

(c) an ability to design a system, component, or process to meet desired needs

Outcome	4 Exemplary	3 Proficient	2 Apprentice	1 Novice
Translate general requirements into specific system behavior and features	Requirements are translated accurately and with great precision into system behavior and features clearly described without ambiguity and without entering into any design details	Requirements are translated accurately into system behavior and features clearly described with some ambiguity. The description of behavior and features enters into some details and proposes design solutions thinking it is just translating the requirements	Requirements are not translated accurately into system behavior and features. Some features not clearly described. Some consistency errors.	Specification does not follow the requirements consistently. Several consistency errors. No clear difference between system behavior description and features and design solutions
Identify and formulate any problem that need to be addressed before being able to start designing (design feasibility)	Potential conceptual problems are addressed and properly formulated. Some system behavior is translated into some mathematical formulas describing necessary conditions for the system to function properly or alike	Potential conceptual problems are addressed but not properly formulated. Some system behavior is translated into some mathematical formulas describing necessary conditions for the system to function properly with some errors on the assumptions.	Potential conceptual problems are recognized but not properly formulated. No system behavior is translated into some mathematical formulas describing necessary conditions for the system to function properly.	Potential conceptual problems are not identified in any way.
List different design alternatives for the overall system (design feasibility)	Different design alternatives are proposed and clearly discussed and compared. The comparison is rigorous and accurate.	Different design alternatives are proposed and clearly discussed and compared. Some rigor missing in the comparison although accurate statements are made.	A small subset of the possible design alternatives is considered. No thorough comparison is performed and statements are not accurate.	No design alternatives are proposed.
Choose the appropriate design solution using technical and economic criteria	The analysis of the technical and economic constraints leads to the optimal design solution. The justification and argumentation is	The analysis of the technical and economic constraints leads to the optimal design solution. The justification and argumentation is	The analysis of the technical and economic constraints does not lead to the optimal design solution. The justification and argumentation are a little	The design solution is presented without any analysis. Some inappropriate justification and argumentation is present with a lot of inconsistencies.

	thorough, accurate and consistent.	accurate and consistent but not thorough. Missing justifications for some aspects.	accurate and superficial.	
Fine tune the chosen solution by breaking it into sub-components and designing the sub-components applying the necessary design rules and justifications and trading off the several contradicting goals inherent to the design process	A structured design methodology is followed that breaks the overall solution into sub-components adequately using trade-offs. Relations and interactions between sub-components are well defined. No redundancy or overlapping in the sub-components roles.	A structured design methodology is followed that breaks the overall solution into sub-components adequately using trade-offs. Relations and interactions between sub-components are not well defined. A little redundancy or overlapping in the sub-components roles.	No structured design methodology is followed. Breaking the overall solution into sub-components follows an ad-hoc methodology with no clear rules. Trade-offs are not identified. Relations and interactions between sub-components are not well defined. A lot of redundancy or overlapping in the sub-components roles.	No structured design methodology is followed. Breaking the overall solution into sub-components follows is purely arbitrary. Trade-offs are confused with solution parameters. Relations and interactions between sub-components are anarchically defined. Sub-components are not really sub-components and suffer from a lack of clear identity.