CATALOG DESCRIPTION
This course fulfills the University’s Junior Year Writing Requirement for students in the College of Engineering. Students will be introduced to traditional technical and scientific writing forms, including outlines, summaries, mechanical and technical descriptions, extended technical definitions, research reports, and proposals. Grammar review, oral presentations and on-line research are significant components of this course.

COURSE OBJECTIVES
Students will develop the ability to communicate effectively using written and oral communication skills; gain competency in English grammar, rhetoric, and composition; learn traditional scientific and technical forms of writing encountered in academic engineering disciplines and professional practice; develop on-line and hard copy engineering research skills; work effectively in groups on written and oral presentation projects; and increase knowledge of ethical and professional responsibilities.

PREREQUISITE
English 112: College Writing

TEXTBOOKS
Required


Recommended

Although it is not required, the MLA Handbook is a valuable resource for all college students.

All textbooks are available at Atticus Bookstore, 8 Main Street, Amherst.

ASSIGNMENTS
- Outlines and Summaries
- Mechanical and Technical Descriptions
Technical and Scientific Definitions; Scientific Metaphors
Oral Presentations of Research
Proposals

ADDITIONAL ASSIGNMENTS
In-class and out-of-class writing assignments, in-class review of student work, two oral presentations of student work.

GRAMMAR REVIEW
Grammar quizzes, exercises, and presentations based on assigned readings are a regular feature of this course.

PLAGIARISM AND ACADEMIC DISHONESTY
Course instructors follow the guidelines on academic dishonesty and plagiarism as defined in the Undergraduate Rights and Responsibilities Handbook issued by the University of Massachusetts. In this course, particular attention is addressed to on-line plagiarism, which includes submitting papers written by other authors and purchasing papers from on-line paper mills. This semester, Turnitin.com, an on-line, plagiarism-detection software program will be available to all course instructors. Periodically, students in this course may be asked to submit their assignments on disks for uploading into Turnitin.com. Additional information on plagiarism detection software is available to students.

Undergraduate Rights and Responsibilities can also be read on-line at www.saris.admin.umass.edu/rights.

*This is the standard syllabus for Engineering 390W: Writing In Engineering, the University’s Junior Year Writing Program requirement. Sections will vary, however, according to each instructor’s individualized approach to presenting the course material, and will include some, or all, of the following: additional handouts, additional reading assignments, additional in-class and out-of-class writing assignments, on-line instruction in the University’s computer labs, and student conferences.
ASSIGNMENT 1
OUTLINES AND SUMMARIES

Engineers are often called upon to summarize their research and present it to an audience. As an engineer, and while pursuing an engineering degree here at the University of Massachusetts, you may be asked to write some, or all, of the following kinds of summaries: outlines, abstracts, laboratory reports, memoranda, progress reports, recommendation reports, proposals, field notes, and instructions. You will also be asked to present your research orally in succinct, coherent, 20-minute reports. The ability to clearly and accurately summarize information is a requirement in your academic engineering pursuits as well as your professional engineering career.

ASSIGNMENT 1, READING

ASSIGNMENT 1, WRITING
2. Using the MLA documentation style guidelines, make an informal outline of the essay.
3. Draft a two-to three-page summary of the article.
4. Bring your outline and summary to class for review and in-class discussion and revision.
5. Write a final, two-to three-page, double-spaced summary of the essay. The outline is due with the final summary.
ASSIGNMENT 2 **
TECHNICAL DESCRIPTIONS, ORAL PRESENTATIONS

ASSIGNMENT 2, READING

ASSIGNMENT 2, WRITING
In class, get into groups of three or four students.

Assume that your group works in the product-development division of a large and diversified manufacturing company. Your division has just thought of an idea for a consumer item with a potentially vast market. Your group’s assignment is write a two- to three-page, double-spaced memorandum addressed to the manager of the company in which you do the following:

Using a general outline as a model, develop an objective description. Include (a) all necessary visuals or (b) a brief and a rough diagram for each visual or (c) a “reference visual” (a copy of a visual published elsewhere) with instructions for adapting your visual from that one. (If you borrow visuals from other sources, provide full documentation.)

Remember, you are simply describing the item, its parts, and its function: do not provide directions for its assembly or operation.

