Senior Year Project Report Guidelines

Handbook on Report Formats

ME/EE Department

March 2015

Joint Project between the ME and EE Departments to create a complete interdisciplinary ABET adherence guidelines and self-sustained standard to be systemized

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Dedication

This work is dedicated for all those who strive to reach the pinnacle yet they are forced to pass through the thorns, steep decent and rocks. It is also dedicated for those who wish to systemize in a chaotic world yet they have great expectations that with a strong well they shall succeed. Finally, it is dedicated for all of us who still have some hope that our students have a lot of room for improvements and can truly excel in this very competitive word.

Abbreviations

DB   Department Board

PC   Project Committee

EC   Examining Committee

FAC   Format Adherence Committee

HATS   HATS Methodology: Headings, Access, Typography, and Spacing

ABET   Accreditation Board For Engineering And Technology

Table of Contents

Chapter One

Introduction

The manuscript of the senior year project must have a professional appearance; it must have standardized features and be attractively reproduced. Introductory material, text, and appendices must all be clearly and consistently prepared and must meet ABET and departmental requirements. In this handbook, Engineering technical report format is presented to shed more light and to provide an overview of the how, what, and why of organizing different types of reports.

1.1 Overview

In general, reports are written for many objectives, such as

- To transmit information to teachers: to show that the writer is thoroughly acquainted with the material, the information, and/or the procedures; therefore, be thorough and complete; be concise.
- To transmit information to decision makers: experts and technicians, executives, and laypeople.
- To help them make decisions and act on the results presented; therefore: be concise; be thorough and complete.

Before one starts writing a report, he/she should wonder and ponder on the following questions:

- Who will read the report?
- In what context will they be reading?
- What do they want to know?
- How should the report be structured?
- What questions will your readers want your communication to answer?
- What additional information do your readers need?
- What information do you need to gather through research?
- Finally, the following remarks should be in mind while writing a technical report.
- There is no universally agreed-upon format.

- You should follow the format for your course or your company.
- You must follow the guidelines and examples provided by the Project Committee to help you.

1.2 Report Formats

Report format is basically a plan of organization, a means of structuring material and a framework for arranging information. Engineers use specific report format for the following reasons:

- To present report as clearly and as concisely as possible to one reader or to a variety of audiences
- To signal the type of information being presented
- To enhance the presentation

1.2.1 Readers or Audience

Before writing a report, one must consider his/her readers. In general, how one formats a technical or engineering report will depend on the report readers goals and needs. One should ask the following questions before jumping into the report writing.

- Who are my readers? Remember there may be more readers than you expect. For example, a feasibility report for your boss may be given to someone higher up in the company and a research report may be used by another researcher years later.
- Why do they need this report?
- What information do they need to get from this report?

Generally speaking, Engineers write reports for diversity of audiences, or more specifically for teachers

- Who know the field
- Who know more than the writer
- Who can give a critical evaluation
- Or for diverse audiences (i.e. for decision makers: experts and technicians, executives, and laypeople)
- Some are known and some are unknown to the writer
- Some know something about the field, but less than the writer

- Some know very little about the field

1.2.2 General Report Format Guidelines

When one writes an engineering report, he/she will want to make it easy to read and understand. Here are some guidelines to apply to any engineering report.

- **Use lists:** Whenever you can, help your reader by using lists. Give your lists visual emphasis by bullets.
- **Use headings and subheadings:** Use headings and subheadings to guide the reader through the organization of the report and list them in the table of contents. Each section should have a clear topic statement to let the reader know what will be included in the section.
- **Use clear typefaces, such as Times New Roman or Arial:** Avoid using more than one typeface in a document. Bold section headings for emphasis.
- **Use white space to enhance your information:** Dense blocks of text are difficult to read and will make it more difficult for your readers to find the information they need.

1.2.3 Other Guidelines for Writing Reports

More guidelines that are useful and more directed towards the structure of the report include the following:

- Write the body of the report first before writing the abstract: Most report writers prefer to save the mechanical elements, such as the title page and the table of contents, for the last step.
- Maintain consistent structure: Once one determines the structure that will be used, then he/she needs to keep using it consistently throughout the report. This will make it easier for the readers to understand the written report.
- Choose carefully the voice, mood, and tense: These depend on the rhetorical situation. Consider the expectations of the report readers and their needs. For lab reports and long formal reports, most companies and most teachers prefer that one should use the third person passive: "A test was run…"…NOT "I ran the test…".

