

Tips, Do's, and Don'ts for your ME301 HW

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General Technical Writing Tips:

1. Avoid the use of subjective “feeling” words like: “it seemed”, “it felt”, “it looked”, “we thought”, “we wanted”, etc.
2. Avoid narrating (story telling with words like “then we...”, “next we...”, “once decision A was made, then...”) in your work unless the sequence and chronological order is vital in being able to understand and/or reproduce it.
3. Just state **what** was done, not **why**. Don't feel like you need to provide a justification for every decision made or approach taken. People can come to an approach for different reasons and the reason shouldn't affect the outcome. Most of the time the reason is irrelevant.
4. Use a single space between words and sentences.
5. Check thoroughly for spelling/grammar/word errors. Correctly spelled but misused words are easily overlooked since Microsoft Word's spell-checker won't highlight them as errors. Try Grammarly.
6. Hyphenate compound adjectives. *What is a compound adjective*, you ask? These are two or more adjectives that precede and modify a noun, but form a single idea. The hyphen will likely alter the meaning that the words would have without the hyphen, and can lead to confusion in technical writing when used improperly or not used. Some examples that should have hyphens for clarity include: velocity-dependent contraction, 3D-printed part, 1-threshold algorithm, 2-dof linkage. Note that the meaning of the compound adjective is lost if either of the words is removed – velocity contraction and dependent contraction don't carry the same significance as they do when joined in a compound adjective “velocity-dependent”. Of course, no hyphen is needed if re-ordered as in: “the contraction is velocity dependent”. The same goes for the other examples: the wrist has two DOF (or two DOFs), but the wrist is a two-DOF joint; It isn't a *two* joint, and it isn't a *DOF* joint, therefore this is another cue that the words should be formed into a compound adjective using a hyphen. By the same token, a smooth spherical joint (or smooth, spherical joint) should not be joined by a hyphen because the modifiers are independent (i.e., they retain their same modifying power even when separated from the other adjective (e.g., smooth joint and spherical joint). The adverb “very” and adverbs that end in -ly do not need a hyphen (e.g., very fast contraction; actively powered joint) as their meaning is almost always clear.
7. Remove superfluous words that don't add clarity or precision to the idea being transmitted. These are called “filler” words and are not appreciated by readers or graders. Examples:
 - a. One of the most important aspects of these systems is ~~how easy it can be for the user to use the system and how easy it is for the user to understand~~ the interface. → One of the most important aspects of these systems is **their ease of use and the intuitiveness** of the interface.
 - b. From the 3D model, we were ~~then~~ able to print sections of the prototype and construct a scaled-down ~~version of the~~ device that can be used in further developing ~~the idea of having similar devices on the market with~~ biomimetic designs. → From the 3D model,

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Tips are derived from collective feedback on ME404/504 Preliminary Draft Paper submissions.

- we were able to print sections of the prototype and construct a scaled **model of the** device that can be used in further developing biomimetic designs.
- c. Care is taken to maintain an interface between the inner bearing race and the truss walls while avoiding **too tight a fit which would create an interface** between the truss walls and the bearing outer race which would **impede the functionality of the bearing**.
→ Care is taken to maintain an interface between the inner bearing race and the truss walls while avoiding **contact** between the truss walls and the bearing outer race which would **increase friction**.
 - d. ...we liked this design because its actuation was readily modifiable to achieve our proposed actuation scheme changes. **Another thing we liked about the design is that** it combined the proximal... → ...we liked this design because its actuation was readily modifiable to achieve our proposed actuation scheme **and because** it combined the proximal...
8. Remove pronouns when their association to previous text can be easily misinterpreted by the reader.
 - a. After removal of the pin from the assembly, store **it the pin** in a safe place.

Tips for Figures and Figure Captions:


1. Enlarge images on screen prior to using Snip & Sketch to increase image resolution.
2. Crop unneeded/irrelevant parts of image that would otherwise reduce size of the image.
3. Click the Layout Options tab () to the right of the image, and configure how you want the figure to move and your text to wrap (or not move/wrap).
4. Figure captions usually go below the figure. (Tables captions are usually above).
5. Right-click the image and click insert caption to create a dynamically-linked caption in Word.
6. Give short big-picture title first (need not be a complete sentence), followed by specifics of the figure contents.
7. Information should flow from general to specific or navigate the reader though the figure in a logical progression (conceptual, chronological, or positional – left-to-right, top-to-bottom, clockwise, etc.).
8. Caption should be self-sufficient, not depending on the surrounding paragraphs.
9. Caption text should follow general rules of clear and concise technical writing (avoid: narration, justification, first-person, subjective, and superfluous text).



Figure 1. Example Figure and Figure Layout Options. Right-clicking the layout options icon displays a toolbar with various options for text wrapping and movement (or fixation) of the figure with respect to the surrounding text.