ESC101 20229 Alpha Release Individual Assessment Tool

Constraints

1. **Must** demonstrate that you have diverged such that you have a least *n* + 1 credible design concepts
2. **Must** demonstrate that your process has made use of divergence tools (e.g. SCAMPER, Morph Chart, Brainwritng 6-3-5, etc to overcome cognitive biases
3. **Must** have prototypes for all design concepts being discussed, including at least **one** (≥1) **physical** prototype

Characteristics for Evaluation	Unacceptable	Satisfactory	Good	Outstanding
Quality of engineering argument, with emphasis on justifying claims through credible use of engineering appropriate sources.	Over-reliance on opinion, description, or "it's obvious" statements. Lack of evidence or limited variety of evidence or over-reliance on sources that do not meet one or more elements of the CRAAP test.	Claims are credible with most supported by relevant evidence. A variety of resources are used although some evidence may be inappropriate for the claim it supports.	Credible and relevant evidence is used throughout the conversation. Additional evidence is used to support interpretive claims.	*As per* "*Good*" + Resources are used credibly, with qualifiers and triangulation regularly applied Acknowledgments/analysis of possible weaknesses, risk, error, omissions are provided.
Usefulness of the engineering requirements to support decision making about design concepts.	Requirements missing critical components but will not allow alternative designs to be evaluated (e.g. metrics unconnected to objectives), and/or requirements are not credible (e.g. constraints come from contrived numbers).	Requirements will allow most alternative designs to be evaluated and compared, but may not be robust or fine-tuned enough to evaluate a broad range of potential designs. Requirements founded in come credible basis (eg. standards, guidelines, DfX definitions or handbooks).	Requirements well supported by evidence, including research beyond the stakeholder statements into the context of the opportunity, research that supports engineering considerations of chosen DfXs; metrics are informed by relevant codes and/or standards. Codes and standards specific to the opportunity	*As per* "*Good*" + Requirements are internal consistent from objectives through metrics to constraints and criteria Uses of codes, standards, DfX are not only appropriate but are modified to be made usable for Engineering Science students in their 1st term
Quality of the learning generated by applying engineering tools for diverging and representing (e.g. prototyping) candidate design concepts.	Prototypes have no defined purpose, or all focused on "communication" without application to prototyping to learn	Prototypes offer a simple understanding of one or two key aspects of the design concept, hand have a purpose in decision-making, information gathering, or refining the concept	Multiple prototypes are used to guide or inform multiple design decisions. Prototypes enable comparisons between different designs.	*As per "Good"* + Prototypes serve purposes that are mutually reinforcing by representing different critical aspects of the design to provide confidence in design decisions
Quality of the concepts under consideration, as demonstrated by the representations, preliminary assessment against requirements, diversity of approaches, and plans for development	Recommended concepts evoke immediate and warranted scepticism due to issues related to (e.g.) thermodynamics (perpetual motion), materials, (unobtanioum), un-usability etc. No progression of the design from initial concept.	Chosen concepts show multiple perspectives have been pursued and not simply variations on a theme. Recognized challenges exist but all have sufficient viability to continue developing.	Key aspects of design address critical aspects. More work needs to be done, but the core concepts are viable	*As per" Good"* + Divergence has yielded "the crazy" but the fascinating to encourage broader design thinking. Sufficient embodiment work has been completed to guide more detailed design decisions

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Characteristics for Evaluation	Unacceptable	Satisfactory	Good	Outstanding
Effectiveness of teamwork during the discussion that demonstrates both integrated and mutually supportive contributions.	Team displays evidence of inequitable contribution; one member dominates or at least one member is excluded; team members talk over each other, silence each other or contradict each other in ways that cannot be accounted for by differences in individual perspective	Reasonably equal speaking contributions across teammates; some members may speak more or less but inequity in speaking doe not undermine implied contribution.	Team members are able to speak not only to their core contributions, but also to those of their teammates. Non-speaking teammates support the speaker by finding evidence at relevant points.	*As per* "*Good*"+ Where necessary and appropriate, team members are able to build on each others' Q & A responses in a way that that enhances meaning and demonstrates mutual respect.
Clarity and integration of oral, visual, physical, and written communication.	Representations are inconsistent; value of the representation to the concept or learning is unclear; representations of different types are not integrated to leverage benefits of different mediums	Representations are varied and consists, although they may have overlapping purposes; most representations used during the Q & A to demonstrate the concept or learning; integration may be inconsistent	Representations are mutually supporting; different representations have clearly defined purposed; integration of representations with Q & A smooth and timely	*As per* "*Good*" + Communication provides assessor with a chance to engage in design thinking with the team. Additional appropriate and valuable forms of representation were incorporated and were of similar quality and effectiveness for their purposes
Ability to participate in meaningful, professional-style conversation with key stakeholders.	Does not respond to questions asked or responds with irrelevant information/ explanations; ignores what others says or misses opportunities to ask questions or build on the ideas	Responds to questions from the assessor, may require some re-direction to address the main point. May offer supporting ideas to others answers.	Takes time to clarify or confirm questions before responding, keeps answers concise but complete. Respectfully explores others answers or the assessors questions with questions or observations	Carefully organizes thoughts and presents a coherent and well-supported response; maintains awareness of others' contributions and questions and offers insightful observations and/or questions