

Models in Engineering

Project Scoring Rubric

WEEK 1: WHAT IS A MODEL?

Criterion	Peer Assessment Feedback
Prompt	A response has been submitted for this assignment; please provide feedback.
Points	
1	Project submitted: A response has been submitted for this assignment. Feedback is mandatory for this step.

Criterion	Step 1: Model Taxonomy
Prompt	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	Complete: Two or more models were identified from the report, and each was assigned to a branch (physical or mathematical) in the taxonomy. Desirably, if the type is mathematical, the subtype is also spelled out (analytical or simulation). Potential models include the computed trajectory of foam (Figure 3.4–3), velocity, and volume estimates of foam (Figure 3.4–5), CFD analysis in CART–3D (Figure 3.4–6), independent analysis of ballistic coefficients (Section 3.4).
2	Partially Complete:

	Acknowledges that different models were used in the analysis, but a classification in the taxonomy is not given.
1	Incomplete: Did not identify any models that were used in the analysis, and did not identify the types of models.
0	Not attempted: No answer is provided. Sample essay is copied for submission.

Criterion	Step 2: Model Credibility and Fidelity
Prompt	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	Complete: A score of {high or low} model credibility is assigned to each model, and a score of {high or low} model fidelity is included for at least two different models mentioned in the analysis report. Potential models include the computed trajectory of foam (Figure 3.4-3), velocity and volume estimates of foam (Figure 3.4-5), CFD analysis in CART-3D (Figure 3.4-6), Independent analysis of ballistic coefficients (Section 3.4).
2	Partially Complete: For only one model mentioned in the analysis report, a score of {high or low} model credibility is assigned to the model, and a score of {high or low} model fidelity is assigned.
1	Incomplete: No indication of model confidence and fidelity is included.
0	Not attempted:

	No answer is provided. Sample essay is copied for submission.
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Criterion	Step 3: Decision Analysis
Prompt	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	Complete: Includes a full explanation, including how model results impacted decision making during the mission and after the accident.
2	Partially Complete: Includes a partial explanation of how model results impacted decision making during the mission and after the accident.
1	Incomplete: Does not connect decision-making capability with the models during or after the mission.
0	Not attempted: No answer is provided. Sample essay is copied for submission.

Criterion	Step 4: Decision Analysis
Prompt	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	Complete: Includes a full explanation with at least one model, its taxonomy, and how the model was used in a decision-making process.
2	Partially Complete: Includes a partial explanation with at least one model, which may or may not include reference to taxonomy with some mention of how the model was used in a decision-making process.
1	Incomplete: The explanation makes no reference to how a model was used in a decision-making process.
0	Not attempted: No answer is provided. Sample essay is copied for submission.

Criterion	Step 5: Model Credibility and Fidelity
Prompt	Choose a specific model 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 matrix.
Points	
3	Complete: A score of {high or low} model credibility is assigned to the model, and a score of {high or low} model fidelity is also assigned with a short supporting discussion.
2	Partially Complete:

	Only one of the two scores is given; there is no supporting discussion.
1	Incomplete: A discussion is included, with no scores for the two criteria.
0	Not attempted: No answer is provided. Sample essay is copied for submission.