excerpted from CHAPTER 1

WRITING-INTENSIVE COURSES

> *But if thought corrupts language, language can also corrupt thought.*
> *—George Orwell*

At some point during college, you will probably be enrolled in a writing-intensive course (also called w-courses or writing-across-the-curriculum courses). In a nutshell, the aim of these courses is to help you learn about a subject by researching and writing about it, and in some courses you actually produce the kinds of documents that are common to your discipline beyond graduation, thus helping you to get ready for the workplace. Some writing-intensive courses require a series of short assignments culminating in a longer report, while others require both oral and written presentation and are akin to a senior thesis. Many w-courses also involve substantial e-mail correspondence between you and a professor or you and other members of a project team. In any case, all writing-intensive courses provide you with ample opportunity to receive concrete feedback on your writing from your professor.

All that said, it must be noted that, from both the professor's and student's point of view, writing-intensive courses often mean extra work and higher standards. Yet many professors are happy to teach them, because it becomes clear from the course's very definition that good communication skills are key to good performance. While you may groan at the prospect of both the workload and standards of a writing-intensive course, they do serve to underscore the fact that writing will matter greatly in any profession you choose.

Simply put, this chapter is designed to help you survive writing-intensive courses. Individual sections in this chapter are devoted to the types of forms you will probably be using in any course involving technical writing, whether it is designated as writing-intensive or not. By reviewing the stylistic tips and the models herein, and following any advice your professor gives to the letter, you should be able not just to breathe a little easier in any writing-intensive course that you take, but to thrive.

Outlines

Most students see outlines as a royal pain. But not only are they often central to writing-intensive courses, they are frequently required on the job; for example, a project manager may require each individual team member to outline and compose different portions of a joint report. Do not be seduced by the belief that an outline is totally useless or simply mechanical; this will only be true if you make it so.

The Value of Outlining

Outlines foster coherence by helping the writer to:

- plan both the sequence and hierarchy of information.
- make decisions about organization and content without the distraction of all the details of composition.
- avoid repetition, digression, poor emphasis, and poor flow.
- improve general organizational skills.

Considered in the light of the above ideal, outlines can be as fundamental to the writer as a flowchart is to the computer programmer. Good writers use outlines to flesh out their ideas, organize their thoughts, and discover their gaps.

Outlines can be writer-centered, of course, to aid you in expressing your ideas, but the material presented here assumes a reader-centered outline—i.e., one written for the eyes of a professor who will use the outline to provide you with some written feedback. As long as the mechanics of the outline are correct and the details concrete, most professors will not be too finicky about the quality of your outlining skills, and will simply take the opportunity to give you quick feedback on your ideas and organization.

Style for Outlines

When drafting an outline, keep the following stylistic tips in mind:

- Compose a thorough working title for your paper, with the title offering a window into the paper's purpose and content.
- Double-space your type to allow room for comments.
- Present headings as scientific categories and assertions rather than as informal speculations (i.e., "How Manganese Oxides Trap Heavy Metals" rather than "Just How Do Manganese Oxides Trap Heavy Metals?").
- Avoid presenting section headings as questions unless the questions themselves are especially compelling.
- Be certain that headings work in relation to one another.
- Avoid the use of acronyms in headings—write the material out.

Even if you are unsure of what material to provide under each heading, include a draft of each major heading to demonstrate your overall plan and to encourage professor feedback.

Mechanics of Outlining

The mechanics of outlining are simple. The two most common forms used are the Arabic System and the Decimal System. Indentations of a tab (1/2-inch or five spaces) are used to designate hierarchy of material, and order is indicated by sequential numbers, letters, or Roman numerals. Headings at the left margin are typically referred to as first-level headings, those indented one tab as second-level headings, and so on. What follows is a simple depiction of the two systems, without the outline text:

DECIMAL SYSTEM

1.0 _____
    1.1 _____
    1.2 _____
2.0 _____
    2.1 _____
        2.1.1 _____
        2.1.2 _____
            2.1.1.1 _____
            2.1.1.2 _____
    2.2 _____
    etc.

ARABIC SYSTEM

I. _____
    A. _____
    B. _____
II. _____
    A. _____
        1. _____
        2. _____
            a. _____
            b. _____
    B. _____
    etc.

Note how the Decimal System requires a period between numbers, and note that, for both systems, the rising sequence of the numbers, letters, or Roman numerals is determined by the level of the heading under which a character falls.

Sample Outline

The sample outline that follows comes from the field of geology, and its first-level headings reflect a common approach writers take when organizing their original research into a senior thesis. As often happens, the writer's first-level headings are somewhat generic, while the second- and third-level headings are more specialized to the subject matter of the essay. Note also the specificity of the title, of each section heading, and the relationships of the headings to each other.

OUTLINE

"The Petrographic Characteristics of the Elk Basin Sandstones
and Their Correlation with Joint Spacing"
by Paul Peat

Abstract

I. Introduction
- A. Distribution of Joints about Folds
- B. Joint Spacing and Fracture Porosity in the Petroleum Industry
- C. Effect of Lithology on Joint Development
- D. Objective
  - 1. Perform Petrographic Analysis of Elk Basin Sandstones
  - 2. Establish Correlation between Joint Spacing and Petrography

II. Background Literature
- A. Definition of Fracture Spacing Ration
- B. Past Work on Fracture Spacing Ration in Sedimentary Rocks
  - 1. Fracture Spacing Ration in Various Geological Localities
  - 2. Fracture Spacing Ration as a Function of Rock Properties
- C. Possible objective of interpreting the record of the Eemain interglacial.

III. Geologic Setting of Big Horn Basin
- A. Stratigraphy of Big Horn Basin
- B. Structural Geology of Big Horn Basin
- C. Description of Elk Basin

IV. Experimental Technique
- A. Sampling of Fracture Spacing Ration
- B. Sampling and Preparation of Thin Sections
- C. Point Counting Technique

V. Results
- A. Formation versus Composition
- B. Formation versus Porosity
- C. Bed Thickness versus Porosity and Composition

VI. Discussion of Correlation between Point Counting Data and Fracture Spacing Ration
- A. Composition versus Fracture Spacing Ration
- B. Porosity versus Fracture Spacing Ration

VII. Conclusions

VIII. References

Essays and Term Papers

When you are first faced with the task of writing a long essay or term paper it can be intimidating, but you make your job and the reader's job easier by following the general advice that follows. Of course, if your professors offer you any specific guidelines about paper writing be sure to follow them first. Otherwise, incorporate the advice that follows into your papers wherever appropriate.

Mechanics

Of course, papers should always be typed, double-spaced on 8-1/2 x 11 paper on one side of the page only, and letter-quality print or better is always expected. Often you are expected to supply a cover sheet giving the date, your name, the title of the paper, the class, and the professor's name. Tables and figures should be numbered consecutively throughout the text, and if there are a good number of them, then separate lists of tables and figures at the beginning of the paper may be expected. Tables and figures should always have descriptive captions, and if they come directly from sources, the sources must be specifically credited in the captions with the same citation style that you used throughout the paper.

Title

Many writers do not settle on a final title until the paper is completed, but choosing a working title as you compose will certainly help you to focus. The final title should be succinct and definitive, individual and informational. Clearly, the title "An Overview of the Hydraulic Fracturing of Methane-Bearing Coal Formations" is more complete, satisfying, and accurate than "Hydraulic Fracturing." The title is important because it announces the paper's specific content and typically serves as a pathway to the paper's thesis.

Introduction

Your introduction is your opportunity to be at your most individual. You should get your reader's attention immediately by announcing the paper's subject or by launching into a relevant scenario or narrative that informs or illustrates your overall argument. A paper illustrating the costly effects of poor mine design, for instance, might open with the scenario of how a poorly designed pillar at a salt mine in Louisiana once collapsed, fracturing the surface above and draining an entire lake into the mine. A paper on the supply and demand of nickel might begin by straightforwardly announcing that the paper will explain the uses of nickel, detail its market structure, and use data to forecast the future supply and demand of the metal.

In brief, a paper's introduction should *define* and *limit* the paper's scope and purpose, indicate some sense of organization, and, whenever possible, suggest an overall argument. Another important principle in technical writing is that the introduction should be *problem-focused*, giving the reader enough background so that the paper's importance and relationship to key ideas are clear. A rule of thumb about the introduction's length: about 5-10% of the entire paper.

As examples of how creative an introduction can be, here are the opening lines from a geography paper and a paper on optics, both of which use narrative technique to arouse our interest. Note how the first excerpt uses an "I" narrator comfortably while the second excerpt does not use "I" even though the writer is clearly reflective about the subject matter. The first excerpt is from a paper on the generic nature of America's highway exit ramp services; the second is from a paper on shape constancy.

> The observation struck me slowly, a growing sense of déjà vu. I was driving the endless miles of Interstate 70 crossing Kansas when I began to notice that the exits all looked the same. . . .
>
> Our eyes often receive pictures of the world that are contrary to physical reality. A pencil in a glass of water miraculously bends; railroad tracks converge in the distance. . . .

Thesis Statement / Objective

Most papers have outright thesis statements or objectives. Normally you will not devote a separate section of the paper to this; in fact, often the thesis or objective is conveniently located either right at the beginning or right at the end of the Introduction. A good thesis statement fits *only* the paper in which it appears. Thesis statements usually forecast the paper's content, present the paper's fundamental hypothesis, or even suggest that the paper is an argument for a particular way of thinking about a topic. Avoid the purely mechanical act of writing statements like "The first topic covered in this paper is x. The second topic covered is y. The third topic is . . ." Instead, concretely announce the most important elements of your topic and suggest your fundamental approach—even point us toward the paper's conclusion if you can.

Here are two carefully focused and thoughtfully worded thesis statements, both of which appeared at the ends of introductory paragraphs:

> This paper reviews the problem of Pennsylvania's dwindling landfill space, evaluates the success of recycling as a solution to this problem, and challenges the assumption that Pennsylvania will run out of landfill space by the year 2010.
>
> As this paper will show, the fundamental problem behind the Arab-Israeli conflict is the lack of a workable solution to the third stage of partition, which greatly hinders the current negotiations for peace.

Body Paragraphs / Section Headings

Never simply label the middle bulk of the paper as "Body" and then lump a bunch of information into one big section. Instead, organize the body of your paper into sections by using an overarching principle that supports your thesis, even if that simply means presenting four different methods for solving some problem one method at a time. Normally you are allowed and encouraged to use section headings to help both yourself and the reader follow the flow of the paper. Always word your section headings clearly, and do not stray from the subject that you have identified within a section.

As examples, I offer two sets of section headings taken from essays. The first is from Dr. Craig Bohren's "Understanding Colors in Nature" (1), which appeared in a 1990 edition of *Earth & Mineral Sciences*; the second is from a student's paper on the supply and demand of asbestos.

