assess and discuss Computer Aided Engineering (CAE) processes as a tool to be used in engineering design processes. The critical assessment of CAE should have a focus on not just how useful the tools can be, but also what sort of limitations there are to this type of process. Think about what sort of limitations there are, what simplifications and assumptions are often made in these types of processes and how this can influence solution accuracy and therefore how this must be considered in a broader design process context.

Literature Use

A literature review section would be expected, however try to make this more technical and focused on the understood, accepted and known limitations of CAE use for this type of application.

Validation

Remember that all solver types being used for the case study should ideally be validated. This means that there is often a need to validate for things like:

- Linear range mechanical deformation
- Thermal/thermomechanical deformation
- Non-linear mechanical deformation (where possible)

Try to also think about using the validation cases to explore some of the other influencing factors in a simulations. Things like mesh sizing influence, boundary condition application etc. can be quickly and easily investigated through simple case studies with known outcomes.

Main Case Study

Performing the main case study is intended to allow you to generate data that will help you then discuss the main points of the assignment. The case study itself will be assessed on its quality, but a large part of its use is to help you point out and discuss some of the key issues and limitations that can be found from this type of simulation and how different factors influence the results.

As a means of demonstrating how the analysis of results can be used as a critical stage of a design process, it would be recommended to make design changes to your parts/case study to generate more data sets to give more depth of analysis.

Remember to critically analyse the results you generate. Comparison to published literature is always a good way of assessing how valid your simulations outputs are, even if the quantifiable values won't be the same, you can compare trends in results to published cases.

Conclusions

Ensure that your conclusions are technical in nature and not reflective. The main point of your conclusions should be the critical assessment and evaluation of the data you have generated, understanding obtained and how this information helps address and answer the original aims of the assignment.