ASSIGNMENT 2, READING FOR ORAL PRESENTATIONS

ORAL PRESENTATIONS
Assume that the class members are a group of venture capitalists eager to hear about your new design. Their financial investment is necessary if you are to develop, test, manufacture, and distribute your invention; therefore, you must convince them that your product is unique, and that consumers will want to buy it. Determine who might purchase your product. For example, fire departments might be interested in a sled that could be pushed onto a frozen lake to rescue people. Do some research on your target consumer: how much money do they traditionally spend on items such as yours, or if your item is unique, how much might they spend?

Use at least two graphics or visuals in your oral presentation. You may use any method of presentation, from overhead transparencies to PowerPoint®. Some recent student presentations have included original film clips, interviews, music, and computer games. Be creative.
**Note on Assignment 2.**
The Course Director maintains a file of papers previously submitted for this assignment. All student papers will be checked against this file, as well as on-line databanks of product descriptions. Some examples of items or objects on file that should not be resubmitted are the following: kegs that talk, serve hot food, play music, or convert into sofa beds; GPS key locators, car locators, or keg locators; pillows that shake you awake, sing you to sleep, or answer e-mail; alarm clocks that run on plutonium; clothing that heats up or cools off; washing machines that wash, dry, dye, resize, or fold clothes; microwave showers; toothbrushes, eyeglasses or hearing aids that plug into doctors’ Internet sites; optical text readers; multi-compartment microwaves; bottle caps for the arthritic; and technologically sophisticated windows and doors.

Also, please do not reinvent items or products already in existence, such as pens that write upside down or hearing loss simulators, unless you make significant modifications to the original design.
ASSIGNMENT 3 ***
TECHNICAL AND SCIENTIFIC DEFINITIONS

A definition explains the precise meaning a person intends to convey when using a specific term. Definitions are particularly important when specialists in one field must use terms to communicate with people who are not in the same specialty. Sometimes a term is so complex or important that its definition needs to be extended to more than a brief phrase or sentence. Any definition that is longer than a sentence or two is called an extended (also called an expanded) definition. An extended definition may in itself make up an entire document, such as a report or memo, or a large portion of that document.

Assignments 3 and 4 explore language, context, metaphor, and meaning in scientific discourse. As an engineer you often will be asked to define, explain, or illustrate terms, procedures, or processes in order to make them comprehensible to people without your engineering expertise. For example, when the Five-College Federal Credit Union was recently built in Amherst, the engineers on the project had to communicate with some of the following people: town officials, architects, budget committee members, watershed preservation review board members, the EPA, local transportation committee members, and, in a local town meeting, the tax-paying residents of Amherst. All of these groups possessed varying degrees of technical knowledge; therefore, it was essential that the engineers be able to present their information in precise, informative, comprehensible language.

ASSIGNMENT 3, READING

ASSIGNMENT 3, WRITING
In a three-page, double-spaced paper, write an expanded definition of one word or term common to engineering and one other academic discipline (chemical engineering and psychology, for instance) such as “result,” “value,” “formula,” “procedure,” “apparatus,” “experiment.” Feel free to choose others. Explain the similarities and differences in usage. Consider the following steps for this assignment:

1. Locate the etymology and history of the word or term by determining its basic elements, by tracing its transmission from one language to another, and by defining its cognates in other languages.

*The Oxford English Dictionary on Historical Principals* (OED) is especially helpful in providing the etymology and history of a word or term. *The Barnhart Dictionary of Etymology, The Etymological Dictionary of the English Language*, books explaining the history of words and terms (e.g., Isaac Asimov’s *Words of Science and the History Behind Them*, 1959), textbooks, on-line sources (see below), and scholarly
journals about linguistics will also be helpful. You can also look at *Merriam-Webster* on-line.

2. Choose examples of how the word or term is used from any source or combination of sources such as textbooks, journal articles, newspaper accounts, popular magazines and on-line sources.

3. Compare and contrast how the word or term is used in these sources. Feel free to quote material with proper attribution. Consider the following questions -- you are not required to answer them directly:

- Can the word or term be used to explain or describe a similar phenomenon in different disciplines? For example, is the word “significant” used in the same way to describe experimental results in physics and experimental results in social psychology?

- How did these similarities and differences develop historically?

- Would the technically specific use of the term create confusion for a non-specialist audience?

- Would a curious non-specialist audience typically encounter this term? Under what circumstances?

