

AE4423 - Airline Planning and Optimization

Assessment matrix for Assignment Problems 3 & 4 - 2021/2022

Question	Criteria	Wrong or missing	Not sufficient	Satisfactory	Good	Very good
Problem 3	Model Formulation (arc-based)	The model is not presented or there are major formulation errors	The model is incomplete or the methodology adopted is not discussed in sufficient detail.	The model is complete with minor errors in the mathematical formulation but the explanation of the model is incomplete	The model is complete with no errors, but the explanation of the model could be improved	The model is complete, mathematically correctly formulated and the model is explained and discussed in good detail
	Results – Fleet assignment and cargo routing	No results are presented or the results include major errors	Only part of the results is presented or the results have significant errors	The results are presented with minor deviation from the expected result	The results are presented and are according to the expected results	The results are presented in an attractive way and are according to the expected results
	Results – KPIs	No results are presented or the results include major errors	Only part of the results is presented or the results have significant errors	The results are presented with a minor deviation from the expected result	The results are presented and are according to the expected result, using different KPIs.	The results are presented attractively and are according to the expected results, using different KPIs.
	Results – analysis and critical assessment	No discussion or analysis of results is provided	Results are briefly discussed, but no further analysis is provided	Results are discussed, but no further analysis or critical assessment is provided	Results are discussed and analyzed, with limited critical assessment of the results and model	The results are clearly discussed and analyzed, and a good critical assessment of the results and model is provided

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Problem 4	Model formulation (path-based)	The model is not presented or there are major formulation errors	The model is incomplete or the methodology adopted is not discussed in sufficient detail.	The model is complete with minor errors in the mathematical formulation but the explanation of the model is incomplete	The model is complete with no errors, but the explanation of the model could be improved	The model is complete, mathematically correctly formulated and the model is explained and discussed in good detail
	Definition of reduced cost of a path and pricing problem	The reduced cost is not presented and the pricing problem contains major formulation errors	The reduced cost is presented but it is not correct and the pricing problem contains major formulation errors	The reduced cost is presented but it is not correct and the pricing problem contains minor formulation errors	The reduced cost is presented and it is correct and the pricing problem contains minor formulation errors	The reduced cost is presented and it is correct and the pricing problem is mathematically sound
	Column Generation algorithm	No algorithm is presented	An algorithm is presented, but it is incorrect in the way duals are retrieved from the master problem, in the set up of the pricing problem, or in the exit condition	An algorithm is presented with some flaws (e.g., in the way duals are retrieved from the master problem) that might affect the quality of the solution	An algorithm is presented with some minor flaws (e.g. the way the master problem is updated at every iteration) that might compromise the runtime, but not the solution quality	An algorithm is presented that is correct methodologically and is also efficient implementation-wise
	Results – Fleet assignment and cargo routing	No results are presented or the results include major errors	Only part of the results is presented or the results have significant errors	The results are presented with minor deviation from the expected result	The results are presented and are according to the expected results	The results are presented in an attractive way and are according to the expected results

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	Results – KPIs	No results are presented or the results include major errors	Only part of the results is presented or the results have significant errors	The results are presented with a minor deviation from the expected result	The results are presented and are according to the expected result, using different KPIs.	The results are presented attractively and are according to the expected results, using different KPIs.
	Results – analysis and critical assessment	No discussion or analysis of results is provided	Results are briefly discussed, but no further analysis is provided	Results are discussed but no compared with the results from the previous problem	Results are discussed and there is a comparison with the results from the previous problem	Results are clearly discussed and analyzed, and a good critical assessment of the results and model is provided, including a discussion of the implications/limitations of using a Column Generation approach versus an arc-based formulation

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Reporting	Overall report quality	The report does not fulfil basic requirements in terms of structure, content, grammar, layout and clarity. It is a poor document, illogical structure, no or irrelevant arguments. Grammar and spelling are so poor that they make the document unreadable.	The report hardly fulfils basic requirements in terms of structure, content, grammar, layout and clarity. Poorly expressed, argumentation often replaced by assumption or assertion or omitted. Structure and transitions need considerable improvement and the document contains serious spelling and grammar errors.	The report fulfils basic requirements in terms of structure, content, grammar, layout and clarity. Reasonably expressed, argumentation sometimes replaced by assumption or assertion. Structure and transitions need improving and the document contains quite a few spelling and grammar errors.	The report fulfils all requirements in terms of structure, content, grammar, layout and clarity. Expressed well, and with a clear structure. Arguments could be improved. The document has a good flow. Transitions sometimes not very effective. The document contains some spelling and grammar errors.	Very good report in terms of structure, content, grammar, layout and clarity. Clear and persuasive and well-structured document. The document has a smooth flow with effective transitions, with only minor spelling and grammar errors.