Section Headings From "Understanding Colors In Nature"
Color By Scattering: The Role of Particle Size
Color By Scattering: The Positions of Source and Observer
The Blue Sky: The Role of Multiple Scattering
Color By Absorption in Multiple-Scattering Media
Color by Absorption: Microscopic Mechanisms are Sometimes Elusive

Section Headings From "Asbestos: Supply and Demand"
Industry Structure
The Mining and Properties of Asbestos
World Resources and Reserves
Byproducts and Co-products
Economic Factors and Supply and Demand Problems
Uses of and Substitutes for Asbestos
The Issue of Health on Supply and Demand

Just by considering the section headings in the above examples, we can begin to see the fundamental structures and directions of the essays, because both sets of headings break the paper topic into its natural parts and suggest some sort of a moving forward through a topic. Note how these headings—as all section headings should—tell us the *story* of the paper and are worded just as carefully as any title should be.

Most importantly, then, you must use your section headings in the same way that you use topic sentences or thesis statements: to control, limit, and organize your thinking for your reader's sake.

Conclusion

Most papers use "Conclusion" as a heading for the final section of the text, although there are times when headings such as "Future Trends" will serve equally well for a paper's closing section. When you are stuck for a conclusion, look back at your introduction; see if you can freshly reemphasize your objectives by outlining how they were met, or even revisit an opening scenario from the introduction in a new light to illustrate how the paper has brought about change. Your conclusion should not be a summary of the paper or a simple tacked-on ending, but a significant and logical realization of the paper's goals.

Beware of the temptation to open your final paragraph with "In conclusion," or "In summary," and then summarize the paper. Instead, let your entire conclusion stand as a graceful termination of an argument. As you write your conclusion, concentrate on presenting *the bottom line*, and think of the word's definition: *a conclusion is an articulated conviction arrived at on the basis of the evidence you have presented*.

What follows is an excerpt from a conclusion to a paper entitled "Exercise in the Prevention and Treatment of Osteoporosis in Women." Note how the conclusion reflects directly on the paper's hypothesis and spells out the bottom line, gracefully bringing closure to the paper's argument:

> The majority of evidence presented in this paper supports the hypothesis that exercise positively affects bone mineral density in both premenopausal and postmenopausal women. Significantly, exercise has been shown to increase bone mineral density in premenopausal women even after the teenage years, and it preserves the bone mass achieved in the following decades. There is also evidence that exercise adds a modest, yet significant amount of bone mass to the postmenopausal skeleton. As these findings demonstrate, women of all ages can benefit by regular weight-bearing exercise, an increased intake of calcium-rich foods, and—for postmenopausal women—the maintenance of adequate estrogen levels. For all women, it is never too late to prevent osteoporosis or lessen its severity by making appropriate lifestyle choices.

References

Any sources cited must be correctly listed on a References page using the Author-Year or Number system (see Chapter 6).

I never let schooling interfere with my education.
—Mark Twain

Technical Reports

Particularly for those of you in engineering fields, you might find the reading of journal articles none too stimulating (other than the occasional exciting references to hot presses, cool gels, quickened pulses, or body melds). Nevertheless, at their best, the journal articles you must read are certainly important and carefully crafted. The rigid-seeming format and objective style of scientific reports lend them a universal utility so that readers from various disciplines can readily access and use the complex information. Your professors will confirm that busy scientists (who can sometimes be characterized as "reader-hostile") rarely read these reports linearly—many readers cut right to "Results and Discussion" or look over the tables and figures before reading anything, then jump around to those bits of the report that are most relevant to their particular needs. Often, their goals are to rapidly exclude information they do not want (or do not trust).

In light of the above realities, it is especially important for you to write reports in a fashion acceptable to a journal in your field. As you prepare technical reports for your writing-intensive courses, you have built-in slots in which to put your information, and you plug in to a tried and proven recipe that has evolved over many years. Understanding this recipe and conforming to it will help you to organize your complex information as well as meet your reader's specific and sophisticated needs. For a more intensive and much fatter look at this recipe from an editor's point of view, check out "The Universal Recipe For Scientific Reports," reprinted in Chapter 9 of this manual. In briefer form, what follows are guidelines that you can apply as you prepare technical reports for your classes.

Mechanics

Of course, reports should always be typed, double-spaced on 8-1/2 x 11 paper on one side of the page only, and letter-quality print or better is expected. Unless you are instructed otherwise, it is usually standard to include a cover sheet giving the date, your name, the title of the paper, the course, and the professor's name. Tables and figures should be numbered consecutively throughout the text, and, in a thesis or long report, separate lists of tables and figures are normally included at the beginning of the paper. Tables and figures should always have descriptive captions, and if they come directly from sources then the sources must be properly credited in the captions. Never present tables and figures without some useful interpretation of them in the text.

Title

It is always necessary to have a highly concrete title consisting only of words that contribute directly to the paper's subject. Be sure that the title contains no filler and includes few abbreviations or acronyms, yet also be certain that it is complete. "Sol Gel Method" is clearly incomplete compared to "The Synthesis of NZP by the Sol Gel Method." Of course, it is possible to overdo specificity as well: "The Role of Solid Oxide Fuel Cells in the Scientific Search For Energy Alternatives as Necessitated by the Recent Middle East Crisis" is painfully excessive and should be reduced to its essential elements.

Abstract

Most reports require an abstract—a condensed summary of the report's contents. In a journal article, more people will read the abstract than any other part of the paper, so its succinctness and accuracy are vital. The abstract is always self-contained, and is sometimes presented as a separate page. The best abstracts do these things, usually in this order:

- summarize the specific nature of the investigation;
- identify the rationale behind the investigation;
- present the important findings and most significant overall data;
- briefly interpret the pertinent findings.

By necessity, abstracts are often written last, and a good rule of thumb is that the abstract is less than 5 percent of the paper's total length. In a thesis, an abstract should always fit on one page if possible. Passive voice and past tense verbs are appropriate for the purposes of summary, although many journals now print abstracts in the present tense with active voice. What follows is a short excerpt from the opening of an abstract. Note how the first sentence summarizes the nature of the investigation, while the second identifies the rationale:

> This study determines the locus of rifting at the southern end of the Eastern Branch of the East African Rift System within northern Tanzania. Here, the Eastern Branch diverges into a 300-km-wide area of block faulting, and consequently it is uncertain whether the rifting extends seawards across the Tanzania continental shelf or directly southwards into central Tanzania. In this study, the locus of rifting is investigated by . . .

Introduction

The introduction should offer immediate context for the reader by establishing why the problem being studied is important and by describing the nature and scope of the problem. You should describe your specific approach to the problem and establish how your investigative work meshes with the needs of the field or with other work that has been done. The funnel system—moving from a broad approach to a gradually narrowed scope—is highly recommended here. Present tense is also highly favored, especially as you present accepted scientific truths and the objectives of the report. Introductions range from one to several pages in length, and must always include a clearly worded account of the report's objective, usually at the exact end of the introduction (Some writers even include a short separate subsection labeled "Objective"). Most journals allow "we" or "our" to be used in the introduction, especially as you outline your objectives or summarize the common goals of researchers.

Here is an ideal opening sentence from an introduction; note how it launches the reader directly into the science:

> To produce highly reliable metal-ceramic joints, we must fully understand the joining mechanisms. Therefore, today's ceramic scientists aim to . . .

Literature Review

When articles appear in journals, the most noteworthy literature will usually be reviewed only briefly in the introduction or as it becomes relevant. In technical reports and theses for your classes, however, an entire section of your paper may well be devoted to a literature review. Literature reviews range from exhaustive searches to summaries of only the most germane articles, but the fundamental objective is always the same: to establish the history of the problem being investigated by summarizing the WHAT, HOW, and WHY of the work that has already been done. Writing a literature review often requires you to establish relationships among researchers and to condense many pages of published material into one short original paragraph. Therefore, your ability to assimilate material and, in effect, tell your own story with it, becomes critical.

Stylistically, literature reviews are often written in the past tense, but many authors favor the present tense when the research being summarized was completed recently. Passive voice may seem tempting to use, but active voice will serve you well here, because you can smoothly place the names of authors into the subject slot of the sentence:

Yoldas and Lloyd (1999) propose a chemical polymerization technique for the preparation of NASICON gels.

Experimental / Methods / Procedures

Any of the above titles will usually do for this section. The goal is to summarize the WHAT, HOW, and WHY behind your specific experiment, with particular emphasis on the WHAT and HOW so that other researchers can repeat your procedures if they so desire. As necessary, this section includes a description of the relevant apparatus and materials used, and photographs and

diagrams could be used, sparingly, to help clarify the procedures.

Stylistically, passive voice and past tense verbs are essential in this section, but be sure that your sentences are written efficiently and contain simple subjects and verbs when possible. The basic form of directly saying "what was done; why it was done that way" should be used over and over in the "Experimental" section.

Here is an ideal sentence from the "Experimental" section of an engineering report:

> After the dispersion thickened it was poured into molds coated with Vaseline to prevent sticking.

Finally, subsections, perhaps numbered, are often used to aid in the organization of the material. For example:

2.0 EXPERIMENTAL
- 2.1 Apparatus
  - 2.1.1 Heat treatment furnace
  - 2.1.2 Tensile testing device
- 2.2 Materials

Results

For most readers, this is the most important section of the report—your readers must easily find your results in order to interpret them. Here you straightforwardly present the results of your experiment, usually with minimal discussion. Naturally, the use of tables, graphs, and figures is especially enlightening here, as are explanations of how data were derived:

> The conductivities of the top and bottom values for each measurement were averaged and the results are listed in Table 3.

Take care not to include your experimental methods here—that is the job of the previous section.

Discussion

Often this section is combined with "Results" into one "Results and Discussion" section; this allows you to interpret your results as you summarize them. Logical deductions must be made, errors of or ambiguities in the data should be discussed, and even causal relationships must be confirmed. It is important here not to rely on a table or figure to do the work for you—you must outrightly and concisely interpret. Beware of making sweeping generalizations or unfounded statements. Again, passive voice may seem tempting here, but active voice can be highly valuable, especially as you make a logical assertion:

> Obviously, the formation of the protective layer prevented rapid oxidation.

As a rule, use past tense to summarize your actual results; use present tense to present established facts or present your interpretations ("The helium sintering data show . . .").

Finally, consider turning back to the key literature of your introduction or literature review in this section. Enlighten your readers (and perhaps even elevate your work) by discussing your results in relation to the published results of others.

Conclusions

In "Discussion" you supplied your reasoning; now you present the exact conclusions you have arrived at as they relate to your experimental objectives. Conclusions may be listed and numbered, and it should be made clear how they contribute to the understanding of the overall problem. In a sense, you are going back to the big picture provided by your introduction now, incorporating your conclusions into that picture, even suggesting where more work is needed. This section may be short—often about the same length as the abstract.

