

## Body of the Internship Paper Guidelines

### Environmental and Occupational Health

A practicing career in environmental and occupational health will encompass routine tasks and research approaches to identify problems and their resolution. The EOH capstone experience includes a 3 credit hour community or workplace based internship (Section A) and a separate 3 credit hour hypothesis based and data driven research project with public health application (Section B).

Section A provides a general outline for the body of your internship report. Faculty may require more or less of you than is listed depending on the specifics of your project. Although the specific approach may change, it remains essential to include the content points described below. (Remember the internship report must demonstrate competency in the core course areas. For your ease, suggestions regarding placement of core course material are indicated.)

1. Sections 1-7 (p. 17) of the internship outline need to precede the following elements comprising Section 8--the Body of the Paper (points 2-6 below).
2. Introduction or Background –
  - a. Broadly describe the issue addressed by the internship. Summarize the literature on the topic and how the broad goal relates to what is known. Describe the overarching objectives of the internship in the context of the field. (The literature review may include policy statements, legal limits or adopted guidelines proposed by various entities).
  - b. Describe the components of the sponsoring site. Include the mission statement, organizational structure, funding sources and employee motivation and reward system. (This section reflects an understanding of policy and management knowledge.)
  - c. Describe the specific goals, proposed outcomes and learning objectives, and activities of the internship.
  - d. State any hypotheses (null or alternative) (This may reflect the student's knowledge of epidemiology &/or biostatistics).
3. Methods—This section needs to be sufficiently detailed to enable replication of the project. Describe the methodology employed: specifically describe any actions taken (including calculations) to achieve the internship, evaluate the results or analyze the data. As applicable to the internship:
  - a. Describe any special approvals needed and place copies in an appendix (College IRB determination submission and response; IRB approval, animal subjects approval, Radiation Control Approval, Certificates of special training attained to accomplish tasks etc.)
  - b. Describe the study design employed including any recruitment or technique of recruiting the population evaluated by the work (i.e., focus groups, all employees, community recruitment etc.) (Epidemiology—characterize the population)
  - c. Describe all data collection methods including questionnaires, methods of administration, validation, data entry, quality assurance measures. (Epidemiology, SBS, & EOH)
  - d. Describe measurement methodology for physical environmental samples, including collection, analysis equipment, specific method, and measurement limits for environmental samples (for instance, method of chemical analysis, LOD, MDL, MLD, etc.) (EOH)

- e. Present all equations used to calculate values, and identify all terms so that another person can use your equation and replicate your calculations. In the results section you will report and explain tables, graphs and statistics associated with these calculated values. In the discussion section you will compare and contrast your values with regulatory values and measures reported in the literature.
- f. Describe statistical tests used, the power and the significance level. (Biostatistics)
- g. Describe how the necessary tasks were implemented and coordinated.
4. Results or Output—these may vary depending on the objective/task. In broad strokes describe what was produced or evaluated. Place actual products in appendices of the internship report. (Biostatistics & EOH) Examples:
  - a. Produced a slide show for training—Result = summary of people trained at the sponsoring site. Appendix = copy of the PowerPoint slide show.
  - b. Wrote a preparedness report for a county—Result = description could be process of development with a table of agencies and individuals consulted. Appendix = the written preparedness plan.
  - c. Performed safety survey of Hazardous materials. Results = a table showing the computerized data base structure developed for tracking/quantifying material. Appendix = the summary output from the database.
  - d. Tables and graphs of measurements (raw and calculated) are results. These need to have accompanying interpretive text that describes the trend, statistic or feature. Do not regurgitate the contents of the table or graph in the text; instead “interpret” the meaning of the data presented while citing important statistical results. Even appendices need to be referred to in the narrative. Do not include tables and graphs that are not discussed in the narrative.
5. Discussion—Evaluate what the results or output mean and describe the public health impact. As applicable to your internship:
  - a. Discuss the strengths and weaknesses of the data collected. Discuss whether any environmental or occupational limits have been exceeded. Is the entity in or out of compliance? (Epidemiology & EOH)
  - b. Recommend necessary improvements: consider the economics and ethics of the proposed action or non- action. (EOH & Policy)
  - c. Relate the internship findings to the knowledge base of the field. (Read the prepared introduction and describe the results are related.)
  - d. Discuss problems encountered, if any, and solutions proposed or utilized
  - e. Address the issues described earlier in the manual for all students under discussion (SBS). Specifically:
    - a) The “discussion” section of the internship report should demonstrate the student’s ability to:
      - i. Accept responsibility, assess situations, make or recommend decisions based on the assessment, and evaluate the progress and effectiveness of work performed;
      - ii. Adapt to work in difficult situations; manage time effectively and use the sponsoring site’s resources, procedures and structure effectively;
      - iii. Present ideas, negotiate and resolve conflicts in a professional manner;
      - iv. Work effectively in diversified task-oriented groups as well as with clients, and;

