



**West Virginia University  
Eberly College of Arts and Sciences  
C. Eugene Bennett Department of Chemistry  
Candidacy Examination Guidelines: Written Portion**

As stated in the DEPARTMENTAL GUIDELINES FOR GRADUATE STUDIES, Research is the main focus of the Ph.D. program.

Guidelines on how to prepare a professional-style research report are not routinely available. For this reason, the following information on report writing and format is provided to be helpful to graduate students and faculty advisors.

For any details that are not explicitly stated in this document, please refer to the ACS Style Guide, which is available on line (<http://pubs.acs.org/isbn/9780841239999>).

**Word limit:** There is a 6,000 word limit for the report (excluding references and figure captions).

**Formatting:** Use one of the following typefaces identified below:

- Arial, Courier New, or Palatino Linotype at a font size of 10 points or larger;
- Times New Roman at a font size of 11 points or larger; or

A font size of less than 10 points may be used for mathematical formulas or equations, figure, table or diagram captions and when using a Symbol font to insert Greek letters or special characters. Students are cautioned, however, that the text must still be readable.

Line spacing should be 1.5 and margins, in all directions, must be at least an inch.

### **Organization of the Research Report**

Irrespective of field, scientific research reports typically follow a logical format that reflects sound scientific reasoning. Specifically, a problem is identified and defined, a hypothesis is developed, specific experiments to test the hypothesis are designed and/or proposed, experimental results are presented and discussed, and conclusions are made based on the experimental results. The framework of your written report should closely parallel this reasoning. As the project is likely a work in progress at this stage in your graduate career, discussion of future work, expected results, potential problems, and alternative approaches should also be included.

The following sections are required:

- Title/Title Page
- Abstract
- Introduction (including background information)
- Experimental details and/or Theoretical Analysis
- Current Results and Discussion
- Future Work
- References

Details concerning each of these sections are provided in this document.

### **Title/Title Page**

The title should reflect the content and emphasis of the project described in the report. It should be as short as possible and include essential key words.

The author's name should follow the title on a separate line, followed by the author's affiliation (e.g., C. Eugene Bennett Department of Chemistry, West Virginia University, Morgantown, WV), the date, and possibly the origin of the report (e.g., In partial fulfillment of the candidacy exam under the supervision of Professor XXXXXX, November 15, 2016).

All of the above should appear on a single cover page. Acknowledgments and a table of contents can be added as preface pages if desired.

### **Abstract**

The abstract should, in the briefest terms possible, describe the topic, the scope, the principal findings, and the conclusions. It should be written last to reflect accurately the content of the report. The lengths of abstracts vary, but seldom exceed 200-300 words. The primary objective of an abstract is to communicate to the reader the essence of the report.

### **Introduction**

The nature of the problem and why it is of interest should be conveyed in the opening paragraphs. This section should describe clearly the background information on the problem, what has been done before (with proper literature citations), and the objectives (hypothesis) of the current project. A clear relationship between the current project and the scope and limitations of earlier work should be made so that the reasons for the project and the approach used will be understood. In short, you should demonstrate an appropriate knowledge of your chosen research field.

### **Experimental details and/or Theoretical Analysis**

This section should describe the experiments that have/will be used in your graduate research. It should describe procedures, techniques, instrumentation, special precautions, and so on. It should be sufficiently detailed that other experienced researchers would be able to repeat the work and obtain comparable results. It should also demonstrate that you understand the theoretical/technical aspects of your research project.

### **Current Results and Discussion**

In this section, relevant data, observations, and findings that you have obtained should be presented. Tabulation of data, equations, charts, and figures can be used effectively to present results clearly and concisely. Schemes to show reaction sequences may be used here or elsewhere in the report.

The crux of this section of the report is the analysis and interpretation of the results. What do the results mean? How do they relate to the objectives of the project? To what extent have they resolved the problem? In this section, you will be demonstrating your ability to perform experiments to successfully obtain, analyze, and interpret data.

### **Future Work**

As your dissertation work will not be complete at this stage of your career, you will need to describe the remaining experiments required to complete your dissertation project. This section should include a discussion of expected results, potential problems, and alternative strategies.

### **References**

Literature references should be collated at the end of the report and cited in one of the formats described in The ACS Style Guide or standard journals. Do not mix formats. All references should be checked against the original literature. Never cite a reference that you have not read yourself.

**NOTE:** When preparing for the oral portion of the candidacy exam, be aware that your committee will be probing not only your specific knowledge of your chosen research field but also your grasp of fundamental Chemistry concepts associated with your research.