The following is an excerpt from the "Conclusions" section of a report:

> These results confirm the hypothesis posed in the Introduction: that the shock sensitivity of this explosive is probably not due to the weakening of the phenyl ring by the substituents. It is possible, however, that mechanical properties such as the coefficient of friction, uniaxial yield stress, and hardness greatly influence the explosive's shock sensitivity. Further work is needed in this area to determine . . .

Acknowledgments

If appropriate, briefly recognize any individual or institution that contributed directly to the completion of the research through financial support, technical assistance, or critique. In a thesis, this section may appear just before the introduction.

References

All sources cited must be correctly listed on a References page using the Author–Year or Number system (see Chapter 6).

Appendices

If necessary, use an "Appendices" section to present supplementary material that was not included in the main body of the report because it would have detracted from the efficient or logical presentation of the text, usually either by sheer bulk or level of relevance. A typical appendix would be a list of organizations relevant to the material of the report, or a list of symbols used in the text, or the derivation of an equation that was used in the text but could not be referenced because it did not originally appear in a standard text. As with figures and tables, appendices should be numbered or lettered in sequence; i.e., "Appendix A, Appendix B," and so on.

excerpted from CHAPTER 6

USING SOURCES

> *Thank you for sending me a copy of your book. I'll waste no time reading it.*
> *—Moses Hadas*

This chapter is an especially important one. With the explosion of available on-line information that has emerged since Al Gore invented the internet ;-), many students enter college with the attitude that they will never set a single toe in any library that has a hard-surface floor and stacks of shelved books. Indeed, it is possible to write many college papers using only internet resources, and many professors embrace the internet by assigning papers that promote or demand its use. Modern libraries must and do scramble to keep up as well, subscribing to on-line journals and CD-ROMs so that students can work in virtual space and download to their desktops with a single click of the mouse.

So how do we address this issue of effectively using and documenting sources, whether internet or print resources? The answer lies in applying professional standards to your work, recognizing how your research and writing process inform the product you produce, understanding how the modern library is best used, and mastering the mechanics of citation.

To discuss professionalism, we should begin with the most obvious problem: plagiarism. Outright plagiarism is always a serious offense, and, when professors forgive it, it is usually because they see it as a terribly dumb and desperate act. In a composition class that I taught, I once had a foolish student plagiarize from someone in the *same* section (then he was surprised that I noticed—duh), and in the hallways I have heard students brag to each other about getting away with blatant plagiarism on papers. Further, there are ample websites (I will not supply their URLs here, natch) where lazy students can download ready-made papers and turn them in for their classes. (Savvy professors can track down these papers readily, of course, perhaps by submitting a suspicious paper to http://turnitin.com/, a website devoted to helping teachers nail their students for plagiarism, even if just a portion of the paper is borrowed from a web-based source.)

However, as a writing tutor who discusses this issue almost daily, I am convinced that many students plagiarize "accidentally"—that is, they fail to cite information they took from a source because they quickly, if tentatively, assess that the information they chose resides in a "gray area," and it might not need to be cited. They reason, "Why bother if I'm unsure?", or "Why risk doing it poorly?" Further, students frequently oversimplify this issue by rationalizing that the information appeared in an encyclopedia or in several books and therefore need not be cited; in

one case, I had a student say to me, “If it’s on the internet, by definition, it’s common knowledge, and therefore I don’t have to cite it.”

What such writers must realize is that one’s use and citation of sources must be both reflective and discerning. The quality and context of your sources matter just as much as their content, and you are obliged always to assess that quality and consider whether to establish that context. Your readers—especially your professors—will naturally be assessing quality and context in the act of reading, and they will expect you to have done the same. When using internet sources, the responsibility to cite your material conscientiously remains, and in fact your responsibility to assess the credibility of the information *increases* because the material appeared on the web. Further, if you see in-text citation of sources as a final, merely trivial step to writing rather than as an integral part, you are bound to slip up somewhere in your citation practice or lose track of the relationship between your own ideas and those of your sources. I am always surprised at the number of students who sit down with me to review a “complete” paper draft, yet no sources are cited. “Oh, I do that last,” they say, then during our tutorials we invariably encounter problems that can only be reconciled by a better handling of source material. Stated simply, using sources well in your paper is not a matter of mere mechanics; it is the art of narratively blending source material within the context of a focused argument.

Unfortunately, the norm for many students is that they spend hours unreflectively surfing the web with an overly broad research focus, or they quickly Xerox anything that looks relevant in the library, then, 24 or 12 hours before the deadline, they sit down and start tapping madly into the word processor, sometimes simply lifting whole paragraphs from their sources and hoping that it looks like their own work, loudly assuring themselves and their friends that they “work best under pressure.” If this is your technique, you will find that it fails you miserably when it comes to writing a thesis or working on a lengthy writing project on the job. Writing a long research paper in a day is a bit like pulling an all-nighter on Christmas Eve to crochet a quilt—the end product looks hurried and flimsy, and you can be sure that you have left many loose ends and produced a lousy Christmas gift.

Finally, the issue of mechanics—citing your sources properly, especially on your references page—remains a challenge for many writers, and the question of exactly how to cite web sources makes things even murkier. With various citation styles available and URLs that are longer than the alphabet, what is a writer to do?

The material in this chapter will help you to address these issues and provide you with resources where you can track down more information. Whatever your writing process, even if you are in the habit of resorting to the “patch and pray” method, my aim is to help you approach the writing process professionally, begin to understand how to assess the quality of all of your sources, whether print- or web-based, and clarify the mechanics of citation. So press on, and recognize that your facility at working with resources highly influences your reader’s perception of your work.

Don't judge a book by its movie.
—Anonymous

Assessing Source Quality

Especially if you are surfing the web, your research process should commence with a quality check of any sources you plan to use. Many writers begin badly in this area, simply typing, say, "genetics" into a search engine and getting a return of over 90,000 hits. The likely result is an arbitrary research process, yielding sources vastly varying in quality. The first step when writing a research paper should always be narrowing your focus and choosing quality sources to fit the circumstances.

To run a quality check on your sources, follow these guidelines:

- Begin by discerning the *expected* quality of resources in relation to the paper you are writing. Read carefully any material supplied by the professor regarding the assignment. Typically, you will be told if your paper should favor primary sources (original evidence provided by participants) or secondary sources (interpretations of primary sources by authors). Specific sources might be suggested to you, and parameters for using internet resources might also be discussed.

> The UC Berkeley Library provides an excellent guide for distinguishing between primary and secondary resources at:
>
> http://www.lib.berkeley.edu/TeachingLib/Guides/PrimarySources.html

- Assess the author's credibility and bias. This could be established by your finding out and providing efficient biographical information on the author, and interpreting the author's agenda through the tone of the text, the kinds of examples provided, and the level of audience to whom the author is writing.
- Note whether the author has any professional affiliation, and how this affiliation connects to the author's work. Especially with websites, where an organization might be considered the author, the question of affiliation and professional status becomes especially important. The most credible resources often have ties to professional organizations with standards for membership, for instance. The most credible web pages are often affiliated with a professional sponsoring organization. And we should expect different commentary on the same incident by, say, a chemical plant representative as opposed to a spokesperson from the Environmental Protection Agency.

- Assess the level of information and interpretation the source provides. Encyclopedias, dictionaries, and other information-based resources are perfectly good for attaining or verifying dates and facts, but keep in mind that the information provided may be viewed as elementary by your readers, and typically little if any authorial interpretation is provided in such sources.
- Carefully consider the sources cited by *your* sources. This not only gives you a potential reading list, it helps you determine the quality of your sources' research. Are the cited sources primary or secondary? encyclopedia or journal articles? biased or objective?
- For both print and web resources, look for clear indicators of quality in both form and content. Are you using a cheaply produced brochure by an organization interested in self-promotion and fundraising, or a book published by a government agency or established press? Is the material written with grace and clarity, organized effectively, and professional in appearance, or is the writing style embarrassing, the organization haphazard, the text awash in typos?
- Note how current the information is, especially if the material comes from the web. In this regard, the internet is often superior to the print medium, in that information might be published either exclusively or first on the web. However, also assess whether the source of information is outdated, or should be compared to information from a different time or a different medium.

Why We Cite Sources

A colleague of mine once told me a story that proves how small the academic world can be while underscoring the best reason to document sources: Doing so is likely to make you friends; failing to do so can only make you enemies. This colleague was asked to review a proposal submitted to the National Science Foundation, and was irate when he realized that an author of the proposal did not acknowledge my colleague's work when he clearly should have. An investigation confirmed my colleague's suspicions, which stung all the more because he had once actually nominated the author for an award. For my colleague, the author, and the National Science Foundation, this became an unpleasant situation all around, breeding distrust and embarrassment. A lot of time was wasted. All of this could have been avoided if the author had merely put his research into the appropriate context by properly acknowledging his sources. Instead, the author—whether intentionally or not—plagiarized, thus hurting other members of his proposal team as well.

When you write papers, you might be tempted to plagiarize to try to cover up the fact that almost all of your paper came directly from sources or that you relied heavily on the internet for your research. Your well-read professors will not be fooled by this tactic, though, and part of your job as a researcher and writer is to organize, assimilate, and recast your information in your own form. If you find yourself doing such things as using the same source for several paragraphs in a row or failing even to provide your own topic sentences for paragraphs, you are obviously not doing your job as a thinking writer. Do not fall back on the flimsy excuse that you might as well just copy it exactly as it appeared because you "like the way it was written." The context for your writing is different from the context of the original. The reason you use sources in the first place is to simplify and summarize information and weave it into the pattern of your own ideas, and your pattern of ideas will develop as you write and do your research.

When Sources *Must* Be Cited

Information that always must be cited—whether web-based or print-based—includes:

- Quotations, opinions, and predictions, whether directly quoted or paraphrased.
- Statistics derived by the original author.
- Visuals in the original.
- Another author's theories.
- Case studies.
- Another author's direct experimental methods or results.
- Another author's specialized research procedures or findings.

If you use specific information of the type just mentioned, document it; otherwise you could be plagiarizing. Better safe than lazy. By citing the source of your information you point to an authority rather than ask your reader to trust your memory or what might appear to be your own idea. Even though you *can* recall a statistic or a description of a process, for example, citation of such information—if it came directly from a source—gives more credibility to your writing and underscores the accuracy, timeliness, and even the potential bias of your information. In short, be honest, smart, and safe.

Integrating Source Material

In technical writing, integrating source material is a process of selection and extraction. Technical writing rarely relies on direct quotations, because the author's exact wording is usually not as relevant as the data reported. Suppose you are writing a technical paper on mine safety, for example, and you encounter this material:

> Since 1870, 121,000 mining deaths have occurred; 1.7 million lost-time injuries have been recorded since 1930. Historically, all of this has contributed to the public's negative perception of mining safety and even helped to fuel the NIMBY mentality.