Note that past tense is used for explaining procedures, and present tense is used for generalizations and for stating what the results show. While, for memos and letters, most

companies prefer the first person active: "I have reviewed the program…"…NOT "The program has been reviewed…".

1.2.4 Report Organization

There are many kinds or reports Engineers are confronted with to write throughout their career. Some of these reports engineers write in academic settings, while others in industry and government environments. Typically, Engineers write Informal lab report, Memo and letter reports and formal reports. Never the less, all technical reports have similar organization, which maybe enlisted by the following WH questions.

- WHAT was done (the problem being worked)?
- HOW it was done (the procedures used)?
- WHAT the results were?
- WHAT conclusions can be drawn?
- WHAT recommendations can be made?

Chapter Two
Report Sections

First a quick overview of the report needed items to remember (checklist) before and after writing Engineering reports is presented as a reference. These questions one needs to ask himself/herself before handing or submitting reports to their readers. In later sections, the main components of the technical report are presented and reviewed.

2.1 Checklist Overview

First a general list is introduced then it is followed by a specific check list that is used for long reports.

2.1.1 General Checklist

- Did you begin by asking yourself: Who will read the report?; What do they want to know?; How should the report be structured?
- Have you planned and prepared the report with the reader in mind?
- Did you follow the format specified in your course or by your company?
- Did you use enough headings and make them in a clear hierarchy?
- Is the important information easy to follow?
- Does the document use the most appropriate typefaces, sizes, styles or alignments?
- Does the document have enough white space?
- Would you be willing to have your competence in your field judged on the basis of how you presented this report?

2.1.2 Long Report Specific Checklist

- Is the report organized so that the reader knows: What was done (the problem worked on)?; How it was done (the procedures)?; What results were found?; What conclusions and recommendations can be drawn, if requested?
- Does the body of the report move from general to specific?
- Are the results presented clearly and in the specific way you found out?
- Are there enough headings and subheadings to help readers find their way through the report, and are the headings in a clear hierarchy?
- Are all headings and subheadings listed in the table of contents?
- Is the important information easy to find?

2.1.3 Abstract

- Does it summarize the main points and include specific results?
- Is it clear and concise?
- Is it self-sufficient? (Can it be read without having to refer to the body of the report?)
- Are there any recommendations you can supply here?

2.1.4 Figures and Tables

- Are the figures located wherever readers would find them easily helpful or persuasive?
- Do all the figures and tables have numbers and captions?
- If the figures and tables are referred to in the text, are page numbers included?
- Are the figures and tables correctly labeled?
- Are the figures and tables explained or interpreted adequately?
- Are the figures and tables listed in the table of contents or in separate lists following the table of contents?
- Do the figures look attractive and easy to read?
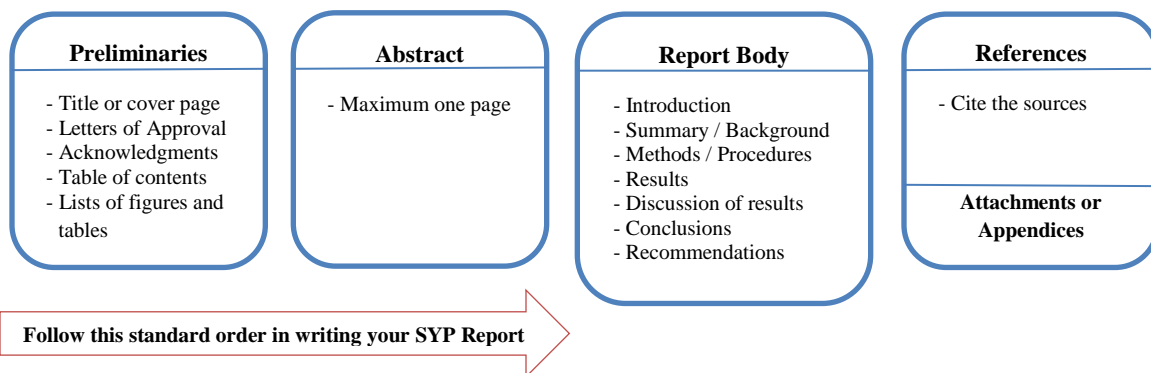- Are all units in the figures and tables clearly indicated?

