E-SURP Policy and Regulations Manual 2011

I. Introduction

The Edwards Lifesciences Summer Undergraduate Program (E-SURP) provides funding for UCI undergraduates who are conducting summer research projects under the guidance of UCI faculty mentors who are associated with the Edwards Lifesciences Center for Advanced Cardiovascular Technology. The program offers students the opportunity to become immersed in a cardiovascular-related research topic for a full-time ten-week period, or the equivalent of 400 hours.

E-SURP participants apply for funding by submitting a proposal during the E-SURP Call for Proposals in the Spring Quarter of each academic year. Fellowships are awarded on a competitive basis, with stipends of up to $2,000 awarded to students who are selected. Under the personal guidance of a UCI faculty mentor, selected students gain first-hand experience and training in state-of-the-art research facilities. Participating students share the results of their work the following spring by presenting their findings at the UCI Undergraduate Research Symposium. E-SURP participants are also strongly encouraged to submit their research findings for possible publication in *The UCI Undergraduate Research Journal*.

The program is designed to help students fully develop the knowledge and skills that will propel them into graduate studies or careers in cardiovascular related fields. E-SURP is funded in part by the Edwards Lifesciences Center for Advanced Cardiovascular Technology, which was established in 2007 through a naming grant from Edwards Lifesciences Corporation.

II. Commitment to Research Ethics and Conduct

E-SURP participants are expected to spend up to 40 hours per week during the time they are involved with the E-SURP Program at UCI. Any schedule changes also need to be approved by the student's faculty mentor. Any modification to the approved proposal project plan must be submitted in writing and be approved by the faculty mentor.

Fellows are expected to abide by the rules that their faculty mentors have established for their laboratories. Fellows are required to work closely with a designate assigned by their faculty mentors (e.g., graduate student or postdoctoral fellow), who will guide their daily activities. Fellows will maintain an orderly lab notebook in accordance with any rules that the faculty mentor has stipulated. Sample guidelines for maintaining a lab notebook are included in **Appendix A**.

Fellows are also required to submit an abstract and do a presentation at the following year's UCI Undergraduate Research Symposium, and are encouraged to submit a paper for possible publication in *The UCI Undergraduate Research Journal*. See **Appendix B** for guidelines. Fellows are expected to treat each other and their fellow researchers with respect throughout the entire period of the program.

III. Administrative

Students receive half of their stipend at the beginning of the program. The remaining amount will be awarded closer to the end of the summer, upon meeting program requirements and based on an evaluation by their faculty mentor of the student's progress. Reports of poor conduct, violation of program rules, and poor performance are grounds for dismissal from the program.

IV. Program Contacts

Edwards Lifesciences Center

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Phone: (949) 824-0071

E-mail: cardio@uci.edu

UROP

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Irvine, CA 92697-5685

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Appendix A
Scientific Data & Materials: Record Keeping, Sharing, and Ownership

Source: *Items used in this appendix have been adapted with permission from the class presentations used by Professor Richard Chamberlain, of the Department of Chemistry at UCI, as part of graduate student training. The original material is also copyrighted by Michael Kalichman and the University of California, San Diego, and was used with their permission.*

Scientific data—including measurements, observations, and all other primary products of research activity—provide the factual basis for all descriptions, calculations, inferences, and conclusions set forth in research seminars, proposals and journals. As data are required to validate the integrity of published or reported work, scientists have a responsibility to carefully manage and maintain their data records, collection, storage, and sharing before and long after publication.

MANAGEMENT OF DATA

Responsible data management begins with planning for data collection, and continues after the work is published. It begins with sound experimental design and protocol approval; involves record keeping in a way that ensures accuracy and avoids bias; guides criteria for including and excluding data from statistical analyses; and entails responsibility for collection, use, and sharing of data.

What are the Rules, and Who Makes Them?

- ❑ Professional societies, research institutions, and academic journals have guidelines for responsible data management, but few are specifically regulated by law.
- ❑ Research records have legal standing in demonstrating priority for intellectual property claims ownership or patent rights requests under the Freedom of Information Act.
- ❑ In addition, nearly all aspects of scientific misconduct allegations depend on the extent and quality of documentation of the research.

Pay attention to:

- ❑ Experimental Design
- ❑ Record keeping
- ❑ Collection and analysis of data
- ❑ Use, storage, and sharing of data

CASE STUDY: STUDENT VS. MENTOR

Description

A graduate student working in the laboratory of her mentor is gathering data for a federally funded project on which the mentor serves as principal investigator. The student is, of course, going to use the data for her dissertation work. The student and mentor have a terrible falling out. The student leaves the lab and finds a new advisor. A week later, the former advisor notices that data and materials related to the student's project are missing. The student readily admits to removing the lab notebooks, spectra, chromatograms, and computer disks. She does not intend to use them in her new research project, but asserts that they are hers—the product of her sweat and blood—and that she, not her former advisor, is the rightful owner.

