Rubric for Performance Indicators of Student Outcome (c):

An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability

Performance Indicator	1: Beginning	2: Developing	3: Proficient	4: Exemplary
Formulate the problem and analyze constraints	• Unable to formulate the problem at all • Does not understand the concept of constraint	• Partial formulation, but missing some key constraints • Understands the concept of constraints but is unable to formulate the problem	• Formulates the problem and use constraints in formulation • Unable to use the most efficient formulation	• Formulates the problem and analyzes all relevant constraints • Finds the best formulation
Establish criteria for evaluating potential solutions	• Unable to establish fitness criteria • Does not understand the concept of tradeoffs	• Somewhat able to establish fitness criteria and tradeoffs with major weaknesses. • Misses several critical tradeoffs	• Establishes fitness criteria and tradeoffs with minor weaknesses	• Establishes complete fitness criteria • Analyzes tradeoffs thoroughly
Generate alternative solutions	• Unable to derive any meaningful solution	• Derives a meaningful solution • Unable to derive alternative solutions	• Derives multiple solutions • Has some weaknesses in evaluation of alternative solutions	• Derives alternative solutions • Performs proper evaluation of alternative solutions
Design a prototype and predict its performance	• Unable to design a proper prototype	• Designs a prototype with some help. • Shows major weaknesses in predicting performance	• Designs an adequate prototype • Somewhat able to predict performance	• Designs a well-developed prototype • Fully predicts its performance