

ME403: Assignment 2

“Determining Design Specifications”

Guide to Responding

As an open-ended design project, there will be many acceptable answers to this assignment. However, to ensure you have established proper design specifications to enable you to succeed as you go further into the project, following are some guidelines to help you:

1. Determine the needs of your project design and organize them into a chart with rankings of importance.

Using what has been established in the readings and lectures, as well as your other engineering education lectures and coursework, examine your design project and determine the needs. This will be driven by your customers' requirements and desires, whether they are specified by a design competition, your company, or your community and individual potential customers and users.

At this stage, don't be afraid to be extensive in your approach and listing. You want to ensure that you do not forget needs which may later drive directions of your design. You will give a ranking of importance (a scale from 1–5 is often appropriate, but you can also use 1–10 or any reasonable field of distribution) so that you can compare the items on your list, allowing it to be extensive and not overbearing.

At this stage, you should be speaking with your customers (or potential customers), as well as researching various technologies already in existence. Find out as much as you can about the problem you're trying to solve. Keep track of everything in your design notebook.

You can find more advice and a short example of how to formulate a needs chart at the University of Minnesota: ME 4054 Design Project: [“Product Design Specification.”](#)

2. Establish the corresponding project metrics to meet the needs of your design.

Metrics are the quantifiable “what,” which is derived from your customer needs. Metrics may span multiple needs or only account for a single need. In order to properly design a product or solution, you need to know what metrics you are trying to meet. Establishing your metrics from the formulated needs requires you to apply your comprehension of engineering subjects and theories to recognize how to translate a need into something measurable and designable.

3. Create a design specification table which includes the metrics, their corresponding needs, their level of importance within the design, and the target values needed based on benchmarking and customer research.

By pulling together the information you've ascertained from your research, inquests, and benchmarking, you should be able to establish marginal and ideal values to associate to your metrics. These will allow you to move forward in your design process. Assemble your table of design specifications with a reasonable number of metrics (most likely at least 20), each having a weighted importance, their units of measurement, the needs they correlate to, your marginal acceptable range to be in, and an ideal value to attempt and design to.

You can find more advice and a short example of how to formulate a metrics and design specifications chart at the University of Minnesota: ME 4054 Design Project: "[Product Design Specification](#)."

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