It is highly unlikely that you would quote these sentences directly, especially because some of the material is data and some is interpretation. The exact wording does not matter, but some of the material does, so your job is to extract only the relevant information, use it, and cite the source.

Similarly, there is no good reason to quote this sentence directly:

> Acid mine drainage has been and continues to be a major problem generated by the mining of coal in Pennsylvania and elsewhere in the world.

In this instance, the information is so general that it need not even be cited, but neither should the sentence itself just be plucked out and plopped into your paper. Ideally, the information from the above sentence would simply end up as part of a sentence of your own creation such as this one:

> This paper explores the three chief reasons why acid mine drainage continues to be a major environmental problem in Pennsylvania.

In this example, note how the relevant information is extracted from the source, without the need for citation, and note how the writer creates new context for the information.

Blending Source Material with Your Own Work

When working with sources, many students worry they are simply regurgitating ideas that others formulated. That is why it is important for you to develop your own assertions, organize your findings so that your own ideas are still the thrust of the paper, and take care not to rely too much on any one source, or your paper's content might be controlled too heavily by that source.

In practical terms, some ways to develop and back up your assertions include:

- Organize your sources before and as you write so that they BLEND, even within paragraphs. Your paper—both globally and at the paragraph level—should reveal relationships among your sources, and should also reveal the relationships between your own ideas and those of your sources.
- As much as is practical, make the paper's INTRODUCTION and CONCLUSION your own ideas or your own synthesis of the ideas inherent in your research. Use sources minimally in your introduction and conclusion.
- In general, use the OPENINGS AND CLOSINGS OF YOUR PARAGRAPHS to reveal your work—"enclose" your sources among your assertions. At a minimum, create your own topic sentences and wrap-up sentences for paragraphs.
- When appropriate, practice such RHETORICAL STRATEGIES as analysis, synthesis, comparison, contrast, summary, description, definition, hierarchical structure, evaluation, hypothesis, generalization, classification, and even narration. Prove to your reader that you are *thinking* as you write.

Also, you must clarify where your own ideas end and the cited information begins. Part of your job is to help your reader draw the line between these two things, often by the way you create context for the cited information. A phrase such as "A 1979 study revealed that" is an obvious announcement of citation to come. Another recommended technique is the insertion of the author's name into the text to announce the beginning of your cited information. You may worry that you are not allowed to give the actual names of sources you have studied in the paper's text, but just the opposite is true. In fact, the more respectable a source you cite, the more impressed your reader is likely to be with your material while reading. If you note that the source is NASA or Carl Sagan or *The Wall Street Journal* right in your text, you offer your readers immediate context without their having to guess or flip to the references page to look up the source.

What follows is an excerpt from a political science paper that clearly and admirably draws the line between writer and cited information:

> The above political upheaval illuminates the reasons behind the growing Iranian hatred of

> foreign interference; as a result of this hatred, three enduring geopolitical patterns have evolved in Iran, as noted by John Limbert. First . . .

Note how the writer begins by redefining her previous paragraph's topic (political upheaval), then connects this to Iran's hatred of foreign interference, then suggests a causal relationship and ties everything into John Limbert's analysis—thereby announcing that a synthesis of Limbert's work is coming. This writer's work also becomes more credible and meaningful because, right in the text, she announces the name of a person who is a recognized authority in the field. Even in this short excerpt, it is obvious that this writer is using proper citation and backing up her own assertions with confidence and style.

Anatomy of a Well-Cited Paragraph

Writing a paragraph with the sources properly cited can seem a tricky task at first, but the process is straightforward enough, especially when we analyze an example. Writing a sound paragraph is really just a matter of thinking clearly about a topic you have researched and transferring that thinking to the page. To illustrate, a tidy sample paragraph follows, with the sources properly documented in the author-year system. Next, the genesis of the paragraph is analyzed.

> The millions of species of plants and animals on the earth have a phenomenal influence on the human species. Not only do they provide a substantial amount of our food, they are of great value in medicine and science. Over 60 percent of the purchases we make at the pharmacy contain substances that are derived from wild organisms (Myers 1998). Studies of plants and animals have led to discoveries in virtually all of the sciences, from biology and chemistry to psychology and astronomy (Wilson 1991). Furthermore, plants and animals are vital to the maintenance of our ecosystem. Their diversity and balance directly control food webs, nutrient diversity, supplies of fresh water, climate consistency, and waste disposal (Ehrlich 1988). Finally, many species act as barometers of our environment. The salmon, for example, is extremely sensitive to changes in the condition of the water in which it lives. Any abnormality in population or behavior of fish usually indicates some type of chemical imbalance in the water. The same is true of butterflies and their responses to the environment within prominent agricultural areas. Clearly, the millions of species of plants and animals in the world are vital to the continued thriving of the human population.

Now let us walk through the paragraph and its use of sources. The first two sentences assert the author's personal view about the value of the world's species (a view shaped by his research, no doubt), which he is about to back up by using three recent sources. Next, the author cites a journal article (Myers) from which he extracted a statistic ("over 60 percent of the purchases we make at the pharmacy"). Without this source cited, the reader might believe that the author estimated loosely or simply relied on his memory for the statistic. The next source (Wilson) is cited because the paper author borrowed a general claim from a textbook by Wilson. The author was at first not sure whether to cite the source, but he wisely decided that he should because he realized that he had in fact had Wilson's book open to a particular page and referred to it as he wrote the sentence. The next source (Ehrlich) is cited because the author had browsed through a whole chapter of Ehrlich's book in order to compose the list in the sentence, usually using Ehrlich's exact

section headings from the chapter as the list members. The final examples of the salmon and the butterfly were based directly on the author's personal experience of working at a fish hatchery for a summer, so documenting sources was not an issue. The fact that the author finds a way to tie this experiential knowledge in with his research is testimony to the fact that he is *thinking* as he writes the paragraph. He blends his sources, but he does not allow them to do the thinking for him. More evidence of the author's control over his material resides in his mid-paragraph transition sentence (beginning with "Furthermore"), his labeling of species as "barometers" of the environment a few sentences later, and his closing sentence, which wraps up the paragraph's ideas neatly by making an affirmative and confident statement that backs up his topic sentence and examples.

Not every paragraph should look exactly like this, of course, but every paragraph should be written with the same kind of conscientiousness about how, when, and why the sources are cited.

In-Text Citation of Sources

On the level of mechanics, citation of sources involves two steps: in-text citation and a references page. Although in-text citation styles vary slightly from one publication to another, the fundamentals can be expressed by two simple categories:

1) author-year system;
2) number system.

In-Text Citation Using the Author-Year System

The author-year system of documentation is used more on the undergraduate level than the graduate. Fields that have ties to the liberal arts, such as geography, human development, and political science, tend to favor the author-year system.

Your basic job when using this system is to indicate right in the text—in parentheses—the author(s) and year of publication of the reference you are citing. Since the citation becomes part of your sentence, you delay the appropriate punctuation until *after* the parentheses:

> In recent decades, anthropogenic activities such as deforestation, desertification, and urbanization have significantly altered the land surface (Nicholson 1997).

Many writers identify the source as soon as they begin the reference, including the author's name directly in the text and supplying only the year in parentheses:

> Furlong et al. (2001) estimate that the first Mt. Erebus eruption . . .

If you use two or more articles written by the same author(s) in the same year, you distinguish between the documents in your text and on your references page by using an "a,b,c" system, providing an identifying letter after the year:

> Toon (1989a) found evidence of . . .

When citing web-based sources in your text, you will often encounter sources with no author listed. Handle these cases just as you would when citing print sources—that is, if no author's name is given in the original, offer the title of the web page, or the publication's title, or the publisher's name. If such a title is lengthy enough to be awkward, offer a clear shortened form of the title, with the goal of making it easy for us to find the source on the references page. In the following example, a document authored by a governmental agency (fully referenced on the sample references page on page 133) is identified by a shortened form of its name:

Coordinated measurements planned in the framework of the original program should help to explain the apparent discrepancies in the data (PRIMO document, 1989).

In-Text Citation Using the Number System

Generally, the number system is favored in fields where you typically report experimental field or lab work. Technical fields such as materials science, aerospace engineering, and chemistry tend to favor the number system.

When you use the number system, your responsibility is to indicate in your text—either in parentheses or brackets—a number that corresponds to a source on your references page. The first source you cite in your text receives the number 1, the second number 2, and so on. If you repeat a reference to a source later in the text, it retains its *original* number—thus, all references to source number 4 receive a 4 after them in parentheses or brackets. You delay the appropriate punctuation until *after* the parentheses or brackets:

> If the load on the thrust bearing can be decreased by some means, the life of the turbodrill can be significantly increased (1).

Many authors prefer to identify the source at the beginning of the reference, perhaps including the author's name directly in the text:

> Gould et al. (5) found a clear relation between. . .

The number system is especially handy for citing equations, because you can simply insert the citation number logically as you introduce the equation to avoid confusion with any other numbers:

> The line's slope is used in the following equation (7) to calculate. . .

Other In-Text Citation Practices

Slight but important mechanical differences exist among in-text citation practices, in particular when you are trying to conform to a specific style, such as MLA (Modern Language Association) or APA (American Psychological Association). For example, MLA style requires you to provide the page number of your citation in-text, but not the year, while APA style asks you to place a comma between author and year. Please feel welcome to explore all of these nuances for yourself if you wish, and recognize that some professors will insist that you conform to a particular

style, but most will simply expect you to use the author-year or number system with consistency throughout the paper.

Remember, too, that journals within you field have already made informed decisions about which in-text citation practices they use. To settle on citation particulars, many writers model a journal in their field—mandatory, of course, if you submit material to a journal hoping for publication.

References Pages

After in-text citation of sources, of course, you are obliged to provide bibliographic information about your sources on a references page. Composing a references page is, for many writers, a painful process, particularly if they handled their references sloppily at the research stage. You simplify your task greatly by recording complete bibliographic information of your cited sources as you research, thus building your references page as you go. Some students wisely use notecards to keep track of their references, while others have a less formal system. As I cite sources in-text, I simply keep adding the complete bibliographic information to my references page right in my Word file for the paper; thus my references page is finished as soon as the last paragraph is.

As with in-text citation, reference page styles vary from one publication to another, but the fundamentals can still be expressed by the two simple categories of the author-year system and the number system. You could, of course, choose any respected magazine or journal in your field as a model for your references page, and this is often the easiest and most logical path to take.

