

Thesis/Project Report Style Guide

Biomedical Engineering Department

San Jose State University

This guide is intended to be a supplement to the SJSU Thesis Guidelines. In the event of the two documents having conflicting information the SJSU document will prevail, in most cases. Please consult your Research Adviser.

Author instructions published by the *Annals of Biomedical Engineering* have been used in developing this style guide.

Presentation is extremely important. This means that your report should be neat. Since the common language being used is English, the report should be written in grammatically correct English. Do spell check and grammar check. The text should be clear and concise. Avoid long, complicated sentences.

Title Page: The title should be informative. It should contain no unnecessary words and should not exceed 120 characters including spaces between words. The title page should follow the SJSU Thesis Guidelines^(*).

Abstract: A one-paragraph abstract of not more than 200 words is required. It should state concisely the reason for the study, what was done, what was found, what was concluded, and the relevance.

Key Terms: After the abstract list three to five terms, pertaining to the work, that are not included in the title.

IRB and IACUC: If human subjects and/or animal subjects were used in the research, evidence that the SJSU Institutional Review Board (IRB) and/or THE SJSU Institutional Animal Care and Use Committee (IACUC) have reviewed the protocols submitted and granted their approval prior to initiation of the research. This information should be included in the Materials and Methods section of the report.

Materials from other sources; If tables, figures, etc., from other sources are copied or modified and included in the report or thesis, evidence that prior permission was obtained for the reproduction of these materials must be provided. Only for Project Reports, in the event that permission to use materials from other sources was not obtained, evidence that an attempt to obtain permission was made must be presented; in this case the copyright page should not be included.

Tables

All data and results, especially numerical results, should be tabulated whenever possible. All tables should have a table number and a *title that is descriptive* of the contents on top of the table. Unlike figures, the table title and number should **not** be placed below the figure. Generic titles such as "Experimental Results", "Temperature Measurements", etc. are prohibited. By reading the title the reader should have a good understanding of what is contained within the table. Keep the titles as brief as possible; explanatory matter should be in footnotes, referenced with standard symbols, e.g., *.

Tables have rows and columns. In general, each row and column should have a title describing the contents of that row or column. In some cases, only the columns or rows will need descriptive

^(*) http://www.sjsu.edu/gup/docs/2017_Thesis_Guidelines.pdf

titles. The units of the numbers contained in the table should be shown clearly. If each column has a separate measure, then the unit should be specified with the column titles. If the whole table has only one unit, then this can be specified along with the title.

The purpose of providing tables in the text is to enable an organized presentation of numerical data. First, remember that the tables in themselves do not convey any message. Do not assume that the reader will automatically read the table provided at the appropriate time, and also interpret it correctly.

All tables must be called out in the text by table number, and not page number. **The message that the reader is expected to get from the data in the table must be clearly stated in the text.** Tables do not stand on their own, independently of the text.

The table called out should then appear at the first possible place after it has been called out. This would typically be in the same page or the following page. If more than one table is called out in the same page, then the tables should follow sequentially.

All tables should be numbered sequentially, starting with Table 1 for the first table, followed by Table 2, Table 3, etc. Do not use different numbering schemes such as Table 1.1, 1.2, 2.1, 2.2, and so forth.

All tables should be positioned so that they are centered horizontally on the page. They should not be left or right justified. Note that the *contents* of a table may contain left, center, or right justified text. Column labels should have the same justification as the contents of the column. Numerical data should be right-justified so that the significant digits are aligned.

If a table needs to be placed in the “landscape” orientation to fit it in a single page, then it should appear on the page following the page in which it has been called out in the text. **Do not** leave empty space after the reference to the table.

For tables that span multiple pages, the table title and the column headers must be repeated on each page. Include “(continued)” at the end of the title for the second and subsequent pages.

Figures

All diagrams, sketches, graphs and photographs should be presented as Figures. Like tables, figures should be numbered, with a title that is descriptive of the contents. All figures should be numbered sequentially, starting with Figure 1 for the first figure appearing in the report. Avoid numbering according to chapter, such as Figure 1.1, 1.2, 1.3, 2.1, 2.2, 2.3, and so forth. For graphs, all axes should be properly labelled, including units, and the scale used should be clearly marked. Legends should be used, if necessary, to distinguish between different data sets present in the plot.