Questions

1. Can a student take the records and materials he/she has generated?
2. What issues of data ownership apply here and what should be done?

CASE STUDY: PRINCIPAL INVESTIGATOR VS. PRINCIPAL INVESTIGATOR

Description

Dr. Apple, a researcher working under a National Science Foundation (NSF) grant is studying the replication of bacteriophage in *E. coli*. Dr. Apple attends a lecture where world-renowned scientist, Dr Ball, discusses her studies on the replication of a particularly useful bacteriophage that infects *E. coli*. Dr. Apple requests a sample of Dr. Ball's bacteriophage. Dr. Ball declines to provide a sample, even after several persistent and strongly worded telephone calls from Dr. Apple. Dr. Apple, obsessed with securing Dr. Ball's bacteriophage has a plan. Dr. Apple writes a letter to Dr. Ball and again requests the material. At the conclusion of the letter, Dr. Apple pleads, “If you insist on denying me this virus, at least give me the courtesy of a written response to this letter.” Dr. Ball quickly responds with a one page, one sentence response: “Forget it!” After receiving Dr. Ball's letter, Dr. Apple—knowing Dr. Ball's propensity for performing much of her own research at the lab bench—takes the letter, places it in a blender making a slurry using sterile buffer, and spreads the slurry on lawns of bacteriophage recipient strains of *E. coli*. Soon, Dr. Apple isolates the long-sought strain of the bacteriophage.

Questions

1. What are the implications of refusal to share data?
2. Were Dr. Apple's actions appropriate?
3. Should Dr. Apple's actions give rise to an investigation of possible scientific misconduct by the NSF?

4. If the bacteriophage was used in a commercial pharmaceutical process and Dr. Ball was employed by the pharmaceutical company, did Dr. Apple illegally obtain a trade secret from Dr. Ball?

OWNERSHIP OF RESEARCH MATERIALS CASE STUDY: STUDENT VS. MENTOR

Description

Ronald Wu had just completed all the requirements for his Ph.D., and his thesis defense had gone extremely well. Dr. Christine Morris, his mentor, wrote in a letter of reference:

> Ron is the best graduate student I ever had. He should be justly proud of what he has accomplished during the five years he has spent in this lab, having nursed a very important problem in synthetic chemistry from conceptualization to the identification of several novel and extremely effective catalysts for enantioselective organo-metallic coupling reactions….

On the basis of his performance and recommendations, Ron was accepted for a prestigious and comparatively well-paying postdoctoral fellowship in a productive, highly regarded laboratory in his area of interest. This situation was particularly attractive since it held the promise of a faculty position in two years. During his recruitment visit, the future postdoctoral mentor, Nobel laureate Dr. John Zintheseizer, suggested that Ron should bring from his current laboratory some samples of the new catalysts, which appeared to Dr. Z to be "just the ticket" for solving a long-standing problem in one of his synthetic routes. Up until this point, Ron and Dr. Morris had not discussed the disposition of the products of his research. After an impressive dissertation defense, Ron met with Dr. Morris to thank her for all her years of support and friendship, and for helping him obtain the fellowship. When Ron raised the topic of taking copies of his notebooks and some of his chiral catalysts to his new lab to help get him off to a fast start, Dr. Morris restated her affection for him and her appreciation of his promise as a scientist.

Dr. Morris then stated somewhat apologetically, "Of course, you understand that the materials associated with your research project belong to the lab. I really can't allow you to take your notebooks or other materials with you. I'm sorry Ron, but that's just the way it is."

Questions

1. What do you think of the suggestion by Dr. Zintheseizer?
2. Who has ownership rights to the following materials:
   a. Ron's original lab notebooks? Is it Dr. Morris' lab, as she said?
   b. the (still unpublished) synthetic routes to the catalysts that Ron made?
   c. the information in Ron's doctoral dissertation before it is officially published?
   d. the limited supply of catalysts that he prepared?
   e. the software Ron developed to predict catalyst structures for some of his studies?
   f. unpatented software Ron used, which was written by a labmate?
3. Is Ron entitled:
   a. To carry with him a photocopy of his lab notebooks?
   b. To write a postdoc fellowship grant for funds to continue along the lines of a part of his Ph.D. thesis that was his independent idea, not Dr. Morris's?
4. What measures should a prudent and responsible laboratory take to protect its valued and unique materials?

Suppose that Ron responds to Dr. Morris as follows:

> There is ample precedent in other areas to support the notion that I should have access to these materials. For example, *Cell* and *Science* explicitly state that materials must be made available to qualified investigators. Since I did the work, I must be a qualified investigator.
>
> Also, NIH requires that materials developed under NIH grants be shared. Ethically, you cannot deny me the materials.
>
> "Furthermore, as a graduate student I'm as entitled to a share in the profits derived from my research as you are."

There are other things to consider:

> The lack of availability to Ron of the materials he has developed will slow Ron's progress on his next job, and possibly in a larger sense, the progress of science.
>
> On the other hand, Dr. Morris has an interest in ensuring that her project not be "scooped" by another lab, and the institution regards materials developed with its resources as its own.

GUIDELINES FOR DATA MANAGEMENT

The responsible conduct of research includes matters to consider even before data collection begins.

- ❑ Carefully designing the study to identify what data will be needed helps assure that resources are not wasted and that significant results can be obtained.
- ❑ The time to correct problems in data collection methods is before the data are collected.

How do these points apply to your specific field(s) of interest?

GUIDELINES FOR RECORD KEEPING

Models for record keeping vary by discipline. However, nearly all fields of scientific research require records that should be kept in bound lab notebooks:

- ❑ With serially numbered pages (arabic) and volumes (roman).
- ❑ Written in permanent ink with no erasures.
- ❑ Leave room at the beginning of each book for a table of contents, and don't forget to add it later.
- ❑ All entries should be dated.
- ❑ Assign a unique notebook number to each important material produced in the experiment—whether it is a synthetic product, plasmid, or whatever—according to the nomenclature customary in your field; e.g., ARC-III-22c identifies the third such product (c) on page 22 in the third notebook (III) of the eminent synthetic chemist Adolf Richard Chamberlin (ARC). Use the format specified by your research advisor, but be sure all your products have unique identifiers (including multiple batches of the same product).
- ❑ Specify the sources of all-important reagents, either by company name for commercial reagents or with a specific notebook number.
- ❑ Include the actual data—such as chromatograms, spectra, and printouts—when practical. Or, more often, give a careful and specific reference to the location of the originals, usually filed by notebook number.

There must be sufficient detail to allow someone else to repeat the experiment you describe, with a high degree of confidence that they will obtain the same result.

DATA ANALYSIS AND SELECTION GUIDELINES

It is a laudable ideal to analyze and report all data; however, in practice some data must be excluded. The selection should be based on objective criteria, preferably ones specified before data collection. Critically evaluate the reasons for inclusion or exclusion of data, the measures taken to avoid bias, and possible ways in which bias may nonetheless influence selection. Clearly document how the data were obtained, selected, and analyzed—especially if the methods are unusual or potentially controversial.

DATA OWNERSHIP GUIDELINES

Who Owns the Data Produced in Academic Research?

Because the products of academic research involve creative contributions to new knowledge, it is sometimes assumed that the resultant data are different from the routine products of employees in any other institution or business. However, although the language and practice of science may seem to suggest otherwise, the equipment, materials and reagents—and even resultant data—all belong to the institution in which they are purchased or produced. The issue becomes especially salient if a marketable product is produced, but it is also an issue when someone moves from one institution to another. If the principal investigator is moving, then she or he can normally expect to take the data, although exceptions do occur and equipment transfer is nearly always a matter for negotiation.

Who Is Responsible for Decisions on Data Ownership Issues?

Without an explicit agreement or ruling to the contrary, the principal investigator (research advisor) has primary responsibility for decisions about the collection, use, retention, and sharing of data. Student or postdoctoral researchers should assume that their original data will stay with the principal investigator. However, most academic institutions assume that graduating students may take copies of their research records. If regulations preclude researchers taking such copies, then the principal investigator is responsible for making this clear to members of the research group before work begins.

DATA SHARING GUIDELINES

Although sharing of data is generally in the best interests of science, it is clear that such sharing can place an individual scientist at risk; sharing data before publication can result in loss of credit or opportunity. Other problems may include:

- ❑ Exposure of data to the prejudiced scrutiny of competitors or detractors
- ❑ Risk of compromising confidentiality of human subjects
- ❑ Expense of time and resources to meet requests for sharing of data

However, reasonable strategies to minimize potential problems should make it possible to choose sharing over secrecy.

- ❑ Before publication, it is best to maintain an open data policy with appropriate caution.
- ❑ After publication, be prepared to grant reasonable access to the raw data; that is, honor requests that are in the interest of scientific inquiry and can be accomplished without inordinate expense or delay.

Appendix B
E-SURP Abstract Guidelines

Abstracts must include sufficient information for readers to judge the nature and significance of the topic, the adequacy of the investigative strategy, the nature of the results, and the conclusions. An abstract is not an introduction; it should summarize the substantive results of the work, not merely list topics to be discussed.

Abstract Content

What Is an Abstract?

- ❑ An abstract is a summary of your paper and your whole project.
- ❑ It should have an introduction, body and conclusion.
- ❑ It highlights major points of the content and explains why your work is important, what your purpose was, how you went about the project, what you learned, and what you concluded.
- ❑ It is a single, well-developed paragraph and should be exact in wording.
- ❑ It does not include any charts, tables, figures, spreadsheets, or other supporting information.

Abstract Format

Many abstracts follow a format similar to this:

1. The problem to be investigated.

   One to two sentences that state why the project was undertaken.

2. The purpose of the study.

   One to two sentences that outline the nature of the project and how it differs from other similar projects.

3. The methods.

   One to two sentences that summarize the important methods used to perform the project.

4. The major results.

   One to two sentences that summarize the major results—not necessarily all the results—of the project.

5. The interpretation.

   One to two sentences that summarize your interpretation of the results.

6. The implications.

   One sentence that summarizes the meaning of your interpretation—what is important about these results.

Abstract Format

Abstracts should be:

- ❑ In Microsoft Word.
- ❑ In Times New Roman font, size 12.
- ❑ No more than 250 words in length.
- ❑ Single-spaced and a single paragraph.

Include the following in the abstract heading:

- ❑ Title of the paper.
- ❑ Full name of the student author.
- ❑ Name(s) of faculty mentor(s).

Sample Abstract

Title of the Paper

Joe U. Student

Mentor: Mary J. Professor

Several studies have suggested that rampart craters on Mars form in regions with high soil volatile contents—namely water ice. This study is the first to use data from Mars Odyssey's Gamma Ray Spectrometer to correlate the distributions of water ice and rampart impact craters on Mars. We hypothesized that if rampart craters form due to high volatile content in the soil, then regions with more sub-surface water should show a higher percentage of rampart impact craters. We plotted the distribution of rampart impact craters on Mars and the water ice concentrations obtained by the Mars Odyssey's Gamma Ray Spectrometer, then used statistical tests to determine if there was a correlation. We found that regions with high sub-surface water ice concentrations had a higher percentage of rampart impact craters than regions with low sub-surface water ice concentrations. For example, 87% of impact craters in Acidalia Planitia, a very water-rich area, were designated rampart craters; however, only 23% of craters in water-poor Syrtis Major were designated rampart. These results lend support to the idea that the fluidized ejecta morphology that characterizes rampart craters is caused by a high water ice concentration in the sub-surface. Understanding the factors that influence crater formation and morphology will allow us to age-date the Martian surface better, and mapping the distribution of ancient rampart craters may help us estimate sub-surface volatile concentrations from the Martian past.

E-SURP Research Paper Guidelines

A research paper gives you a chance to demonstrate the results of your work, what you have learned, and how you have contributed to your research area's body of knowledge. All E-SURP Fellows are encouraged to submit a paper for possible publication in *The UCI Undergraduate Research Journal*.

Originality, academic and practical relevance, thoroughness, accuracy, consistency, credibility, and proper referencing are important criteria for success. In preparing your paper, aim for a logical structure and a style that promotes readability. Also take care to use standard academic English.

Note: These guidelines are somewhat different from those you would use in preparing a paper for many scientific publications.

Paper Structure

Your paper must include a Title Page, an Abstract, Key Terms, Introduction, Acknowledgements, and Works Cited sections, in addition to the manuscript body. The following sections describe these parts of the paper.

Title Page

The title page must include the following:

- ❑ Student name and home institution
- ❑ Paper title
- ❑ Professor(s) or mentor(s) who guided the research, and his/her/their home department(s)

Abstract

The abstract is a single paragraph of fewer than 250 words that summarizes the entire paper. Readers use the abstract to decide whether they want to read the rest of the paper. It must contain enough information for them to gain a preliminary understanding of the project and to decide whether it appeals to their interests or not.

Discuss the following issues, devoting only one or two sentences to each:

- ❑ The problem you investigated
- ❑ The purpose of the study
- ❑ The methods
- ❑ The major results
- ❑ The interpretations
- ❑ The implications

Key Terms

This is a list of up to seven alphabetized words or short phrases that are central and specific to your research. All of the key terms must be explained in your paper.

Introduction

The Introduction provides readers with the information they need to understand the rest of the paper. Make sure you:

- ❑ Establish the basis and background for the project.
- ❑ Define terms that may not be familiar to readers outside the field.
- ❑ Present the objective(s) and question(s) the research addresses.
- ❑ Summarize previous research and the current status of the topic.
- ❑ Discuss the relevance and significance of the research.
- ❑ Describe the general methods and rationale used to explore the hypothesis.

Manuscript Body

Organize the body of the paper carefully. Subdivide the body into sections to emphasize both content and clarity. Use headings and subheadings to make the organization clear. Consider the following:

- ❑ Use the accepted terminology of the field to describe any materials, subjects, or experimental procedures used to gather and analyze data.
- ❑ Include detailed methods, so readers would be able to replicate the investigation.
- ❑ State the results clearly and succinctly. Thoroughly discuss, interpret and analyze the implications of the findings.
- ❑ Describe any problems you encountered and explain any unexpected findings. Include ways to improve or expand your research.
- ❑ Provide a conclusion that restates the question(s), results, and broader significance of the research.
- ❑ Plainly and succinctly discuss the impact of the results, both globally and specifically, to enlighten readers, regardless of their previous background in the field of study.

Methods and Materials

The purpose of this section is to make it possible for someone versed in your area to repeat your experiment and reproduce your results. Describe, in excruciating detail, exactly what you did. Include the following:

- ❑ Subjects used and their pre-experiment handling and care
- ❑ Sample preparation technique
- ❑ Origins of samples and materials
- ❑ Protocol for collecting data—how the procedures were performed
- ❑ Statistical analysis techniques used
- ❑ Information on computer programs used or written
- ❑ Descriptions of equipment setup and function

Results

Present the key results of the project without interpreting their meaning. Do not present raw data; use text, tables and figures to summarize. If feasible, follow the organization of the Methods and Materials section to provide consistency for the readers.

Discussion

Use this section to interpret the results of the project. Restate the major issues you discussed in the introduction and interpret them in light of the results. It is important to answer these questions:

- ❑ Did the results provide answers to the testable hypotheses?
- ❑ If so, what does this mean for those hypotheses?
- ❑ If not, do the results suggest an alternate hypothesis? What is it? Why do the results suggest it? What further results might solidify the hypothesis? Have others proposed it before?
- ❑ Do these results agree with what others have shown? If so, do other authors suggest an alternate explanation to explain the results? If not, how does this experiment differ from others? Is there a design flaw in this experiment?
- ❑ How do these results fit in with results from other studies? Do results from related studies affect the way you have interpreted these results?

Beyond simply interpreting the results, consider the following (in any order):

- ❑ What factors or sources of error might have influenced your results?
- ❑ What anomalous data appeared and how can you explain them? Are they explained by a theory, either yours or somebody else's?
- ❑ Was this experiment the most effective way to test your hypothesis? How could the experiment be improved to gain further insight?
- ❑ How have the results and conclusions of this study influenced our knowledge or understanding of the problem?
- ❑ What would be the next step in this study?
- ❑ What experiments could be run—or data found—to further support your hypothesis? What experiments could be run to disprove your hypothesis?

Acknowledgements

Thank the people/organizations that have supported the research and acknowledge funding sources where applicable.

Works Cited

Papers must contain full in-text referencing (not endnotes) with the complete references listed at the end of the paper. All resources—people, journals, pamphlets, etc.—must be referenced.

References must be in MLA format. See the "Citing References" section on page 8 for an overview of the reference format. For further information, MLA handbooks are available in the UROP office.

Layout and Style

This section describes the required format and layout for submissions.

Document File

Page Count	Papers are limited to a maximum of 20 pages.
File Format	Submitted documents must be in one of two file formats: ❑ PC-formatted Word (.doc) file ❑ Adobe Acrobat (.pdf) file
Page Margins	Set margins to one inch (1") on all sides.
Font	Use 12-point Times New Roman throughout the paper.
Line Spacing	Set Line spacing to Double.
Page Numbers	Number all pages. Center page numbers on the bottom of each page.
Figures	Number and title all figures, including graphs, drawings and photos. Place figure captions below the figures.
Tables	Number and title all tables. Place table captions above the tables.
Equations	Number all equations. Place equation numbers in parentheses to the right of the equations.
Footnotes	In general, avoid the use of footnotes. If, however, there is critical supporting text that does not fit in the main text flow, a few footnotes may be appropriate. Never use footnotes to cite references.

Graphics

Use graphics, including figures, tables, graphs, etc., to support your key findings. Graphics should be able to be understood on their own and must:

- ❑ Be of high resolution, at least 350 DPI (dots per inch). Note that many screenshots and pictures from the Web are 72 DPI, which is not suitable for print.
- ❑ Have neat, legible labels.
- ❑ Be simple. Avoid forcing too much information into a single graphic.
- ❑ Be clearly formatted.
- ❑ Indicate error. Include standard deviation information in tables and use error bars in graphs.
- ❑ Have detailed captions.

Style Guidelines

Commas in Lists	If a list comprises three single words (apples, oranges and bananas), there is no comma before the "and." Use a comma before "and" for lists with four or more single words (apples, oranges, bananas, and kumquats) or if one or more of the items listed has more than one word (apples, passion fruit, and bananas).
Semicolons	Use to separate two closely related, independent clauses; these clauses can stand on their own and have both a subject and a verb. Semicolons can also be used in lists of multiple phrases where commas are already used.
Space after Periods	Use a single space after periods. Do not use double spaces.
Space after Colons	Use a single space after colons. Do not use double spaces.
Em dashes	Do not insert a space before or after an em dash (double hyphen).
Slashes	Do not insert a space before or after a slash.
Italics	Italicize foreign words used in their original context, such as in vitro and in vivo. Italicize *et al.* in the text, but not as part of in-text references.
Acronyms	When defining acronyms, only capitalize proper nouns.
Unit Abbreviations	Abbreviate units without periods: Seconds: sec Grams: g Minutes: min Kilometers: km Hours: hr
Degree Symbols	Angles: #º (no space before the degree symbol) Temperature: # ºF or # ºC (space before the degree symbol) In Word, click Insert, then click Symbol to open the Symbol dialog. With the font set to Times New Roman, select the degree symbol from the table. Another way to insert a degree symbol is to hold down the Alt key and, on the numeric keypad, press 0 1 8 6, then release the Alt key.

Tips on Good Writing

Producing a paper of excellent quality is not as daunting as it may seem; it just takes a little planning:

- ❑ Write your paper with an interdisciplinary audience in mind. Your audience includes students, faculty, and members of the university community who are not in your field. Consider their level of knowledge about your specialization as you write.
- ❑ Keep writing throughout the research process. By the time you come to the conclusion of your project, the amount of information you have collected can seem overwhelming. Sit down each week and write a few paragraphs about your topic. These preliminary drafts will be invaluable when you start to write your paper.
- ❑ Check sentence order. Make sure that all the sentences in a paragraph relate to each other. You may want to prepare an outline after you have written the paper to double-check that each paragraph is in the most appropriate place. If you sense that the paragraphs are out of order, try cutting the paper apart by paragraph and physically rearranging the segments. Then reorder them on your computer.
- ❑ Evaluate the use of quotations. Avoid the excessive use of direct quotations; paraphrase whenever possible.
- ❑ Avoid writing the paper in the first person. (I did this; I found that; I will describe…) unless you are talking about your specific interactions with people.
- ❑ Get feedback on a draft. Ask students in your field and from other disciplines to read your paper and make suggestions. Have your faculty mentor read it and make suggestions as well.
- ❑ Read to your plants. This may sound silly, but it works. A few days after you finish your paper, read it out loud. Reading aloud will force you to slow down, and you will find yourself catching spelling and grammar mistakes, as well as awkward phrasings or unnecessary sentences.

Submission Checklist

- ❑ My paper answers the question "What is the significance of my research?".
- ❑ I have checked that my abstract and conclusions accurately reflect the content of my paper.
- ❑ I have explained any technical or scientific terms unique to the topic of my research.
- ❑ People from other disciplines have read and critiqued my paper.
- ❑ I have spell-checked and read my paper thoroughly.
- ❑ I have reviewed the Paper Submission Guidelines.
- ❑ If applicable, my paper includes in-text citations, graphs, and data, and is formatted according to the Paper Submission Guidelines.
- ❑ My mentor read my paper, and I asked my mentor to suggest improvements.

Citing References

All references should be in MLA format. This section gives an overview and examples of the reference format. For more details or other examples, please consult the MLA Handbook (available in the UROP Office) or search online for other MLA guides.

In-Text Referencing

In-text referencing depends on whether the reference deals with a specific section or the conclusions of an entire work.

- ❑ Specific section: Cite the name of the author(s) and page number(s) only (James 115). There is no comma before the page number.
- ❑ Entire work: Cite the name of the author(s) and year of publication (James, 1984). There is a comma before the year.

Format multiple-author references according to the number of authors:

- ❑ Two authors: (Collins and Fremont, 1977)
- ❑ Three authors: (Collins et al., 1988)

For parenthetical in-text references, "et al." is not italicized. Italicize "et al." everywhere else.

Works Cited Section

Here are some examples of common entries for a Works Cited section. If you cite two or more entries by the same author(s), provide the name(s) only in the first reference and use three hyphens and a period (---.) for the others. Also make sure to provide the unabbreviated article and journal titles.

Books

Author(s) of Book. Book Title. City Published: Name of Publisher, Year Published.

Eggins, Suzy. Analyzing Conversion. London: Cassell, 1997.

Eggins, Suzy, and Diane Slade. Analyzing Conversion. London: Cassell, 1997.

Eggins, Suzy, Diane Slade, and Ann Sheldon. Analyzing Conversion. London: Cassell, 1997.

Books Published in a Different Edition

Author(s) of Book. Book Title. Ed. Name of Editor. Edition Number. City Published: Name of Publisher, Year Published.

Chaucer, Geoffrey. The Works of Geoffrey Chaucer. Ed. F. W. Robinson. 2nd ed. Boston: Houghton, 1957.

Scholarly Journal Articles Paginated by Issue

Author(s) of Journal. "Article Title." Journal Name Volume.Issue Number (Year Published): Page Numbers.

Hallin, Daniel C. "Sound Bite News: Television Coverage of Elections, 1968-1988." Journal of Communication 42.2 (1992): 5-24.

Scholarly Journal Articles with Continuous Pagination

Author(s) of Journal. "Article Title." Journal Name Volume (Year Published): Page Numbers.

Craner, Paul. "New Tool for Art: The Computer and Music." Computers and Humanities 25 (1991): 14-19.

Articles in a Collection or Anthology

Author(s) of Article. "Article Title." Title of Collection or Anthology. Ed. Name of Editor. City Published: Name of Publisher, Year Published. Page Numbers.

More, Hannah. "The Black Slave Trade." British Women Poets. Ed. Paula Feldman. Baltimore: Johns Hopkins University Press, 1997. 472-482.

Articles in a Newspaper

Author(s) of Article. "Article Title." Name of Newspaper. Date, Edition: Page Numbers.

Lohr, Steve. "Now Playing: Babes in Cyberspace." New York Times. 3 Apr. 1998, late ed.: C1.

Articles in a Magazine (weekly/every two weeks)

Author(s) of Article. "Article Title." Name of Magazine. Day Month Year: Page Numbers.

Mehta, Pratap Bhanu. "Exploding Myths." New Republic 6 June 1998: 17-19.

Note: For a magazine published monthly or every two months, provide the month and year only.

Interviews that You Conducted

Name(s) of Person(s) Interviewed. Interview Type. Date Conducted.

Pei, I.M. Personal interview. 22 July 1993.

Bed, Alvin F. Telephone interview. 10 Dec. 1990.

Electronic Publications

Because this area is so diverse, here are a few guidelines to follow. Be as complete and specific as you can.

Title of database or project (underlined).

Name of editor(s) of the database or project (if given).

Electronic publication information, including version number, date of electronic publication (latest update), and name of the organization.

Date of access and Web Site address.

CNN Interactive. Ed. J. Doe. Vers. 98.2. 8 May 1998. Cable News Network. 8 May 1998 <http://www.cnn.com/>.

Note: To cite a selection within a database or project, begin with the author's name and then, in quotes, the title of the work. Then proceed as described above. Be sure to give the specific Web site address for the selection.

E-SURP Presentation Guidelines

Preparing and delivering a presentation gives you a chance to demonstrate the results of your work, what you have learned, and how you have contributed to your research area's body of knowledge. All E-SURP participants are required to present their research at the UCI Undergraduate Research Symposium the spring following their E-SURP research.

Presentation Details

- ❑ Presentations are allotted 15 minutes, followed by three minutes for questions.
- ❑ A computer and projector will be available in every presentation room. Please upload your PowerPoint file to the Web, under your application profile, so you can load it quickly when it is your turn to speak. Bring a copy on a CD or USB drive as a backup.

Preparing an Effective Presentation

- ❑ Organize your thoughts.

  Start with an outline—it can be similar to the outline for your research paper—and develop good transitions between sections. Emphasize the real-world significance of your research.
- ❑ Have a strong opening.

  Why should the audience listen to you? One good way to get their attention is to start with a question, whether or not you expect an answer.
- ❑ Define terms early.

  If you are using terms that may be new to the audience, introduce them early in your presentation. Once an audience gets lost in unfamiliar terminology, it is extremely difficult to get them back on track.
- ❑ Finish with a bang.

  Find one or two sentences that sum up the importance of your research. How is the world better off as a result of what you have done?
- ❑ Design your PowerPoint slides.

  Consider doing a presentation without slides. Then consider which points you cannot make without them. Create only those slides that are necessary to improve your communication with the audience.
- ❑ Time yourself.

  Do not wait until the last minute to time your presentation. You only have 15 minutes to speak, so you want to know, as soon as possible, if you are close to that limit.
- ❑ Create effective notes for yourself.

  Have notes that you can read. Do not write out your entire talk; use an outline or other brief reminders of what you want to say. Make sure you use large enough text that you can read it from a distance.
- ❑ Practice, practice, practice.

  The more you practice your presentation, the more comfortable you will be in front of an audience. Practice in front of a friend or two and ask for their feedback. Record yourself and listen to it critically. Make it better and do it again.

PowerPoint Tips

Microsoft PowerPoint is a tremendous tool for presentations. It is also a tool that is sometimes not used effectively. Here are some tips to make your PowerPoint slides more effectively enhance your presentation.

- ❑ Use a large font.

  As a general rule, avoid text smaller than 24 point.
- ❑ Use a clean typeface.

  Sans serif typefaces, such as Arial, are generally easier to read on a screen than serifed typefaces, such as Times New Roman.
- ❑ Use minimal text.

  Use bullet points, not complete sentences. The text on your slide provides an outline to what you are saying. If the entire text of your presentation is on your slides, there is no reason for the audience to listen to you.
- ❑ Use contrasting colors.

  Use a dark text on a light background or a light text on a dark background. Avoid combinations of colors that look similar. As a note, the most common form of color blindness is red/green.
- ❑ Use special effects sparingly.

  Using animations, cool transition effects, sounds and other special effects is an effective way to make sure the audience notices your slides. Unfortunately, that means that they are not listening to what you are saying. Use special effects only when they are necessary to make a point.

When You Are Presenting

- ❑ Be excited.

  You are talking about something exciting. If you remember to be excited, your audience will feel it and automatically become more interested.
- ❑ Speak with confidence.

  When you are speaking, you are the authority on your topic, but do not pretend that you know everything. If you do not know the answer to a question, admit it. Consider deferring the question to your mentor or offer to look into the matter further.

- ❑ Make eye contact with the audience.

  Your purpose is to communicate with your audience, and people listen more if they feel you are talking directly to them. As you speak, let your eyes settle on one person for several seconds before moving on to somebody else. You do not have to make eye contact with everybody, but make sure you connect with all areas of the audience equally.

- ❑ Avoid reading from the screen.

  First, if you are reading from the screen, you are not making eye contact with your audience. Second, if you put it on your slide, it is because you wanted them to read it, not you.

- ❑ Explain your equations and graphs.

  When you display equations, explain them fully. Point out all constants and dependant and independent variables. With graphs, tell how they support your point. Explain the x- and y-axes and show how the graph progresses from left to right.

- ❑ Pause.

  Pauses bring audible structure to your presentation. They emphasize important information, make transitions obvious, and give the audience time to catch up between points and to read new slides. Pauses always feel much longer to speakers than to listeners. Practice counting silently to three (slowly) between points.

- ❑ Avoid filler words.

  Um, like, you know, and many others. To an audience, these are indications that you do not know what to say; you sound uncomfortable, so they start to get uncomfortable as well. Speak slowly enough that you can collect your thoughts before moving ahead. If you really do not know what to say, pause silently until you do.

- ❑ Use a pointer only when necessary.

  If you are using a laser pointer, remember to keep it off unless you need to highlight something on the screen.

- ❑ Breathe.

  It is fine to be nervous. In fact, you should be—all good speakers are nervous every time they are in front of an audience. The most effective way to keep your nerves in check—aside from a lot of practice beforehand—is to remember to breathe deeply throughout your presentation.

- ❑ Relax.

  It is hard to relax when you are nervous, but your audience will be much more comfortable if they sense you are too.

- ❑ Acknowledge the people who supported your research.

  Take a moment to thank the people who made your research possible, including your mentor(s), research team, collaborators, and other sources of support. E-SURP is co-sponsored by the Edwards Lifesciences Center for Advanced Cardiovascular Technology and UROP; please include both of these programs in your list of acknowledgements.