Mechanics of the References Page—Author-Year System

Using the author-year system, on your references page you typically provide the following information in the following order:

- The names and initials of all authors, beginning with the last name of the first author listed, followed by a comma.
- Year of publication, followed by a colon.
- Title of the document or article being cited, with the key words capitalized. Quotation marks could be used around article titles.
- Title of book, magazine, or journal, underlined or italicized, with journal titles abbreviated, followed by a period.
- Publication information—for a BOOK or PRIVATELY PUBLISHED DOCUMENT, provide the publisher's name and location, then the total number of pages, separated by commas; for a JOURNAL or MAGAZINE, provide the volume number in boldface, then a comma, then the page numbers of the article being cited.
- The entire URL (if the source is a website), usually enclosed in brackets, followed by a period. Then provide either the last date the page was updated or the date that you accessed it, followed by a period. When citing a web document, typical bibliographic details, such as the page's author, will often be unavailable. Therefore, skip the steps above as needed, but always provide the URL.

At times, some of the above information will be unavailable or sketchy, especially in relation to company brochures, maps, non-professional publications, and web sources. It is acceptable to omit unavailable information, of course, but when less information is available you might provide a short narrative description of a particular source, just as I do in my sample references page.

Sample References Page—Author-Year System

In the author-year system, your references are listed on a separate references page in alphabetical order, using the last names of the authors, article title (if no author), or publisher name. The type should be double-spaced, lines should not be skipped between each reference, and a hanging indent of five spaces should be used after the first line of each reference. Always include the word "References," boldfaced, in the center at the top of the page. An example follows below, covering typical scenarios you face as you cite sources.

REFERENCES

Charlock, T.P., and V. Ramanathan, 1985: "The Albedo Field and Cloud Radiative Forcing Produced by a General Circulation Model with Internally Generated Cloud Optics." *J. Atmos. Sci.*, **42**, 1408-1429.

"Drilling Probes Mediterranean Climate and Oceanography," originally published in *Earth in Space* **8**, May 1996. <http://www.agu.org/sci_soc/leg.html> accessed May 22, 2001.

Ozick, B., 1987: The Physical Oceanography of the Mediterranean Sea. Bell Publishing Co. Austin, TX. 176 pp.

PRIMO document, 1989: Preparatory document on the development of PRIMO, an international research program in the western Mediterranean. Published by PRIMO, Inc., Paris. 29 pp.

Mechanics of the References Page—Number System

Using the number system, on your references page you typically provide the following information in the following order:

- The number of the reference, followed by a period.
- The first initials and last names of all authors, followed by a comma.
- Title of the article enclosed in quotation marks, followed by a comma.
- Title of book, magazine, or journal, underlined or italicized, with journal titles typically abbreviated, followed by a period.
- Volume numbers or editors—if citing a JOURNAL or MAGAZINE, provide the volume number in boldface, followed by the issue number in brackets; if citing a BOOK with editors or volume numbers, provide the names of the editors or the volume numbers.
- Publication information—for a BOOK or PRIVATELY PUBLISHED DOCUMENT, provide the relevant page numbers, then the publisher's name and location (all separated by commas), then the year in parentheses, followed by a period; for a JOURNAL or MAGAZINE, provide the relevant page numbers of the article being cited, then the year in parentheses, followed by a period.
- The entire URL (if the source is a website), usually enclosed in brackets, followed by a period. Then provide either the last date the page was updated or the date that you accessed it, followed by a period. When citing a web document, typical bibliographic details, such as the page's author, will often be unavailable. Therefore, skip the steps above as needed, but always provide the URL.

At times, some of the above information will be unavailable or sketchy, especially in relation to company brochures, maps, non-professional publications, and web sources. It is acceptable to omit unavailable information, of course, but when less information is available you might provide a short narrative description of a source for clarity.

Sample References Page—Number System

In the number system, your references are listed on a separate references page in the order in which they were cited by first appearance in your text, and they are numbered accordingly. Each source is, of course, simply listed once, even though it may have been referred to in the text numerous times. The type should be double-spaced, lines should not be skipped between each reference, and a hanging indent of five spaces should be used after the first line of each reference. Always include the word "References," boldfaced, in the center at the top of the page. An example, covering typical scenarios you encounter with sources, follows on the next page.

REFERENCES

1. M. Poulain and J. Lucas, "Optical Properties of Zirconium Tetrafluoride-Based Glasses," *Mater. Res. Bull.* **10**, 243 (1975).
2. G. E. Rindone, "Influence of Platinum Nucleation on the Crystallization of Lithium Silicate Glasses," *J. Am. Ceram. Soc.*, **41** [1] 41-42 (1958).
3. Gutzow and S. Toschev, "The Kinetics of Nucleation and the Formation of Glass Ceramics," in *Advances in Nucleation and Crystallization of Glasses*. Edited by L.L. Hench and S.W. Frieman. American Ceramic Society, Columbus, OH, (1971). pp. 10-23.
4. C. Walker, "Kinetics of Nucleation and Crystal Growth in Glass Forming Melts in Microgravity." <http://searchpdf.adobe.com/proxies/0/34/70/56.html>. accessed May 10, 2001.

excerpted from CHAPTER 7

RESUMES

> *A thought that sometimes makes me hazy, am I, or are the others crazy?*
> *—Albert Einstein*

Around campus, folklore abounds about unorthodox methods for landing jobs. Students swap stories about how one woman got her job with a major pizza franchise by having her resume delivered in a pizza box, while another guy fresh out of college took the George Costanza approach—lying his way through the interview, even faking his age. Another one I heard recently was that a software company had hired a skilled hacker, impressed by his ability to access the company's confidential files.

Whether these tales are fact or fiction, I attribute them partly to wishful thinking—we want the hiring process to happen easily, almost magically, without having to do research or traverse hoops. We want the task of landing a job to be as simple as calling in a favor from Aunt Julie, or exchanging a chatty e-mail with an alum who knows of an opening. Mostly, we want to avoid having to *write*. But the fact remains that a perfect resume is usually essential for getting your foot in the door; happily, lots of advice is available to guide you as you tread.

No one expects you to invent your resume from thin air; in fact, employers reading your resume expect you to know and follow the accepted conventions. Remember, you are often competing with hundreds of similar documents at a time, so you want yours to fit in yet stand out for the right reasons. Further, you must treat your resume as a living document that you will revise for the rest of your life. Most professionals change jobs five or more times, so their resumes are always in flux. So begin well by studying the conventions and basing your resume on a good model. And recognize that plenty of options and variations are available within the conventions. This chapter will help you to study the conventions, work within them, and write a winning resume.

Every job is a self-portrait of the person who did it.
Autograph your work with excellence.
—Unknown

Nuts and Bolts of Resume Writing

I learned about resume writing from my students. The students with the best resumes, I found, were those who understood that a resume is principally an objective summary of your skills and achievements, secondly a subtly clever argument that you are worth hiring, and finally a reflection of your individuality. The key is to work within the conventions while building a resume that is unique to you. The best way to begin is to study the conventions, then mimic the qualities of a good model, with an eye for places where your individuality can emerge. With the help of your peers, I have provided you with excellent advice and resume models on the following pages. Finally, I should note here that employers sometimes use the terms "resume" and "curriculum vitae" (or "c.v.") interchangeably, and both terms loosely mean "life summary."

The conventional resume is organized according to the sections that follow, moving from the top of the resume to the bottom.

Name and Addresses

- There is no title for this section; simply provide your legal name, addresses, and phone numbers as shown in the examples. No matter how attached you are to it, do not use your nickname—use the formal name under which you will be cashing your paychecks. :-)
- Either beneath your name or address, provide relevant e-mail addresses. See sample resumes for format ideas.
- Boldfacing and capitalizing your name is reasonably standard, though not required, and making your name stand out with a larger or fancier font is acceptable, but beware of graphic overkill.
- Never use titles such as "Resume" or "Personal Data Sheet" on the top of the page—redundant and silly; your name centered at the top automatically tells readers that the document is a resume.

Objective

- As a rule of thumb, include a job objective on an undergraduate resume. Keep it as short as is practical, with the goal of taking up no more than two lines of text.
- If possible, use an actual job title ("forecaster," "engineering intern") and provide the specific type of employer or type of position that you are seeking ("internship at a research facility," "entry-level position with a consulting firm").
- Avoid the overuse of phrases such as "a challenging position," "a progressive company," "an established firm"—you need not preach to the employer about its status. Your aim here is to categorize the *role* that you can fulfill.

Excerpted from Joe Schall's Style for Students: Effective Technical Writing in the Information Age, *Outernet Publishing,* © *2002 by Joe Schall. Available from Cengage Learning at 800-355-9983.*

Your job objective can be tailored a bit to the position that you are applying for, but never mention a company's actual name in your job objective—the objective is intended to define a role, not a specific job at a specific place.

Education

In this section, be at your most objective on the resume—simply report the facts. Begin by providing the title and address of your school. On the next line, provide your exact degree title, including a minor or program emphasis if relevant. Include your projected graduation date even if it is years away. Other options that might be included under "Education":

- *G.P.A.* Generally, include if it is a 3.0 or better; include G.P.A. in major if impressive.
- *Dean's List*. Provide actual semesters or years.
- *Relevant Coursework.* List actual course titles or appropriately worded categories.
- *Curriculum Description*. This could be included to describe your background concretely.
- *Study Abroad*. Always include it and provide the college's name and address.
- *Honor's Program*. Always include it.
- *Thesis*. Always include it and list it by title.

Note the variety of options explored under "Education" in the sample resumes provided.

Experience / Work Experience / Employment

- Any of these three titles is acceptable, though "Experience" is the most standard.
- The convention is to use past tense throughout this section, even to describe jobs that you currently hold. Some students elect to discuss current jobs in the present tense.
- As a rule, list your work experience in reverse chronological order—most recent first—and provide the actual dates of employment. Go back several years, even early into high school if necessary. Provide exact job titles (invent them honestly if no actual titles were used), and give the locations of your employers. All jobs need not be directly relevant to the position you are applying for, but be sure that the descriptions of your job duties are worded such that they enhance your accomplishments and responsibilities.
- Use active verbs to describe your job skills (a list is provided in the next section) and make each job description specific and efficient. Do not feel compelled to describe every job duty ("waiter" and "newspaper carrier," for example, are self-explanatory).
- As a rule, do not include your supervisor's name or phone number, unless you are seeking an internship (where formal applications are rare) and have permission.
- Including job salaries is rarely a good idea, but providing the number of hours you worked per week can be helpful.
- Use identical margins and format for parallel items (e.g., line up all of your job titles with each other, and if you boldface one then boldface them all). Again, the sample resumes provided show a variety of approaches.