2.2 Sections of Report

In different companies, in different universities, and in different courses, you will find that different formats are preferred for specific kinds of reports. Who your audience is greatly affects how your report should be designed. Thinking about your readers, who they are, what they want to accomplish, and what you want to accomplish will help you determine how to write and format your report to best bring about your purposes.

Thus, the suggestions one will find here are for typical ways to proceed. Before using these suggestions, one should check first to see if there are specific requirements for his/her specific situation, and also one should consider for whom the report is written, the situation, and what one is trying to achieve. Luckily, the ME and the EE departments at Jordan University (JU) has a template for the senior year project report. That template needs to be implemented properly in order for the report to get a Format Adherence Committee (FAC) approval. However, the content of this booklet is an aid and complementary for the provided Template.

Students may find it easier to write the body of their report first (the procedures, results, discussion, and so on). When that's done, one will be able to write the abstract much more easily. As a final step, what then remains to be done are the mechanical elements, the cover page, table of contents, references, and so on.

Therefore, this section discusses the parts of a report in the order in which one will usually proceed: first, the body; second, the abstract; finally, the mechanical elements. When you assemble the parts, consider putting them in the following standard order, remembering always to adjust to your reader and situation:

Preliminaries	**Abstract**	**Report Body**	**References**
- Title or cover page - Letters of Approval - Acknowledgments - Table of contents - Lists of figures and tables	- Maximum one page	- Introduction - Summary / Background - Methods / Procedures - Results - Discussion of results - Conclusions - Recommendations	- Cite the sources **Attachments or Appendices**

Follow this standard order in writing your SYP Report

2.2.1 The Abstract

The abstract is a crucial part of your report as it may be the only section read by people at the executive or managerial level who must make decisions based on what they read in your abstract. When you include specific content, it is important to remember these readers are looking for the information they need to make decisions.

The abstract is an overview that provides the reader with the main points and results, though it is not merely a listing of what the report contains. It is a summary of the essence of a report. For this reason, it should be crafted to present the most complete and compelling information possible. It is not a detective story building suspense as the reader hunts for clues, and should not be vague or obtuse in its content.

A good technical abstract should include the following.

- Why the work was done (the basic problem), the specific purpose or objective, and the scope of the work if that is relevant. (College lab reports may not require this part of the abstract.)
- How the work was done, the test methods or means of investigation
- What was found—the results, conclusions, and recommendations

There are many mistakes and pitfalls committed by the students while writing report's abstract. The following are frequently seen mistakes, which may improve one's report if the report abstract should

- Not make references to material in the text
- Not lose the message by burying the methods, results, conclusions, and recommendations in a sea of words
- Not be written before the rest of the report

In summary, a good technical abstract has the following characteristics

- **Complete**

- **Concise**

- **Specific**

- **Self-sufficient**

The Format Adherence Committee (FAC) in the ME department will evaluate all the abstracts in the submitted reports. Because the abstract is of major importance in a report, a summary of effective qualities of abstracts is offered here. **A well-written abstract**

- Considers the readers it will encounter

- States what was done and what results were found

- Is concise

- Avoids vagueness by stating specific results

- Uses past tense to report what was done

- Is informative

- Is self-sufficient and does not refer to the body of the report

- Makes concrete, useful recommendations

Exercise

Below are two abstracts. The first one, (A), was written by a student for a lab report, and the other one (B) was a revision written by someone with more experience in writing abstracts. Read both versions and try to figure out why the changes were made in B.

Abstract - A

We studied the flow characteristics of meters, valves, and pipes that constitute a flow network. The meter coefficients for orifice and venture meters were determined. The orifice and venture coefficients were, on the average, 0.493 and 0.598, respectively. Fanning friction factors for pipes of different sizes and for gate and globe valves were also determined.

The accuracy with which the meter coefficients and friction factors were determined was affected by leaks in the piping network. In addition, air bubbles trapped in the pipes and manometers affected the accuracy with which pressure drops were measured. Hence, it is recommended that the piping system be checked to ensure the absence of any leaks. Furthermore, the fluid should be allowed to flow in the network for some time before taking any measurements, in order to get rid of the air trapped in the pipes and manometer.