Figures must be called out in the text, and the message that the reader is expected to get from the

figure must be clearly stated. The figure should be placed at the first opportunity after it has been called out in the text, typically on the same page or the following page. The title of the figure must be descriptive of its contents.

When plotting graphs and histograms, choose the scales carefully and appropriately. For example, if the data cluster around 24 to 27, having a scale from 10 to 50 is not only not necessary, but can be quite meaningless. Secondly, when the raw data reflect accuracies to one decimal place, to plot histograms that are accurate to zero decimal places is also inappropriate. It would be much better to have a scale from 20 to 30, with divisions for every 0.1 or 0.2. This gives a more meaningful histogram. Graphs/histograms that share the same variables should be plotted using the same value ranges (scales), to make them easier to compare to one another.

It is recommended that there be only one figure per page, unless if two can fit neatly and not appear crowded. The figures should be centered on the page, well away from the edges.

Each Figure should have a title, sufficiently descriptive of the contents of the figure, placed at the **bottom** of the figure. Generic titles are to be specifically avoided, as has been explained in the previous section on "Tables".

The curve should be smooth going through, or close to, all the points except for obviously wrong data points (outliers). The practice of connecting points must be avoided. The use of software that simply connects points will not be accepted as an excuse. If regression techniques are used, such as linear regression, then there must be a basis for establishing linearity first; this basis should be explained in the text. If more than one curve is included in a figure, each curve should be appropriately labelled.

References

The References section must list all sources that were used in preparing the report, using the *Annals of Biomedical Engineering* referencing style. They should be typed separately, double-spaced, arranged alphabetically by author, and numbered serially, with only one reference per number. The number appropriate to each reference should be superscripted at the proper point in the text, within parentheses, e.g., ⁽³⁾. When using a *citation manager* software, such as EndNote, Mendeley, PaperPile, etc., the proper citation format should be selected.

The format for referencing materials from different sources is as follows:

Journal articles. Last name of first author, followed by initials, initials and last names of each coauthor; title of article (first word only capitalized); name of journal (abbreviated as in Serial Sources for the BIOSIS Data Base, published by BioSciences Information Service), volume, inclusive pages, and year.

Haselton, F. R., R. E. Parker, R. J. Roselli, and T. R. Harris. Analysis of lung multiple indicator data with an effective diffusivity model of capillary exchange. *J. Appl. Physiol.* 57:98–109,

1984.

Book references. Author(s) as above; title of book (main words capitalized); city of publication; publisher; year and pages.

Thompson, D. A. W. *On Growth and Form*. Cambridge: Cambridge University Press, 1961, 346 pp.

Chapter in an edited book: Glass, L. and A. Shrier. "Low dimensional chaos in the heart." In: *Theory of Heart: Biomechanics, Biophysics, and Nonlinear Dynamics of Cardiac Function*, edited by L. Glass, P. Hunter, and A. McCulloch. New York: Springer-Verlag, 1991, pp. 289–312.

Personal Communication: Any information obtained from another individual verbally, via email, or any other form. This type of reference should be used as a last resort, only when a retrievable reference (books, journals, conference proceedings) is unavailable. Personal communications should be cited in the text of the document (as in the examples below) but they should not be included in the bibliography. Permission to cite must be obtained from the source/author of the personal communication.

According to G. Selvaduray (personal communication, July 2, 2018), BME is the best major ever.

There is broad agreement that BME is the best major ever (G. Selvaduray, personal communication, July 2, 2018).

Footnotes

Footnotes appear at the bottom of the page in which the reference to a footnote is made. It may be used to provide additional/supplemental materials which, if included in the body of the text, could interrupt the flow. It is generally intended to enhance the reader's understanding of the report. Reference the footnotes with superscript symbols contained within parentheses, e.g., (*).

Endnotes: Do not use endnotes.

Appendices

All materials included in an appendix should pass the "*not essential for understanding of the work reported*" test.

All Appendices must have numbers or letters, even if there is only one Appendix. "The raw data for the microhardness measurements are contained in the Appendix" is unacceptable. Instead, it should be written as: "The raw data for the microhardness measurements are contained in Appendix A". It should begin on a new page.

Supplemental material, such as photocopies of pages from reference books, sample calculations, etc. can be included as an Appendix, each individually identified.