Models in Engineering
TA Sample Essay Evaluation: STS-107 Mission

WEEK 1: WHAT IS A MODEL?

Model Taxonomy

How would you categorize the model(s) used with respect to what you have learned about the taxonomy of models? Did your categorization of the models include several different models relevant to the analysis as well as their taxonomy types?

Points: 3

3 models were identified from the report with the correct taxonomy. Since all 3 models were mathematical models, the simulation subtype was correctly identified as well.

Model Credibility and Fidelity

Based on what you have learned about model credibility and fidelity, where do you think the various models used for the STS-107 should reside in the 2x2 matrix of model confidence and model fidelity? Did you identify in which quadrant of the 2x2 matrix of model credibility and fidelity? Are at least two different models from the analysis report included?

Points: 3

3 models identified in part 1 are once again described here. Correct scores for both fidelity and credibility are assigned to each of the models.

Decision Analysis

How do you think the models affected the decision to continue flying the space shuttle after Columbia? Did you discuss whether the models and data available during flight were sufficient to identify damage to the tiles? Did you identify whether these models and data could be used in future flights? Did you also include that models post-accident assisted in understanding the accident dynamics?

Points: 3

Included an explanation that conveyed how the variability in the model prevented NASA from taking actionable steps to prevent the accident or rectify the situation.

Decision Analysis

How does this relate to the situation in your firm? In particular, how do models affect the decision-making process in your organization? Be sure to identify at least a model, its placement in the taxonomy, and how the model was used in a decision-making process in your organization.

Points: 3

The author described one model used at work in detail. The type of model was also correctly identified, along with an explanation on how the model was used.

Model Credibility and Fidelity

Grade the model on the 2x2 matrix based on how your organization perceives it in terms of credibility and fidelity? Choose a specific model that you have seen within your firm. How does your organization perceive the model in terms of credibility and fidelity? Grade the model on the 2x2 and briefly justify your grading choices.

Points: 3

A bit unclear on which model is being described here. However, a score for credibility and fidelity were included along with a short discussion.