Abstract - B

In an orifice and a venturimeter in a flow network, we measured the meter coefficients to be 0.5 0.1 and 0.6 0.15. We measured the Fanning friction factors at steady state for several pipes and for gate and globe valves. The most important source of error was a leak in the piping network which has to be repaired in order to obtain more precise results.

The Executive Summary

The government and some companies have begun to request executive summaries at the beginning of a long report. An executive summary is a one-page statement of the problem, the purpose of the communication, and a summary of the results, conclusions, and recommendations. The same considerations of readers and situation should guide your executive summaries.

2.2.2 The Report Body

The body of a report is a detailed discussion of one's work for those readers who want to know in some depth and completeness what was done. **The body of the report shows what was done, how it was done, what the results were, and what conclusions and recommendations can be drawn.**

All technical Engineering reports consist of main pillars or building blocks. These building blocks form the report, give it flow and make complete or coherent. The report body (one of the reports largest building blocks) consists of the following elements.

- Introduction
- Summary / Background
- Methods / Procedures
- Results
- Discussion of results
- Conclusions
- Recommendations

A quick overview of the report body main elements is presented below with some discussions. A full understanding of these ingredients is necessary and needed while writing the report body.

I. Introduction: The introduction states the problem and its significance, states the technical goals of the work, and usually contains background information that the reader needs to know in order to understand the report. Consider, as you begin your introduction, who your readers are and what background knowledge they have. For example, the information needed by someone educated in medicine could be very different from someone working in your own field of engineering.

The introduction might include any or all of the following.

- Problems that gave rise to the investigation
- The purpose of the assignment (what the writer was asked to do)
- History or theory behind the investigation Literature on the subject
- Methods of investigation

Note that while academic reports often include extensive literature reviews, reports written in industry often have the literature review in an appendix.

II. Summary or Background or Literature Review: This section gives the theory or previous work on which the experimental work is based if that information has not been included in the introduction.

III. Methods / procedures: This section describes the major pieces of equipment used and recaps the essential step of what was done. In scholarly articles, a complete account of the procedures is important. However, general readers of technical reports are not interested in a detailed methodology. This is another instance in which it is necessary to think about who will be using your document and tailor it according to their experience, needs, and situation.

A common mistake in reporting procedures is to use the present tense. This use of the present tense results in what is sometimes called "the cookbook approach" because the description sounds like a set of instructions. Avoid this and use the past tense in your "methods / procedures" sections.

IV. Results: This section presents the data or the end product of the study, test, or project and includes tables and/or graphs and a brief interpretation of what the data show. When interpreting your data, be sure to consider your reader, what their situation is and how the data you have collected will pertain to them.

V. Discussion of Results: This section explains what the results show, analyzes uncertainties, notes significant trends, compares results with theory, evaluates limitations or the chance for faulty interpretation, or discusses assumptions. The discussion section sometimes is a very important section of the report, and sometimes it is not appropriate at all, depending on your reader, situation, and purpose. presentation

It is important to remember that when you are discussing the results, you must be specific. Avoid vague statements such as "the results were very promising."

VI. Conclusions: This section interprets the results and is a product of thinking about the implications of the results. <u>Conclusions are often confused with results. A conclusion is a generalization about the problem that can reasonably be deduced from the results.</u>

Be sure to spend some time thinking carefully about your conclusions. Avoid such obvious statements as "X doesn't work well under difficult conditions." Be sure to also consider how your conclusions will be received by your readers, and as well as by your shadow readers—those to whom the report is not addressed, but will still read and be influenced by your report.

VII. Recommendations: The recommendations are the direction or actions that you think must be taken or additional work that is need to expand the knowledge obtained in your report. In this part of your report, it is essential to understand your reader. At this point you are asking the reader to think or do something about the information you have presented. In order to achieve your purposes and have your reader do what you want, consider how they will react to your recommendations and phrase your words in a way to best achieve your purposes.

Ideas and hints on conclusions and recommendations generation / writings one should the following.

- They answer the question, "So what?"
- They stress the significance of the work
- They take into account the ways others will be affected by your report
- They offer the only opportunity in your report for you to express your opinions

Exercise

What are the differences between Results, Conclusions, and Recommendations?

Assume that you were walking down the street, staring at the treetops, and stepped in a deep puddle while wearing expensive new shoes. What results, conclusions, and recommendations might you draw from this situation?

Some suggested answers follow.

