Description of Design Considerations

Examples of Design Considerations and Questions
The following list has been created to assist the students with establishing appropriate design criteria. The best designs are often a compromise of multiple competing criteria. It is up to the engineer to make judgments weighing the costs and benefits of each decision. Discussion of these design considerations is required in the Design Proposal and Project Report. All of these should be considered when establishing criteria. These are NOT criteria themselves, these are design considerations:

- Performance – How is the design to function? What need is it filling? What does it have to do? Is it reliable?
- Serviceability – Is maintenance or repair a concern? If so, can it be easily performed?
- Economic – Is the production and/or use costs considered?
- Environmental – Does this have positive or negative impact to the environment? Are there any environmental effects due to the production, use or end-of-use of the design? Are appropriate materials selected?
- Environmental Sustainability – (Sustainability refers to the practice of having minimal impact on the environment. Completely sustainable practices do not deplete or degrade the environment.) Does the design consider recycling, and using sustainable materials and manufacturing methods? Are renewable energy sources used (such as solar)? Does the product promote sustainable practices?
- Manufacturability – Can the design be economically produced? Can critical elements be inspected?
- Ethical – Has the student followed the code of ethics established by professional organizations such as ASME? Does the design benefit humanity? Have appropriate standards been applied? Are the design documents accurate with claims not overstated?
- Health and safety – Have appropriate codes and standards been applied to prevent harm? Does the design mitigate harmful effects of failure to prevent injury? Does the design directly improve the health and safety of users?
- Social – Does it benefit society? Are there societal implications of the product?
- Political – Are there political implications of the project? What materials or parts would need to be imported? Would this be exported or imported?