

MARKING CRITERIA AND STUDENT FEEDBACK

MODULE: Advanced Computational Methods CFD

ASSIGNMENT: CFD : Ahmed Body

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This section details the assessment criteria. The extent to which these are demonstrated by you determines your mark. The marks available for each criterion are shown. Lecturers will use the space provided to comment on the achievement of the task(s), including those areas in which you have performed well and areas that would benefit from development/improvement.

Common Assessment Criteria Applied	Marks available	Marks awarded	Percent Awarded
1. Research-informed Literature Extent of research and/or own reading, selection of credible sources, application of appropriate referencing conventions. (e.g. Background research into CFD techniques and models)			%
50-59%: Inclusion of a range of research-informed literature, including sources retrieved independently. Referencing conventions mostly consistently applied. <i>You have conducted some basic reading to support your understanding of the CFD process, but a wider range of sources could have been used to inform your methodology with respect to the investigations application.</i> <i>Little or no research of context of CFD study. This would have helped critique your results and draw firmer conclusions.</i> <i>Evidence of some reading through embedded citations to support general discussion. Good to see mesh quality research used to assess mesh. Existing studies of the geometry and papers on CFD best practice could have been used to support your modelling decisions and strategy. A much wider range of relevant sources are available to support your work.</i>	10	5	50
2. Knowledge and Understanding of Subject Extent of knowledge and understanding of concepts and underlying principles associated with the discipline. (e.g. Justification of initial mesh strategy, mesh refinements and geometry based on comparisons with wind tunnel data)			
50-59%: Knowledge is accurate with a good understanding of the field of study. <i>You demonstrate a good understanding of the CFD process and have used this understanding to develop a valid initial mesh and mesh refinements.</i> <i>Some of the choices have been informed by the empirical results</i> <i>Your knowledge of the fundamental process of CFD modelling is presented, but the detailed understanding of modelling parameters and the governing equations could have been discussed. Logical development of model demonstrated. You could have more clearly shown the areas of weakness through postprocessing of initial models. You have a fundamental geometry issue on one of your runs which will effect the validity of all results (the vehicle is not modelled on the ground plane). This should have been recognised. This geometry is not consistent as the model is on ground plane on other runs.</i>	25	14.4	58
3. Analysis Analysis, evaluation and synthesis; logic, argument and judgement; analytical reflection; organisation of ideas and evidence (e.g. Analysis of results to help create a validated base case, evaluation of methods used, analysis of aerodynamic device)			
60-69%: Sound, logical, analytical thinking; synthesis and evaluation. Ability to devise and sustain persuasive arguments, and to review the reliability, validity & significance of evidence. Ability to communicate ideas and evidence accurately and convincingly. Sound, convincing conclusions / recommendations. <i>Some good basic analysis of results conducted to assess your modelling strategy. You could have been more critical of results and investigated reasons for any discrepancies</i> <i>Basic simulation parameter studies (mesh, domain, turbulence model) studies conducted, but you could have investigated these parameters further to increase confidence in your modelling approach</i> <i>Good to see standard versus coupled solve comparison. Turbulence model comparisons are good, supported by postprocessing and with comments as to why certain models are not working well (poor mesh resolution). Your geometry error has compromised your analysis. You should have performed mesh, domain and prism layer independence studies. However your density box development is good. Well done for monitoring mesh quality throughout.</i>	30	18	60
4. Practical Application and Deployment Deployment of methods, materials, tools and techniques; application of concepts; formulation of innovative and creative solutions to solve problems. (e.g. Methodology, use of post processor, selection of component design parameters)			
60-69%: A very good application of a range of methods, materials, tools and/or techniques. Very good consideration of the context of the application, with perceptive use of examples, where relevant. Evidence of some innovation and creativity. <i>You understand the cfd process and demonstrate some proficiency with the software</i> <i>You have used the post processor to visualise and present your results in a clear fashion for conclusions to be drawn.</i> <i>Good use of CFD software with a clear understanding on control of the mesh and quality. You should have conducted parameter studies. Good to see 35 degree case with further development - you could have checked the developed case still works for the 25 degree.</i>	20	13	65
5. Skills for Professional Practice Attributes in professional practice: individual and collaborative working; deployment of appropriate media; presentation and organisation. (e.g. Technical report writing and presentation.)			
60-69%: Can communicate well, confidently and consistently in a suitable format. Can work very well as part of a team, with very good contribution to group activities. Work is coherent and fluent and is well structured and organised. <i>A very good account of the investigation conducted, could be structured a little more professionally in places.</i> <i>Technical report formatting and presentation generally is very good. A couple of minor errors only.</i> <i>Report is generally well presented. Some of the changes made from run to run could have been highlighted more clearly. Nice presentation of results for comparison between turbulence models. All graphs should be captioned below. Some of the language could be more technical in places.</i>	15	10.1	68
Assignment Mark (Assessment marks are subject to ratification at the Exam Board. These comments and marks are to give feedback on module work and are for guidance only until they are confirmed.)	Late Submission Penalties (tick if appropriate)		
	Up to one-week late		
	Over one week late		
	61	%	