- **Results:** The shoes got soaking wet, the leather cracked as it dried, and the soles separated from the tops.

- **Conclusions:** These shoes were not waterproof and not meant to be worn when walking in water. In addition, the high price of the shoes is not closely linked with durability.

- **Recommendations:** In the future, the wearer of this type of shoe should watch out for puddles, not just treetops. When buying shoes, the wearer should determine the extent of the shoes' waterproofing and/or any warranties on durability.

Chapter Three
Mechanical Elements of Reports

The mechanical elements of your report are largely included to make sure your information was useful and accessible as possible for your readers. It is especially important to incorporate the HATS methodology (headings, access, typography, spacing) when designing your mechanical elements, as that will make your documents easier to read, and it will give your documents a professional appearance. The ME department at JU has provided a template for the report writing and the HATS methodology. Hence, make sure to use the template precisely as is without making any modifications or alterations!

A brief overview of the report's mechanical elements is presented in subsequent sections with some hints and brief discussions.

3.1 Preliminaries

- **Title or Cover Page**

  The title or cover page includes the title, the name of the person authorizing the report, the name of the author(s), the name and address of the institution or company issuing the report, and the date.

- **Letters of Approval**

  These letters of approval bound into the report immediately after the cover page. The letters include the supervisors' approval sheet, FAC approval sheets, and Examining Committee (EC) evaluation sheets.

- **Acknowledgments**

  The acknowledgments section includes material which is irrelevant to the actual report but is required for the record or for acknowledgment purposes. The acknowledgments

may include, for example, the names of people who made technical contributions, notices of permission to use copyrighted materials, and so on.

- **Table of contents**

  The table of contents contains a guide to the contents of the whole report. It lists the preliminary pages such as the letter of transmittal and the acknowledgements, and it includes all headings and subheadings used in the report, exactly as they appear in the report.

  The table of contents also includes the page numbers for all parts. Use lower case roman numerals (i, ii, iii, etc.) for all preliminary pages and Arabic numerals (1, 2, 3, etc.) for all pages in the body of the report, starting with page 1 for the introduction of the body.

- **Lists of tables and figures**

  In some situations, especially if the report contains only a few figures and tables, all of the figures and tables, with their complete titles, are listed in the table of contents. In that format, tables and figures are listed separately even though they are mixed together in the report.

  In most situations, tables and figures are listed on separate pages, with the figures and their complete titles listed on one page and the tables and their complete titles listed on a separate page. If you follow this format, list the headings for each page in the table of contents.

3.2 Graphics

Graphics are all the tables and figures used in a report as visual aids for the reader. They are useful, important parts of a report and must be accurate. They should also be clear so the reader can interpret them easily. Tables are all lists of data presented in rows and columns. <u>Place the numbers and titles above the tables. Figures are any other visual presentations. Place the numbers and titles below the figures.</u>

When tables or figures are discussed in the text, cite their numbers and the pages on which they appear. Either number them consecutively through the report or number them according to the section in which they appear (2.1, 2.2, 2.3, etc.). Put all units in the tables, and

don't make the tables too long. If necessary, break them up into several short tabulations. This will help your tables be more visually appealing and will encourage your readers to look at them.

Popular Engineering types of illustrations found in technical reports include the following.

- Line graphs—for representing continuous processes

- Bar graphs—for representing absolutes

- Pie graphs—for showing percentages

- Flow charts—for illustrating stages in a process

- Schematics—the same as flow charts, but usually used for illustrating more abstract concepts

3.3 Mathematical Equations

All the mathematical equations, correlations, expressions…etc. must be typed neatly in a scientific equation editor such as latex or MS Word equation editor. Below are some hints and tips that are useful in using the MS Word equation editor.