Computer Skills

Computer Skills is *not* a mandatory resume section, although many students include it, knowing that employers are typically interested in your computer expertise. As you can see in the resume examples provided, some students discuss computer skills in narrative form, others simply list their experience with specific hardware and software packages, others combine computer skills and language skills, and some describe their computer skills in the context of the "Experience" section, linked to particular jobs. Whatever your approach—from no mention of computer skills to providing specific URLs that you have worked on—make an informed choice that considers both your background and the requirements of the job you are after.

Activities / Honors / Volunteer Work

- For this section, choose whichever title or combination of titles best fits your examples. "Activities" is the most commonly used. Honors could be presented separately if they are impressive enough.
- Dates are highly recommended, in that they illustrate your level of participation in activities.
- List the most noteworthy extracurricular activities and include offices that you have held. Include any honors you have received, especially scholarships, but do not repeat items that were included in other sections of the resume.
- Choose descriptions of your leisure activities wisely and sparingly, even to the point of presenting them all on one line for the sake of efficiency.
- Try to include a conversation piece. I know students who have gotten into great discussions in interviews because they listed beekeeping or piano playing or their golf handicap under "Activities."
- The bottom line in this section is that you want to provide a window into your uniqueness, whatever that uniqueness is. A volunteer firefighter, eagle scout, or licensed pilot can stand out as much as a scholarship recipient or professional sorority officer.

References

Employers generally like to see this section included as a convention and a courtesy, but in truth it is optional because employers already know that you can provide them with references. If you do include this section keep it highly efficient, perhaps just one line long, i.e., "References available upon request." As a rule, do not include the actual names of your references on your resume unless you have their permission to do so and are simply seeking an internship; for a full-time permanent position you want your resume to inspire the employer to contact you and specifically request your references. Employers are often looking for specific kinds of references, and you do not want to hurt your chances by listing references who might not be quite right for their needs, or giving an employer the opportunity to call or write one of your references without your knowing about it. When references are requested, type up their full contact information, including address, phone, fax, and e-mail, on a page separate from your resume.

Quality Checking Your Resume

Once your resume is composed, it must be quality checked. Three prominent issues that arise in a quality check are content, format, and computer-related problems.

Reconsidering Content

- Look over the resume and be certain you have considered effective wording and strong candidates within each category, as detailed in the previous section of this manual.
- Consider accuracy and professionalism. If you simply volunteered at a position two hours per week, make sure your wording reflects this. Do your examples and wording reflect someone with a professional attitude or are they too informal or vague?
- Look over your job descriptions. You should be reporting exactly WHAT YOU DID and HOW IT WAS VALUABLE. Make sure we can see that your work was of use to someone and that performance was a concern.
- Browse for any major time gaps between jobs or other activities. If there are any, fill them in or otherwise eliminate them if possible.
- Review your activities section. It should essentially contain an objective listing of information—data, and perhaps some description—unique to you.
- Ask yourself: Have I only included content that I would feel comfortable discussing in an interview? At an on-site interview, your resume might be right on the interviewer's desk.

Reviewing Overall Format

- With few exceptions, an undergraduate resume should be limited to one page.
- Maintain at least one-inch margins on all four sides of the page, and spread your information out so that it is visually balanced. Do not be afraid of white space.
- Be sure you have used identical margins and format for related information.
- Exploit punctuation marks—especially dashes, semicolons, and colons—to present your material efficiently.
- Be line conscious: if you are fighting for space and you see that just one or two words are gobbling up an entire line unnecessarily, revise accordingly.
- Remember that readers look at your resume left-to-right. Where logical, go to a new line for prominent new information.
- Present the final version of your resume on durable white or off-white paper; absolutely avoid odd colors such as purple, green, or pink (despite implications otherwise in the "Legally Blonde" film).

Making the Computer your Ally

- Change fonts types or sizes if needed to fit the resume to one page, but use just one or two fonts throughout the resume—Times, Chicago, and Helvetica are popular resume fonts—and go no lower than 10-point and no higher than 12-point.
- When lining up material, use tabs rather than space bars; otherwise, your output may appear differently than it does on the screen, or differently from one printer to the next.
- If you need a bit more space horizontally for just a line or two, see if you can "stretch"

the relevant lines by resetting the margin on the ruler at the top of the page.

- Absolutely work with a hard copy of your resume. Do not trust that the way it looks to you on the computer screen will exactly match the output.
- Proofread with perfection in mind, even having someone else proofread the resume too. Do not rely just on the spell checker, and certainly not on the grammar checker—neither will ever be capable of proofing a resume effectively.

As a final quality check, seek help. Other readers—your peers, professors, parents (gasp!), and the staff at your school's Career Center—can add fresh perspectives (and even corrections) to your resume. You get the last word, of course, but I strongly suggest that you seek collective agreement that you have presented yourself in the best possible way on paper. It pays off.

List of Common Action Words

Action Words to Describe your Skills in the "Experience" Section of your Resume

Accepted	Coordinated	Experienced	Made	Recognized
Achieved	Correlated	Experimented	Maintained	Recommended
Adapted	Counseled	Explained	Managed	Reconciled
Adjusted	Created		Mapped	Recorded
Administered	Critiqued	Facilitated	Measured	Recruited
Advised		Financed	Mediated	Reorganized
Allocated	Decorated	Formed	Modeled	Reported
Analyzed	Defined	Formulated	Moderated	Researched
Appraised	Delegated	Founded	Monitored	Retrieved
Approved	Demonstrated		Motivated	Reviewed
Arranged	Designed	Generated		Revised
Assembled	Detailed	Governed	Navigated	
Assessed	Determined	Grouped	Negotiated	Scheduled
Assigned	Developed	Guided	Nominated	Screened
Assisted	Devised			Served
	Diagnosed	Handled	Observed	Set forth
Balanced	Digitized	Headed	Operated	Shaped
Budgeted	Directed		Ordered	Simplified
Built	Discovered	Implemented	Organized	Solved
	Displayed	Improved	Originated	Sorted
Calculated	Dissected	Improvised	Overcame	Sparked
Catalogued	Distributed	Increased		Strengthened
Checked	Drafted	Indexed	Participated	Supervised
Clarified		Informed	Performed	Supplemented
Classified	Earned	Initiated	Persuaded	Systematized
Collected	Edited	Innovated	Pioneered	
Communicated	Effected	Inspected	Planned	Trained
Compared	Empowered	Inspired	Predicted	Transcribed
Compiled	Encouraged	Installed	Prepared	Transformed
Composed	Enforced	Integrated	Presented	Translated
Computed	Engineered	Interpolated	Presided	
Conceived	Enlarged	Interviewed	Prioritized	Unified
Conducted	Enlightened	Investigated	Produced	Utilized
Confronted	Enlisted		Programmed	
Constructed	Established	Justified	Promoted	Valuated
Consulted	Estimated		Protected	Validated
Contracted	Evaluated	Keynoted	Provided	Verified
Controlled	Examined			
Converted	Executed	Led	Quantified	Weighed
Conveyed	Expanded	Logged	Questioned	Wrote

Resume by a First-Year Student

Paula B. Perfect

School Address:
501 Hartranft Hall
University Park, PA 16802
(814) 825-1431
pbp329@psu.edu

Permanent Address:
18 Burger Road
Cheswick, PA 15024
(412) 965-1089
pbperfect@aol.com

Objective Seeking summer internship to enhance my meteorological forecasting experience.

Education

Pennsylvania State University, University Park, PA 16802
Bachelor of Science in Meteorology
Anticipated Graduation: May 2006

Christiana High School, Newark, DE 15678
Honors Program; Class Valedictorian
Graduation: June 2002

Experience

MEMBER, Campus Weather Service, Penn State University, University Park, PA, June 2002-present
- Volunteered for a weekly shift at campus weather station.
- Collected weather data and recorded weather reports for broadcast on local radio stations.

VOLUNTEER, Springhouse Homeless Shelter, Eatontown, NJ
May 2001-June 2001
- Supervised children while their mothers attended classes.
- Delegated duties to other volunteers.

Activities/ Honors

Dean's Freshman Scholarship, Penn State, 2002
Bear Creek Township Women's Club Scholarship, 2001
Severe Weather Committee, Campus Weather Service, Penn State, 2001-
Academic Decathlon Gold Medal for Speech, 2000
Volunteer, Bear Creek Nursing Home, 1997-1999
Active in mountain biking, piano, and golf

Computer Skills

Working knowledge of PASCAL and BASIC.
Four years experience using Microsoft Word.

References Academic and personal references available on request.

Junior Seeking an Internship, with References Listed

MATTHEW A. SILICA

Home:
1886 Fork Road
York, PA 17407
(717) 238-4486

School:
3007-C Vairo Blvd.
State College, PA 16803
(814) 764-2259

Objective To enhance professional breadth through a summer internship position in materials science and engineering.

Education

Bachelor of Science in Ceramic Science and Engineering
The Pennsylvania State University, University Park, PA 16802
Anticipated Graduation, May 2004.
Current GPA: 3.05/4.0.

Bachelor of Arts in Natural Sciences, Co-op Engineering Program
Lock Haven University, Lock Haven PA 17745

Work Experience

White Rose Roofing, Inc. York, PA.
2001, 2002, during summer and winter breaks.
As part of a team, I installed new roofing systems and repaired old and damaged roofs, sometimes working 50+ hours per week.

Stevenson Library, Lock Haven University, Lock Haven, PA.
2001, 2002, during academic year.
I worked in the Reader Services Office 10-15 hours per week, documenting newly arrived materials and answering questions from library patrons.

Weathershield, Inc., York, PA.
2000, 2001, during summer and winter breaks.
I assisted in the insulation of over 20 new and existing homes.

Activities Sigma Pi Fraternity—treasurer and chair of membership committee.
Member of Management Science Club and the Ski Club.

Language/ Computer Skills

Six years of written and oral Spanish.
Working knowledge of Pascal, BASIC, and introductory CAD systems.
Working knowledge of word processing using Microsoft Word and Macwrite.

References

Dr. Gary Messing
119 Steidle Building
University Park, PA 16802
(814) 865-2262

Mr. Bruce Bookish
Lock Haven University
Lock Haven, PA 17745
(717) 399-4487

Mr. John Cutter
237 Rosemont Avenue
York, PA 17408
(717) 645-6693

Conventional Resume, Senior Stressing Related Coursework and Experience

JANICE MOBILE
jmobile@psu.edu

Current Address
136 Eden Lane
Pleasant Gap, PA 16802
(814) 236-6778

Permanent Address
1306 North Dallas Parkway
Dallas TX 75420
(214) 609-9612

OBJECTIVE Position with a mining company in production or engineering.

EDUCATION The Pennsylvania State University, University Park, PA
Bachelor of Science in Industrial Health and Safety, May, 2002.