- How is our understanding and treatment of otherwise distinct phenomena (say a tropical depression and an economic depression) shaped by using a common term or description? For instance, should one treat an economic depression like a natural occurrence? Would changing the term change the way we treat the phenomena? Would, for example, clinical depression be treated differently if not identified as a unique condition?

Feel free to speculate based on evidence you have gathered in your research.
ASSIGNMENT 4 ***
TECHNICAL AND SCIENTIFIC METAPHORS

We use metaphors to help define our natural and scientific world and explain our behavior and attitudes. As Anne Eisenberg says, “Once metaphors were the stuff of poetry not proteins – but no more. You are just as likely these days to run across them in a scientific review as in a sonnet. Despite the 300-year effort by Hobbes, Locke and a legion of logical positivists to confine them to the English classroom, metaphors are suddenly inescapable in technical prose. From chemical scissors and solvent cage to optical molasses and squeezed light, from DNA fingerprints to read-only memory, metaphor is out of the scientific closet’ (*Scientific American*, May 1992, p.144).

ASSIGNMENT 4, READING


ASSIGNMENT 4, WRITING

Write a three-page, double-spaced paper in which you identify and explain the function of metaphors in your engineering discipline. Here are some questions to help focus your analysis:

1. What are the metaphors attempting to help define? Elaborate on the concept and how the definition helps to explain the concept. How do they help explain a concept to non-specialists? How are metaphors used among specialists in your engineering field to help visualize concepts?

2. Many people think that metaphors are only used in poetry and literature. We use them so often that we are not even aware we are doing so. What are some metaphors you use in your everyday life? Give examples of them and elaborate on their meaning. Are you aware that you are using metaphors? Do they lose their meaning when they become clichés?

3. Can metaphors simplify concepts too much? Do they serve a necessary function even within their limitations? What might some of the dangers be in using metaphors? What might some of the advantages be? Give specific examples from your field of engineering to prove your point.

4. Look closely at some of the terms used in science or technology. Which ones classify as metaphors? To find terms in a scientific or technical area, feel free to consult a specialized dictionary or encyclopedia.

Some specialized dictionaries and encyclopedias:
Biolexicon: A Guide to the Language of Biology
Henderson’s Dictionary of Biological Terms
Encyclopedia of Chemistry
Dictionary of Computing
Encyclopedia of Electronics
The Language of Biotechnology: A Dictionary of Terms
Academic Press Dictionary of Science and Technology
McGraw-Hill Encyclopedia of Science and Technology
Encyclopedia of Computer Science and Technology

***Note on Assignments 3 and 4. The Course Director maintains a paper file of previously submitted assignments. All student submissions will be checked against this file, and against on-line databases of similar topics. Some of the technical terms on file include stress, formula, fusion, entropy, equilibrium, dot, result, value, solution, result, viscous, memory, to list but a few. While you are free to investigate these words in an original paper, all papers will be checked against this file. If you plagiarize (use a previously submitted paper) you will fail the assignment and also risk failing the course.

Acknowledgments
Information for this assignment was adapted from the following sources:
ASSIGNMENT 5
FINAL PROPOSALS
ORAL PRESENTATIONS

The U.S. Department of Energy is creating a facility in Nevada for storing nuclear defense by-products and waste materials that will remain radioactive for more than ten thousand years. Visit the official DOE site at http://www.ymp.gov and explore some of the links. How can future generations be warned against drilling in this area or disturbing the material buried more than two thousand feet underground -- especially when these distant generations might differ radically in use of language and symbols or in technological and scientific awareness? What system of icons and obstacles would most likely endure through the centuries and convey a clear warning to any culture at any time?

ASSIGNMENT 5, READING
4. The Work of Edward Tufte (Handout)
5. “The Value of Science,” Richard Feynman (Handout.)

ASSIGNMENT 5, WRITING
1. Working in groups of four or five, your assignment is to devise a system of obstacles and visual warnings. You will present your designs to the class.
2. In a proposal addressed to the U.S. Department of Energy, prepare a detailed proposal that includes a full set of visuals depicting your plan. Your proposal should include a Letter of Transmittal, Title Page, Abstract, Table of Contents, List of Figures, List of Tables, List of Terms, Introduction, Materials and Apparatus (including software), Procedure, Results, Discussion of Results, Conclusion, Recommendations, References (works cited and works consulted), and Appendices. Your final proposal should be roughly ten pages.

Acknowledgments
Information for this assignment was adapted from the following source: