

## Outcome 2: Ability to design a system, component, or process Performance Indicator Scoring Rubrics

Course: \_\_\_\_\_

Semester taught: \_\_\_\_\_

Type of Student Work Used for Assessment  
(e.g., Homework #4, Exam #2 problem 3, final project): \_\_\_\_\_

Number of students in course: \_\_\_\_\_

Number of students sampled: \_\_\_\_\_

Rating Scale Element	0	Needs Improvement	1	2	Meets Expectations	3	4	Exceeds Expectations	5	N/A
<b>Understanding of design objectives, constraints and how areas interrelate and integrate prior knowledge</b>		Has narrow view of what is involved in the design and misses key principles and components required for a complete design process			Produces a design statement that is generally correct in the "big picture;" may be missing some prior knowledge, consideration of all components, etc.			Produces a clear needs/design statement including identification of all major elements required for the design process (analyses, tools, process components)		
<b>Design strategy including a plan of attack, subtasks, timetables, and milestones</b>		Conducts design as needs arise; has no formal strategy or management of the project			Selects and performs appropriate stage at the appropriate point in the design project; may not re-evaluate progress or need to change strategy			Produces a design strategy and uses it to guide the design project; re-evaluates progress and potential need to change strategy		
<b>Uses models or simulation software to provide informed design decisions</b>		May not use models or only uses limited tools which do not provide appropriate information; does calculation by rote and not to evaluate design decisions			Selects and performs models or simulations at appropriate points in the project; may not analyze output as part of design strategy			Selects and performs models or simulations at appropriate points in the project; evaluates not only model output but also quality and appropriateness of model for the given task		

<b>Develops alternative concepts/proposed solutions; /evaluates feasibility of alternatives</b>		Sticks to one or two solution methods or concepts and does not consider alternatives			Selects a feasible concept (may not be the best); selects and applies appropriate evaluation method at appropriate points in the project; feasibility analysis may be incomplete or may lead in the wrong direction			Selects most feasible and suitable concept; selects and applies appropriate evaluation method at appropriate points in the project; considers feasibility analysis and uses insight to determine direction of design project		
<b>Recognizes practical significance of design outcome/answer; is solution realistic</b>		Works through a solution that may be unrealistic without additional considerations or iterations			Considers some, but maybe not all, aspects of feasibility; carrier through to the solution, but it may not be the most economic/desirable			Determines whether the solution is realistic; carries solution through to the most economic/desirable solution and justifies the approach		