Relevant Courses:

Mine Maintenance Engineering	Mine Systems Engineering
Mining Engineering Analysis	Elements of Mineral Processing
Senior Mining Engineering Project	Rock Mechanics
Mineral Processing Laboratory	Mine Plant Engineering
Mineral Land and Mine Surveying	Mineral Property Evaluation

EXPERIENCE

6/01-8/01
1/01-4/01 **Engineering Assistant**, Cyprus,Inc., Waynesburg, PA
- Participated in an Engineering Student Co-op program and gained diverse experience in the operation of a longwall mine.
- Assigned to Engineering Department but also worked for other departments, including production, safety, and maintenance.
- Performed surveying, data compilation, and time-study tasks.
- Completed computer simulations for ventilation and belt haulage.
- Participated in quantity and pressure ventilation surveys.

5/00-8/00 **Roofbolter Helper**, Solar Fuel Company, Grindstone, PA
- Began as a surface and underground laborer for a room and pillar mine.
- Was promoted to a steady roofbolter helper position on a single-boom machine for final two months; also performed other working face duties.

5/99-8/99 **Laborer**, Deerfield Coal Company, Irwin, PA
- Performed minor land improvements on reclaimed properties.

5/98-8/98 **Laborer**, FCI Corporation, Irwin, PA
- Operated a forklift and made deliveries of machined parts.

COMPUTER SKILLS Experienced with IBM's Lotus 1-2-3, Penn State's Mine Ventilation Simulation program, and West Virginia University's Belt Haulage Simulation program.

ACTIVITIES Student member of the Society of Mining Engineers, 1998-2001.
Active in racquetball, water-skiing, and canoeing.

Conventional Resume, Senior with Unrelated Work Experience

Dennis A. Marble

Present Address
1297 East Hamilton Avenue
State College, PA 16801-5331
(814) 861-3767
dam1@minec.psu.edu

Permanent Address
123 Macintosh Drive
Coraopolis, PA 15108-2757
(412) 230-9208
dam1@minec.psu.edu

OBJECTIVE Seeking an analyst position with a consulting firm where I can apply and enhance my mineral economics and business logistics training.

EDUCATION The Pennsylvania State University, University Park, PA
Bachelor of Science in Mineral Economics, Minor in Business Logistics
Graduation date: May 2002

WORK EXPERIENCE

- Salesman, The Oxford Shop, State College, PA. June 2000-present.
  Responsible for cash register, inventory control, and customer service.
  Developed radio and newspaper advertising campaign.
  Programmed computer for inventory, mail order, and sales projection.
- Research Assistant, Penn State Department of Economics. Summer 2000.
  Assisted Economics professor with library research and computer programming.
  Programmed computer code to evaluate data for self-employed US citizens.
  Utilized computer packages including SAS, Word Perfect, and Lotus 1-2-3.
- Owner, Manager. Foley Lawn Service, Coraopolis, PA. Summer 1999.
  Started own business for lawn service and general handyman work.
  Employed three high school students, organized payroll, developed business contracts with residential and civic groups, and developed advertising.

ACTIVITIES

- The 2001 Penn State Dance Marathon, Rules and Regulations Chairperson
  Helped organize the largest student-run philanthropy in the country.
  Supervised 70 students in the areas of registration and security.
  Redesigned rulebook and registration processes. Supervised registration.
- Theta Chi International Fraternity
  Held the offices of Vice President, Social Chairman, and Caterer.
  Developed chapter philanthropy that benefited terminally ill children.

HONORS

- Theta Chi Penn State Chapter Outstanding Brother of the Year, 1999-2000.
- Theta Chi International Fraternity Key Man Award, 1999, 2000.
- IBEW/NCEA Scholarship, 1998.

Conventional Resume, Senior Stressing Education and Honors

JOANN GLASS
jglass@hotmail.com

Current Address
999 Lions Hall
University Park, PA 16802
(814) 861-2233

Permanent Address
111 East Street
Johnstown, PA 15905
(814) 235-2656

OBJECTIVE To obtain an entry-level position in the testing, analysis, or manufacture of ceramic substrates or integrated circuits.

EDUCATION The Pennsylvania State University, Park, PA
B.S. in Ceramic Science and Engineering, High Honors
Anticipated Graduation—May, 2001

Completed thorough engineering curriculum in the processing and electrical, optical, mechanical, and thermal properties of ceramics and glass, with electives in circuit analysis and semiconductor physics.

G.P.A.: 3.96/4.0
THESIS: Rapid Thermal Sintering of Nanocrystalline Ceramic Films.

EXPERIENCE IBM, Burlington, VT., SUMMER PRE-PROFESSIONAL (5/00-8/00).
- Developed quantitative and qualitative procedures for analyzing solder using x-ray fluorescence.
- Analyzed solder samples to ensure that the solder met purity specifications.
- Evaluated the accuracy and reliability of the x-ray fluorescence results against other analytical tests.

Penn State Dept. of Engineering Mechanics, TYPIST (1/00-5/00).
- Typed course notes for a graduate engineering mechanics seminar.

Penn State Office of Disabilities, PROCTOR (1/99-1/00).
- Proctored handicapped students during examinations and provided physical assistance as needed.

Johnstown Civic Band, Johnstown, PA., MUSICIAN (6/96-12/99, seasonally).

HONORS/ ACTIVITIES
College Marshall, College of Earth and Mineral Sciences, Penn State (2001)
Dean's List (all semesters, 1997-2001).
Member of the American Ceramic Society (1998-2001).
President of National Honor Society for Ceramic Engineers (2000-2001).
Member of Earth and Mineral Sciences Student Council (1999-2000).
Recipient of the Cook Memorial Scholarship (1999).
Academic Chairperson for Residence Hall (1998).

excerpted from CHAPTER 8

LETTERS, PERSONAL STATEMENTS, AND PROFESSIONALISM

> *I don't want to achieve immortality through my work,*
> *I want to achieve it through not dying.*
> *—Woody Allen*

When giving advice about or reading cover letters and personal statements, the key benchmark I use is simple: Do I get to know both the person and the professional? As we read a cover letter or personal statement, we should have a sense that no other candidate could have written this particular document in this particular way. Hence, we respect and honor the individual.

In conversation, the term "cover letter" is used loosely to mean any professional letter that you write in an attempt to get a job, with the term "cover" denoting that the letter is usually a "cover piece" designed to introduce and accompany your resume. Thus, too many writers think of the cover letter as mere mechanical introductory fluff, disposable goods, when in fact it can be more important than your resume. Professional letters you write are likely to be kept in a company file along with your resume as part of your permanent record. Letters are also your opportunity to show professional courtesy, impress companies with your knowledge of and interest in them, and allow readers to know you as a person. Good letters humanize you. And employers tend to choose people they feel they know—not strangers.

Even more humanizing are personal statements or application essays that you write when seeking a scholarship or admission to a graduate program. Here, you are typically expected to reveal something about what drives you as a person and a researcher. I clearly recall a few winning essays from years past: a student writing about his fascination with weather due to a hurricane he witnessed at the age of 10; another student who traced her interest in marine science back to her early days of beachcombing with her parents; a college marshal applying to law school who wrote not about his obvious academic success, but about experiencing discrimination at the hands of his peers because of his embarrassing skin condition. These students, all of whom achieved the goals they were after through writing, are memorable because they understood how to take the simple risk of "being themselves."

Finally, unless you interview well and know how to approach faculty for letters of recommendation, your cache of professionalism is incomplete. Use the material in this chapter to ensure that employers, selection committees, and your professors get to know the best in you.

Whenever you are asked if you can do a job, tell 'em, "Certainly I can!" Then get busy and find out how to do it.
—Theodore Roosevelt

Writing Cover Letters

As with resumes, great cover letters tend to be based on excellent models, so the next few pages provide models that you can use. The best tip that I have heard on letter writing is that the letter is for the *audience*, not for you. Certainly you are selling yourself, but you do that by molding your skills to what an employer needs and by knowing all that you can about your audience. This tells you that you should visit a company's website, read the company literature, and have a specific person's name and title to write to (you can always request this by phone or e-mail before you write). In sum, know what your audience is interested in and how you might fit into *a company's* plans, not the other way around. Unless an employer instructs you otherwise, always include a cover letter with your resume as you apply for a job.

Tone: Making it Sound Good

- The proper tone for the cover letter is one of an informed, straightforward, courteous, relaxed, literate writer.
- Use "I" comfortably as a sentence subject, but avoid being too informal—overusing contractions or jargon could make you appear unprofessional.
- Avoid being too cocky, aggressive, idealistic, or unrealistic; come off as mature, self-aware, and confident.

Appearance and Mechanics: Making it Look Good

- Limit cover letters to one page, and type them using single-spaced or 1.5-spaced typing, with one-inch margins on all sides of the page.
- Skip lines between paragraphs.
- Favor short paragraphs over long ones.
- Use highly readable, tight, fonts, such as Helvetica or Times, and point sizes no larger than 12 and no smaller than 10.
- Spell check, then proofread the hard copy carefully. Present the final version of the letter on durable white or off-white paper.
- So that both your letter and resume are easy to read and Xerox, mail them flat in a large envelope rather than folded in a small one.

The Heading and Greeting: Following the Formats

- At the top right or left corner of the page, type your address, your phone number, your e-mail address, and the date. Below that, at the left margin, put the name, title, and address of the person receiving the letter.
- Skip a line or two, then type "Dear," the person's title (Dr., Ms., Mr.), name, and a colon.
- If possible, find out the proper title, spelling, and gender of the receiver of the letter (all it

usually takes is a phone call or a little web surfing). If you cannot be certain of the recipient's gender, it is acceptable to use both the first and last name (i.e., "Dear Jan Morris"). If no name is available, use "Dear Human Resources Representative."

The Opening Paragraph: Showcasing Your Homework

- Ideally, open with a reference to how you derived knowledge of the company or position.
- If possible, provide context by some artful name-dropping ("Ms. Judith Sowers, a Quality Control Specialist in your Meredith plant, informs me that you are seeking . . ."). Otherwise, simply be forthright about why you are writing the letter ("I am writing to you because . . .").
- Include particulars about the company's activities and vision—prove that you have done your homework and know something about the company's products and mission. Even quote a mission statement if you can.
- Establish your own professional context by naming your major and school.

The Body Paragraphs: Selling your Skills

- One paragraph may suffice here, but use more if necessary, especially if you have several different skills or experiences to sell. Stick to one topic per paragraph.
- Through concrete examples, provide *evidence* of your work ethic and success—cite courses, co-ops, papers, projects, or internships you have completed. Make your examples both quantitative and qualitative. Some writers use a bulleted list to introduce narrative examples of their skills. Some even provide URLs for their home pages or other web pages they helped to create.
- Introduce your resume ("As the enclosed resume shows . . .") and *interpret* it for your audience rather than simply repeat its details. Apply your education, work experience, and activities directly to the job, proving that you are a highly capable candidate.