- **Example:** Written mathematical expressions such as "F=m*a" is not acceptable and must be written in the equation editor and it must be given an equation number and the variables must be defined.

$$F = ma \qquad\qquad\qquad (1)$$

where F is the exciting force (N), m is the objects point concentrated mass (Kg) and a is the objects induced acceleration (m/s^2)

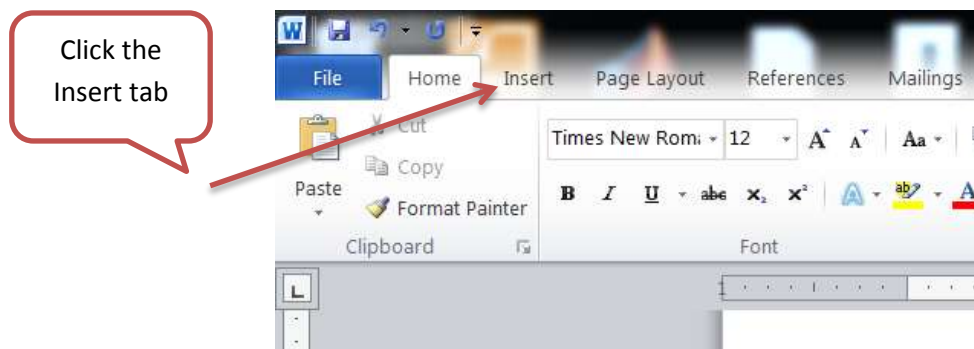- To use the equation editor click on the insert tab, which is depicted in Figure 3.1

Figure 3.1: Hit the Insert tab to access the equation editor

Then click the Big blue π on the right hand upper corner. The top menu bar will change to mathematical tools and an equation box title "Type equation here." will appear with the text area. Hit that equation box and start writing your equation. It is that simple. Figure 3.2-3 illustrates these steps.
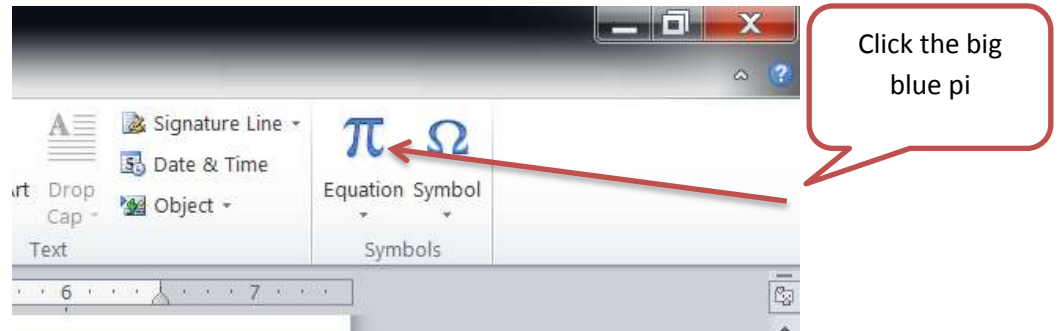

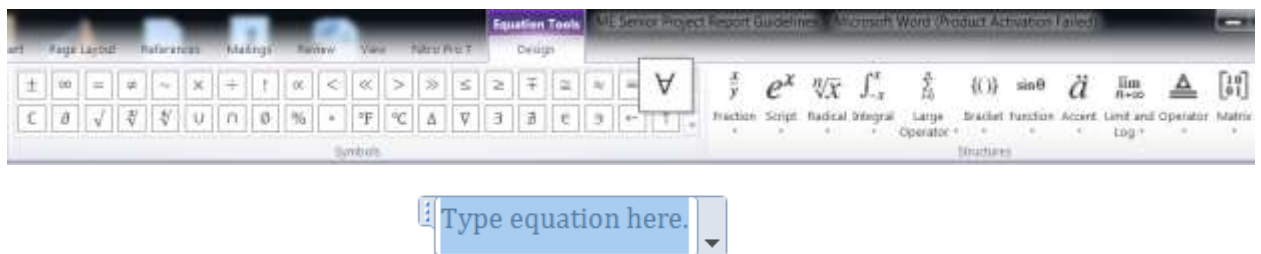Figure 3.2: Click the pi to access the equation editor

Figure 3.3: Equation editor tools and the equation box

- Use the above equation editor to generate or write all your equations or scientific symbols.

3.5 References

References are used to cite your sources and give credit to the written work of others that you have read and used. When you refer to these published works in the text of your report, one can choose one of several formats. However, the ME and EE departments has adopted the following referencing format and the FAC members will enforce the usage of these format.

Wherever needed, references should be specific and to the primary published source material, i.e. to a journal article or conference proceedings or to a book, and not to a web page containing reference to the primary source (i.e. web pages often have a limited lifetime also in general web material is not subject to any quality control in the form of peer review.)

