

CE 577 - Term Paper

The objectives of the term paper assignment are to:

1. provide students with an opportunity to develop in-depth expertise in an aspect of solid waste management that is of particular interest.
2. provide an opportunity for some individual interaction between the student and instructor.
3. guide students through the process of planning and executing a substantial project.
4. allow students the opportunity to teach themselves.

The assignment consists of sequential assignments described below.

1. Select a topic to research – a topic should be submitted by **February 14** or earlier if possible. The submittal should include a one paragraph description of your objectives and the type of information that you intend to present. I will be happy to provide some guidance on topics of interest. In starting, it is critical to select a topic that is sufficiently narrow that it can be covered in a semester, yet sufficiently broad that there is literature available. Note that the Web of Science is a scientific literature search tool that is extremely powerful. Use it to confirm that there is ample literature before submitting your proposed topic. The primary sources of articles to be reviewed should be peer-reviewed journal articles and books but not trade publications such as Biocycle, MSW Management and Waste Age. While the latter are quite informative of current trends in solid waste management, they do not hold authors to the same scientific standards as do peer-reviewed journals.
2. Submit a progress report. The progress report should include a preliminary outline of your paper, a list of the references that you have reviewed to date, a short statement of the findings of the paper and your analysis of how this information fits, or does not fit, into your paper. The progress report is due on **March 14**. Meetings/phone calls should be scheduled to discuss your report.
3. Submit the final paper on **April 30**. The final paper should present a critical review of the available literature. This means that you should both summarize and analyze what you read. Do not assume that everything that you read is necessarily correct. The literature review should go well beyond an overview of a given topic. For example, I do not want a review of different techniques for composting yard waste as I will cover them in class. I would be interested in a discussion of the presence of heavy metals or pesticides in compost and how this affects land application rates.

Flexibility

The actual nature of this assignment can be flexible. If you have an idea for something that you would like to do, then present a brief proposal. For example, a student might want to merge this assignment with a design project. Another might want to develop a model of a solid waste unit operation, or of decomposition in a landfill.

The Written Presentation

Once you feel that you have collected enough information to begin writing the paper some planning of the paper's organization will prove helpful. Do not just start writing and assume that you will cover everything that you intended to in an organized manner. Rather, make an outline of the paper that includes subject headings and notes to yourself about what you wish to cover in each section. Think about the outline and modify it until you have convinced yourself that your paper is organized in the most logical manner possible.

One common mistake is for a student to summarize every paper that they have read when in fact; some of the papers may be irrelevant. Be prepared to evaluate what you have read and report only that which strengthens your paper.

The report should be divided into main sections and sub-sections. The actual report format is left to the writer but each report should have at least the following:

1. Abstract - A one paragraph summary of the report which describes the topic of the paper and what can be concluded based on the available research. The summary should provide a busy reader with the key points of the paper. The abstract is not an introduction, it is a summary of the entire paper.
2. Table of Contents - should be included at the beginning of the report
3. Introduction - Explain the issue that you have studied and the reason why it is an important area to study. Relevant background information and theory required to understand the paper should be presented in a subsection of the introduction.
4. References – Please use the ‘Harvard Referencing System’ you can find a description of it online. Alternately, you may use the system specified for the journal Environmental Science and Technology. When referencing a book, be sure to give the relevant page numbers, when referencing a URL give a date where the URL was last accessed.
5. Appendices - Use an appendix for presentation of a lot of data that is not critical to understanding the paper and is of interest to only some people. Equations may also be derived in an appendix.

Recommended Reading: Strunk, William and E. B. White, The Elements of Style, MacMillan Publishing Co., N.Y.

Example Topics

- The presence of trace organic compounds in landfill gas
- A comparison of available life-cycle impact assessment models
- Alternate techniques for waste characterization
- Case studies of source reduction based on waste characterization. For example, what has been done to reduce Hg or Cd in the waste stream.
- Compost stability
- Landfill stability
- Alternate landfill cover designs
- Anaerobic digestion of solid waste
- European waste management initiatives
- A comparison and analysis of recycling programs around the world
- A synthesis of data on solids decomposition in landfills
- The use of biocovers to promote methane oxidation
- An estimate of marine debris resulting from catastrophic events
- A review of the management of solid waste on cruise ships