The Closing Paragraph and Signoff: Exiting Gracefully

- Keep your closing short and simple. Do not waste time. Be gracious and sincere, not falsely flattering nor pushy. Respectfully indicate your desire for further action, reminding the company of your availability.
- Remembering that a company could try to call you over a break or during the summer, indicate relevant phone numbers right in the text. Provide your e-mail address as well.
- Under the final paragraph, skip a line or two, then, directly under your heading address, type "Sincerely," then handwrite and type your name beneath.
- Indicate that a resume is included along with the letter by typing the word "Enclosure" at the left margin near the bottom of the page.

"Blind" Cover Letter Seeking an Internship

444 Montrose Avenue
State College, PA 16801
(814) 235-6783

February 8, 2001

Ms. Gale DeLaveaux
E304/C216
DuPont Experimental Station
Wilmington, DE 19880-0304

Dear Ms. DeLaveaux:

At the suggestion of Dr. John Hellman, Associate Professor of Ceramic Science and Engineering at the Pennsylvania State University, I am writing to inquire about any possible summer internship positions for 2001. I understand that you are working with thermodynamic, kinetic, and finite element modeling of reactions and flow in CVD reactors.

I am currently a junior in Ceramic Science and Engineering at Penn State. As my enclosed resume shows, I have a thorough background in mathematics, chemistry, and physics, and I am enthusiastic about applying this background in a summer position where I will learn from experienced scientists in a research environment. My primary interests are in thermodynamics and processing, and my interests continue to expand as my education broadens.

I am eager to discuss my background with you at your convenience. Dr. Karl Spear (814-865-4992), chair of the Ceramic Science and Engineering Program at Penn State, is also happy to speak with you about my credentials. My daytime phone number is (814) 235-6783, and a secondary phone number, where you could leave a message, is (814) 236-5609. My e-mail is wls1@psu.edu.

Thank you for your consideration.

Sincerely,

_____
William Scaffold

Enclosure

Cover Letter Seeking an Internship, Stressing Company Information

8 December 2000

642 Irvin Hall
University Park, Pa. 16802
(814) 862-7650
jm433@psu.edu

Stephen Rometo, Performance Engineer
General Electric International, Inc.
1 River Road, Building 55, Room 236
Schenectady, NY 12345

Dear Mr. Rometo:

Reading the recent *Fortune* article declaring GE the most admired company in America for the third year in a row, I was inspired to learn more about your company. I explored the GE website and attended a recent GE information session held at Penn State, and I am writing to inquire about possible summer internship opportunities for 2001. The valuable experience in manufacturing I gained in a previous internship makes me a strong candidate for an internship position with the Power Systems Performance Evaluations Group.

My search for the best way to apply my electrical engineering degree sent me last summer to an internship with Motorola in a wafer fabrication lab. I found that I thrived in the manufacturing environment. During this time, I was the owner of a metal deposition machine and a screen print tool. I acquired many crucial skills such as writing specifications and maintaining equipment. I also learned many valuable lessons about manufacturing including the nuances of communication between operators and engineers and effective methods of implementing process changes. While completing my internship, three documents I authored made their way into the factory's specification literature and I initiated three process changes. I was also honored with a scholarship award given to one summer intern who shows exceptional leadership skills.

Knowing first-hand the value of an internship with a company well respected for excellence in manufacturing, I am especially interested in GE Power Systems. I am impressed with your company's attention to its customers, especially in its new e-commerce initiatives such as the power turbine simulation web pages—a creative way to include the turbine industry in this new type of business. Finally, I respect your company's attention to the community, as seen in the number of community service projects that GE consistently undertakes.

My resume is enclosed for your reference, and I am readily available for an interview. If you need any further information, I can be reached at (814) 862-7650. Thank you.

Sincerely,

_____
Jennifer Moxie

Enclosure: resume

Cover Letter Emphasizing Skills

927 W. Barnard St., Apt.#1
State College, PA 16801
(827) 841-6836
April 8, 2002

Wilson Geosciences
379 Sonoma Lane
Sonoma, CA 95476

Dear Personnel Representative:

I will be graduating in May from Penn State University with a degree in Geosciences (emphasizing hydrogeology) and am seeking employment as an entry-level hydrogeologist. There are three primary skills that I have developed to apply as an entry-level hydrogeologist:

1. Field skills and experience, which are usually primary responsibilities in entry-level positions. I have conducted my own research for my senior thesis, which involved implementing borehole dilution tests to determine the groundwater velocity in a coal aquifer. I also have extensive coursework field experience, ranging from summer field school to water and soil sampling at polluted sites.

2. A strong interest in contaminant transport and groundwater modeling. This interest, coupled with good computer skills, provides opportunities for the use of groundwater and chemical modeling software packages. Hydrogeology and geochemistry coursework have equipped me with the theoretical basis for modeling, and an introduction to software packages. My work experience has also involved extensive PC skills. Although I have had only preliminary opportunities to apply these skills to groundwater modeling packages, I am confident that I can become proficient with such packages.

3. Good communication skills. Good writing and speaking skills allow for effective communication within a company and with clients. My studies have provided me with quality writing experience. I am currently completing my senior thesis, which involves a written and a Powerpoint presentation. Throughout my studies, I actively worked to improve my writing and gain experience writing for a variety of audiences.

My resume is enclosed for your reference. I would welcome the opportunity to meet with you to discuss my career opportunities with your company. Please feel free to contact me at (827) 841-6836. I look forward to hearing from you.

Sincerely,

_____
Diane Z. Weston
Enclosure

Cover Letter Emphasizing Computer Skills

999 Lions Hall
University Park, PA 16802
(814) 555-1000
October 1, 2000

William Peterson, Director of Development
Atlas Information and Technology Systems
101 Stevens Drive, Suite 303
Lester, PA 19113-1564

Dear Mr. Peterson:

After recently speaking with Dora Plath, Human Resources Representative, I am responding to your advertisement for a Systems Administrator in the "Careers in Science and Technology" section of the September 24 edition of *The Philadelphia Inquirer*. I am highly interested in helping Atlas Information and Technology Systems in its "twin mission to provide educational software products and produce state-of-the-art computation accelerators." I will graduate from Penn State in December, 2000, with a B.S. in Computer Science.

As my resume shows, through both coursework and internships I have accrued extensive web experience. By working as a team member in my Computer Project Design class--aiding in the creation of three websites--I developed a fluency in HTML, JavaScript, and Java. I also learned how to administer a website, and I now support several different sites for research groups and students at Penn State.

I also possess large-site administration skills, having assisted with the administration of nearly 100 Unix workstations, spread over several workgroups with over 500 users. Communicating with the users, assessing software needs, debugging user code, and writing scripts to make the administrator's job easier are but a few of my daily tasks.

Finally, my experience is not limited to the Unix world. As a student intern in a computer lab for two years, I have administered over 40 Macintoshes and 20 PC-compatibles, including initial configuration of hardware, software, and network facilities.

I am confident that my package of skills will make me a versatile systems administrator with your company. I welcome the opportunity for an interview, and can be reached by phone at (814) 555-1000 or e-mail at jsample@psu.edu.

Sincerely,

_____
Jane Sample

Enclosure

Cover Letter Stressing Company Information

18 May 2001

RD 6, Box 4500
Stroudsburg, Pa. 18360
(570) 471-4564
jm433@psu.edu

Raytheon Systems Company
300 Science Park Road
State College, PA 16804

Dear Human Relations Staffing Recruiter:

After exploring your website and recently receiving an email about potential positions with your company, I am writing to inquire about full-time entry-level opportunities beginning January 2002. The considerable variety of experiences I have gained in previous internships makes me a versatile candidate for a full-time position with the Raytheon Systems Company.

While completing my B.S. in Electrical Engineering, I have interned with General Electric, Motorola, and Lockheed Martin. All three of these companies have taught me valuable workplace skills such as writing reports clearly, delivering presentations concisely, implementing process changes efficiently, and communicating with suppliers, customers, and other engineers effectively. My experience working for Lockheed Martin Management and Data Systems, most importantly, prepared me specifically for a job in the systems industry. During this time, I worked in both classified and non-classified environments in the area of software development. On the non-classified side, I co-authored software design inspection checklists that made their way into the company's documentation for both external and internal inspections. I was able to apply these quality control measures directly when I entered the classified realm, where I got experience coding and debugging using C++. This experience gave me a window into the daily work-related skills necessary to become a productive engineer in this field.

Knowing first-hand the pride of working for companies well-respected in industry, I am especially interested in Raytheon. Most importantly, however, I respect your company's attention to its responsibility to the community, as seen in the number of environmental groups and programs supported by Raytheon. For this reason, Raytheon is a company I would be proud to work for. Further, as a future Penn State alumna, I would welcome the chance to remain a member of the friendly and spirited State College community.

My resume is enclosed for your reference, and I am readily available for an interview. If you need any further information, I can be reached at (518) 385-0443 until August 17th, when I will return to school for my final semester and can then be reached at (814) 862-7650.

Sincerely,

_____
Jennifer Moxie

Enclosure

Cover Letter Stressing Previous Experience at the Host Company

846 Hammond Hall
University Park, PA 16802
(814) 860-2233
September 23, 2002

Dr. Timothy Brown, Manager
General Technology Division
International Business Machines Corporation
Burlington, VT 19000

Dear Dr. Brown:

After working for IBM and speaking with you about ceramic substrates in electronic packages over the summer, I have become interested in permanent employment in your Burlington branch. As you know, I am currently a senior Materials Science and Engineering student (Ceramic Science Emphasis) at Penn State, and I am seeking an entry-level position that involves working with the materials utilized in electronic packages.

Experiencing IBM first-hand was gratifying and exciting. Not only was I impressed with the concern IBM has for the safety of its employees, but I was intrigued by its constant striving to become a six-sigma company. Along with this goal, IBM faces the challenge of producing electronic packages that operate faster and are not limited by the speed of the substrates. I want to be part of a team that faces and meets these kinds of challenges.

As my enclosed resume shows, I have gained valuable experience from both school and employment. My academic background includes studies of various properties of ceramics with an emphasis in electrical properties of materials and integrated circuits. I have also expanded my studies by taking electives in the computer graphics area. Through my employment as a summer pre-professional for Quality Assurance under Dr. George Slusser, I was exposed to several analytical techniques to ensure the purity of materials used in chip production. In particular, I was faced with the task of developing procedures to analyze materials using x-ray fluorescence. As a result, I was able to validate my findings by comparing them to the findings obtained from accurate though more tedious analytical techniques. I am confident that my background, particularly my previous employment at your Quality Assurance division, will be of interest to you.

After you have reviewed my qualifications, I would welcome the opportunity for an interview. I can be reached at 814-860-2233. I look forward to hearing from you soon.

Sincerely yours,

_____
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Enclosure