- v. Adhere to commitments made to the sponsoring site, colleagues, and clients, with professional integrity and impartiality.
  - b) Discuss how the project relates to public health (covers all core areas), what core functions were addressed, and which of the ten essential services were provided? (<http://www.health.gov/phfunctions/public.htm>)
  - c) Keep in mind, the purpose of the final report, along with the Internship Presentation, is to determine the student's ability to:
    - i. Demonstrate public health knowledge and relevance
    - ii. Demonstrate the ability to integrate public health skills
    - iii. Demonstrate technical writing and oral presentation skills
    - iv. Assess the completion of the planned learning objectives
6. Conclusions:
- a. Summarize internship findings as appropriate
  - b. Provide an overall evaluation of the experience, conclusions, and recommendations regarding future use of the site, agency or program.
7. Finally, the student should go back to the "internship outline" in the internship manual (p. 17) and be sure to include Section 9 (references), and Section 10 (appendices).

## Guidelines for Body of the Research Paper Environmental and Occupational Health

The University of Arizona Thesis/Dissertation format

[http://grad.arizona.edu/system/files/etd\\_Diss\\_Manual.pdf](http://grad.arizona.edu/system/files/etd_Diss_Manual.pdf) is the basis for both the internship and the research paper to minimize confusion. The research paper will emulate published papers.

1. Sections 1-7 of the format outline (p. 17) need to precede the following the Body of the Paper (Section 8 or points 2-6 below): Note: there are slight differences in the statement by author and signature pages (use thesis format for the Research paper & consult faculty).
2. Introduction including Background –
  - a. Broadly describe the topic of the research. Summarize the key literature and how that leads to your research question or testable hypothesis.
  - b. State your hypotheses (null or alternative)
  - c. Rather than a testable hypothesis, you paper might explore a controversial question with both pro and con publications. You may choose to review and evaluate the literature addressing the topic and conclude the state of the science, or formulate a test of the issue based on literature review. This approach is frequently more difficult than the direct performance of an experiment. It requires judgments of validity based on the written presentation.
3. Methods—This section needs to be sufficiently detailed to enable replication of the project. Describe the methodology employed: specifically describe any actions taken (including

calculations) to achieve the internship, evaluate the results or analyze the data. As applicable to the internship:

- a. Describe any special approvals needed and place copies in an appendix (College IRB determination submission and response; IRB approval, animal subjects approval, Radiation Control Approval, Certificates of special training attained to accomplish tasks etc.)
  - b. Describe the study design employed including any recruitment or technique of recruiting the population evaluated by the work (i.e., focus groups, all employees, community recruitment etc.)
  - c. Describe all data collection methods including questionnaires, methods of administration, validation, data entry, quality assurance measures.
  - d. Describe measurement methodology for physical environmental samples, including collection, analysis equipment, specific method, and measurement limits for environmental samples (for instance, method of chemical analysis, LOD, MDL, MLD, etc.)
  - e. Present all equations used to calculate values, and identify all terms so that another person can use your equation and replicate your calculations. In the results section you will report and explain tables, graphs and statistics associated with these calculated values. In the discussion section you will compare and contrast your values with regulatory values and measures reported in the literature.
  - f. Describe statistical tests used, the power and the significance level.
  - g. Describe how the necessary tasks were implemented and coordinated.
4. Results
- a. Whether obtained through direct experimentation/collection or compiled from the literature, tables and graphs of data (raw and calculated) are results. These need to have accompanying interpretive text that describes the trend, statistic or feature.
  - b. Do not regurgitate the contents of the table or graph in the text; instead “interpret” the meaning of the data presented while citing important statistical results.
  - c. Even appendices need to be referred to in the narrative.
  - d. Do not include tables and graphs that are not discussed in the narrative.
5. Discussion
- a. Evaluate what the results mean in the context of other publications, regulations or advisories
  - b. Discuss the health implications of your work at an individual and public level
  - c. Describe the strengths and weaknesses of your work
  - d. Identify any regulatory implications of your work in the context of the broader literature.
6. Conclusions
- a. Summarize your important findings
  - b. Recommend necessary policy or regulatory changes
  - c. improvements: consider the economics and ethics of the proposed action or non-action. (EOH & Policy)
7. Acknowledgements
- a. Subject participation
  - b. Financial aid on the project
  - c. Equipment loans

- d. Expertise provided
- 8. Finally, the student should go back to the “Thesis outline” in the internship manual (p. 17) and be sure to include Section 9 (references), and Section 10 (appendices).