Anonymous work	[Citation number] If there are no authors, corporate author, editor, compiler, or translator, omit the author spot. Begin the entry with *Title of the Book*, year, Publisher, Location.
Example	[1] *Collaborative Writing in industry: Investigations in Theory and Practice*, 1991, Baywood Publishing Co., Amityville, NY.
Book with one author or a chapter in a book	[Citation number] Author's Name, year, *Title of Book*, Publisher, Location. [For chapters in a book, add chapter number (if any) at the end of the citation following the abbreviation, "Chap."]
Example	[1] Saxby, G., 1996, *Practical Holography*, 2nd ed., Prentice Hall, New York, NY, Chap. 6.

Book with two or more authors	[Citation number] For each author, surname followed by initials. List the authors in the order given in the source. Note that commas go between each name, and also that "and" comes before the last name in the list.
Example	[1] J. H. Watt, J. H. and van der Berg, S. A., 1995, *Research Methods for Communication Science*, Allyn and Bacon, Boston, MA.
Edited or translated book	To the standard author entry, simply insert the names of the editor or translator between title and publication information, separated by a comma. Note that, as with authors, you use the editor's/translator's initials, followed by the full surname, omitting professional titles but including personal titles such as "Jr." or "III". Immediately after, identify that person's role by using either Ed./Eds. (editor/multiple editors) or Trans. (covers both single and multiple translators), followed by a comma.
Example	[1] Sarunyagate, D., Ed., 1996, *Lasers*, McGraw-Hill, New York, NY.

Journal article	[Citation Number] Author(s), year, "Article Title," Journal Title, **vol. no**. (issue no.), pp.
Example	[1] Dahl, G. and Suttrop, F., 1998, "Engine Control and Low-NOx Combustion for Hydrogen Fuelled Aircraft Gas Turbines," Int. J. Hydrogen Energy, **23**(8), pp. 695-704.
Web Page	[citation number] Author(s), year, "Title of Web Page." Report Number (if applicable), from url.
Example	[1] McBride, B.J. and Gordon, S., 1996, "Computer Program for Calculation of Complex Chemical Equilibrium Compositions and Applications – II. Users Manual and Program Description," NASA Ref Publ. No. 1311, from http://www.grc.nasa.gov/WWW/CEAWeb/ [1] Danish Wind Energy Association, n.d., from http://www.windpower.org/en/core.htm
Conference Proceedings	[Citation number] Author(s), year, "Article Title," *Conference Proceedings*, **vol**. (if given), year, pp.

Example	[1] Welch, G.E., 2000, "Overview of Wave-Rotor Technology for Gas Turbine Engine Topping Cycles," *Novel Aero Propulsion Systems International Symposium*, The Institution of Mechanical Engineers, London, pp.2-17.
Technical Report	[1] Author(s), year, "Report Title," Report Number (if any) Publisher, Location.
Example	[1] Leverant, G.R., 2000, "Turbine Rotor Material Design – Final Report," DOT/FAA/AR-00/64, Federal Aviation Administration, Washington, D.C.
Thesis/Dissertation	[Citation number] Author, year, "Thesis/ Dissertation Title," Ph.D. thesis OR M.S. thesis, Department, University.
Example	[1] Chan, D.C., 1996, "Effects of Rotation on Turbulent Convection: Direct Numerical Simulation Using Parallel Processors," Ph.D. thesis, University of Southern California.

Standards/Patents	[Citation number] Inventor(s), year, *"Patent Name/Title."* Country where patent is registered, Patent number. **For standards:** Standard Issuing Body, year, "Standard Name," Number.
Example	[1] Seippel, C., 1949, "Gas Turbine Installation," U.S. Patent 2461186. [1] IEEE, 1992, "Scalable Coherent Interface," IEEE Std. 1596-1992.
Personal communications	[Citation number] Author, year, Position, Affiliation, private communication.
Example	1] Jackson, A., 2004, Consultant at Cranfield University, U.K., private communication.

3.6 Plagiarism (Copying or Technical Theft) [3]

Plagiarism is simply copying without citing, which is considered a technical theft. Whatever style of referencing you adopt, it is critical that you are assiduous in acknowledging the sources you have used; failure to do so may lead to suspicions of unfair practice and an

investigation into whether or not your work reflects the standards expected of academic research. Guidance on plagiarism and how to avoid it is available at

http://learningcentral.cf.ac.uk/bbcswebdav/institution/INSRV/Study%20Skills/plagiarism2/new/index.html.

