**BME 460 Final Report Format**

1. Cover Page
   * Project Title
   * Class number and name
   * Team members
   * Faculty
   * Supervisor(s) with affiliation
   * Date
   * Acknowledgement: “This material is based upon work supported by the National Science Foundation under Grant No. CBET-0967221.”
2. Abstract
   * *(See example* “Shopping Aid for Manual Wheelchair Users”)
   * Title of project
   * Customer, problem and need identification
   * Design description/ approach
   * Testing result (including statistics)
   * Client result
3. Table of Contents
   * List every numbered item on this list verbatim
4. Customer or Clinical Need

* (from Background of Proposal)
* Client background
* Problem Statement (client need)
* Background research results
  + Patent search (*required*)
  + Commercial products (as relevant)
  + NSF student projects (as relevant)

1. Specifications and Final Evaluation
   * Functional Specifications and evaluation
   * Performance Specifications and evaluation
2. Final Design
   * Technical Description

* describe device’s physical components, operation and key features
* include labeled photos – refer to these in text
* follow format of NSF report, with additional pictures/description as needed
  + Mechanical Drawings and Electrical Schematics
* all figures must be professional quality
* provide separate figures for every custom part, including all dimensions
* provide a detailed caption for each figure, describing important fabrication details including materials, screw size/type and thread count
* for electrical schematics, the caption should contain a detailed theory of operation
* Imagine that someone who has never seen the project has to fabricate it from your drawings, schematics and captions
* ***Select part names carefully, and use them consistently throughout the rest of the report and User’s Manual.***
  + Budgets
    - provide separate budgets for Development Costs and Replacement Costs
    - for Replacement Costs, show detailed parts list
    - include descriptions for any non-obvious items (e.g., if your device has one large motor that runs everything, you don’t need to describe its function)

1. Final Testing Methods (refer to sections 5 and 9)
2. Final Testing Results (refer to sections 5 and 9)
3. Quantitative Analysis

* include your team’s best individual QA, after editing by the team
* start with a clear explanation, and a figure to show the overall approach
* include appropriate statistics (hypothesis testing where pertinent)
* provide thoughtful conclusions

1. Risk Analysis, with reference to BSEN 12182 Standard

(Technical aids for disabled persons - General requirements and test methods)

* include designsafe analysis for final device
* use past tense to indicate that all risk minimization has been completed
* *reference BSEN 12182 standard explicitly* by section name, number and page

1. Ethical Concerns – Sustainability Analysis

* attach completed Project Materials LCA for your project

1. Design Iterations (refer to individual lab notebooks)
   * delete any client personal info (name, address, phone, email, etc.)
   * bring pdf hardcopies of all team notebooks to poster session; attach to the final report
2. NSF Report
   * see example report
   * use abstract from final report
   * include quote(s) from client, teacher, therapist, parent in SOI
3. User’s Manual
   * see example manuals

Also required with the final report:

**Project Video**

The video should first describe the device, and then show your client using it. It will be made public on the BME 460 web site, so please check with me to ensure you have consent from the client. If possible, please keep the size under 50Mb. Length must be <5 minutes; shorter is often better.

Final report submission checklist:

* Word doc containing items 1-12 above: groupname\_finalreport.docx
* Word doc containing NSF report: groupname\_nsf.docx
* Word doc containing User Manual: groupname\_user.docx
* Video file: groupname\_video.wmv, etc.
* Separate jpg files for all pictures:

Final report: groupname\_final\_fig1.jpg, … groupname\_final\_figN.jpg

NSF report: groupname\_nsf\_fig1.jpg, groupname\_nsf\_fig2.jpg

* Files for any other figures (electrical schematics, mechanical drawings, …)
* UPLOAD ABOVE AS A SINGLE ZIP FILE TO YOUR GROUP PAGE: groupname\_final.zip
* A high quality video file, first describing the device and then showing your client using it, e.g. “timer.mpg”. This will be made publically available on the BME 260 web site. Please keep the size under 100Mb.

**Example Abstract:**

**Shopping Aid for Manual Wheelchair Users**

People who use manual wheelchairs often have trouble grocery shopping because of difficulty moving a shopping cart while wheeling their chairs. The goal of this project was to develop an easily attachable shopping aid that provides a stable location for groceries. The Shopping Aid resembles a hand-held shopping basket, attaches quickly to the wheelchair's frame, and folds for compact storage. Empirical testing showed that the horizontal force needed to tip the basket with seven pounds of groceries increased from 1.8 ± 2.7 lb to 6.7 ± 1.6 lb when Velcro was applied to the basket bottom. The device gives shoppers with wheelchairs easy view and access to groceries, allowing them to shop independently without using a cart.