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Faculty of Engineering

Innovative Design for Engineering Applications

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Project Criteria Descriptions

1. Challenge

The design problem posed must be sufficiently complex such that the “best” solution is not immediately apparent. Students will use systematic problem solving, along with the engineering knowledge they have gained, in order to iteratively solve the problem posed. The project will be undertaken by four to six students who will pool their existing knowledge together to solve the problem, and further gain insight towards life long learning.

2. Scope

The design process begins by precisely defining the scope of the project, which consists of specific needs, specifications (including metrics), constraints and limitations. This crucial first step assigned to the design team is vital **to the project’s success as it sets the boundaries of the problem to be solved. The company** should be prepared to expedite this process so that more time may be devoted to the creative and detailed design phases.

3. Creative

The design project must engage the students’ creative engineering process, and not be overly restrictive in specific solution methods. Therefore, the main problem around which the project is focused must be open-ended in terms of how it is to be solved. This allows the design team to select one concept/solution among many alternatives that best addresses the context and variables of the problem.

4. End Goal

From conception, the design project should have a well-defined end goal that the design team can work towards achieving. This helps to indicate and measure whether the team is on track to achieving the desired end-goal for the industry partner. The final solution to achieving the end goal will be presented in the form of a technical report and a final presentation. The Biosystems course, as well as select Mechanical projects will add a proof-of-concept to the output.

5. Industry Engagement

A robust relationship must exist between the design team and the industry partners. This will ensure accountability between all those involved and allow for a feedback mechanism in the design process. This is highly crucial towards providing a rewarding experience for both the industry partner and the students. The industry partner should have a designated individual who is prepared to work with the design team **to help ensure the project’s success**, and who is committed to meeting with the team on a regular basis throughout the term(s). Additionally, the company should be prepared to facilitate any other necessary information transfer, demonstrations, etc. in a timely and effective manner so as to not delay the **students’ progress.**

6. Captivating

The Capstone Design project **is a key finishing component of the students’ engineering education, to** which students often look forward to. The value of a truly great design project for the UofM IDEA Program lies in its ability to create a memorable experience for the students. Three key factors that make a project memorable are the hours spent, the work done, and above all else, the **“cool factor”.**