Note that it is seldom sufficient to simply "cut and paste" material from other sources. When you take material from someone else's work, you are doing so because it helps support your argument, or justify decisions you are making. It is therefore essential to make it clear why you have included material from other sources; in other words, you need to critically assess the work of others, whether it is supporting your position or not:

- If the material you are citing from another source supports your position, you must explain why it should be trusted. For example, material from a published journal will, normally, have been peer-reviewed and can therefore be considered to have some validity, according to subject matter experts. Much of what is published on the Internet cannot be regarded in the same way, however.
- You will often find that there are conflicting views in the published material; in such cases you must explain which view you favor and why, before relying on the material to support your position.
- If other writers have taken a different position to the one you support, you must explain why the reader should accept your ideas rather than those proposed elsewhere.

In summary, you need to ensure that you have clearly assessed the relevance of referenced material to the development of your position, or your argument, and demonstrated that you are justified in taking this material to be authoritative.

3.7 Attachments or Appendices

An appendix is like a storage warehouse, the place to put material that needs to be included in the report, but is not essential. Putting material (such as raw data, processed data,

analytical procedures, details of equipment, etc.) at the end keeps the report from being buried in a mass of detail, but keeps all that detail available if needed by any of your various readers. Each appendix is numbered or lettered consecutively and given a title.

Chapter Four

Report Typography

The manuscript of the senior year project should be engineered to meet ABET and departmental requirements and must have a professional appearance; it must have standardized features and should be attractively reproduced. Introductory material, text, and appendices must all be clearly and consistently prepared and must meet the following subsequent sections specifications.

4.1 Text Related Specifications

All the requirements stated in this handbook must be met and adhered to the stated specifications and requirements any violations will result in disapproval by the Format Adherence Committee (FAC) members. Consequently, the Project Committee members will withdraw the violated project from the presentations and file an incomplete grade for the project team members.

Typeface: Type size should be 12-point. Do not use script, or ornamental fonts, use Times New Roman. Print must be letter quality or near letter quality with dark black characters that are consistently clear, crisp, and easily read. Accent marks and other hand annotations must be done neatly in black ink.

Text Specifications	
Chapter title font size	16 bold /all capital
Section font size	13.5 bold /all capital
Sub-section font size	12 bold / word first letter capital
Body text font size	12 Times New Roman

Margins: Left, Right, Upper, and Lower Margins: 1 inch each (setting: Norm Al)

Spacing: One and a half spacing is required in the main body of the manuscript except where conventional usage calls for single spacing; e.g., footnotes, indented quotations, tables, etc.

Word and Text Divisions: Words must be divided correctly at the end of a line and may not be divided from one page to the next. Use a standard dictionary to determine word division. Avoid any heading or subheading at the bottom of a page that is not followed by text.

Language: The report must be in English.

Paper Size: All copies must be on white, A4 or letter-size paper. Note that double-sided copies may be submitted.

Pagination: Each page of the manuscript, including all blank pages, and pages with photographs, table, figures, maps, and computer program printouts should be assigned a number. Consistent placement of pagination, at least one inch from the paper's edge, should be used throughout the manuscript. The following pagination plan may be used:

- For the preliminary pages, use small Roman numerals (i, ii, iii, iv, etc.). The title page does not have a number but counts as page i; the following page is ii and so on.
- For the remainder of the manuscript use continuous pagination for text, illustrations, appendices, and bibliography- use Arabic numbers (1, 2, 3, etc.).
- Figures, tables and other illustrations should be titled as well as numbered (example- Figure 1 "The title of the figure.").

Large Photographs, Maps, and Charts: Large maps and charts should be avoided. Where necessary, they must be folded to 10.5 x 7.5 inches or smaller; they should be in pockets in the bound reports.

Reproducing the Report: Final copies of the report must be submitted in clear and attractive format. Review each copy for evenness and clarity of type, missing pages and misaligned text…etc.

Front Page: check the ME senior year project Template.

Report copies: Four bounded copies (two for EC members, one supervisor and one for PC to keep in the department for ABET) with original signed supervisor and FAC approval forms should be submitted to the PC senior member. One soft copy of the project should also be submitted. This should be inserted in an envelope attached to the back cover of the department copy.