

Chemistry Graduate Program
Research Seminar Presentation
Instructions for the Manuscript and Presentation
Chemistry 8901-8902

As part of the graduate seminar series, you are required to deliver a research seminar that provides a comprehensive perspective on the current state of a research field. The presentation can be related to, but must be distinct from, your research thesis project. The selected topic should align with your broader field of study (such as, Analytical Chemistry, Biochemistry, Organic Chemistry, Inorganic Chemistry, or Physical Chemistry), allowing you to demonstrate the wider impact and contributions of your research. The purpose of your seminar is to educate the audience on the chosen topic by offering a thorough overview that includes sufficient background information to orient and engage them. This presentation should move beyond the scope of an extended group meeting and serve as an opportunity to deepen the audience's understanding of the field. In conjunction with your seminar presentation, you are also required to prepare a manuscript formatted as a perspective review, which should be submitted in accordance with the provided guidelines.

Definition and Scope: Comprehensive Review and Seminar Preparation

A. Comprehensive Review: A comprehensive review involves a thorough and critical analysis of the current state of research within a specific field of chemistry, such as, Analytical Chemistry, Biochemistry, Inorganic Chemistry, Organic Chemistry or Physical Chemistry. The presentation can be related to, but must be distinct from, the student's thesis topic. The review should:

1. **Identify Key Themes and Advances:** Critically analyze a minimum of ten recent research papers (published within the last 10 years) to highlight the most significant developments in your chosen field. Your review should synthesize the findings from these papers to identify key trends, breakthroughs, methodologies, and current challenges faced by researchers. Remember, the focus is on providing a comprehensive overview of the topic, rather than directly presenting the content of the selected articles.
2. **Provide a Contextual Perspective:** Situate these developments within the broader context of the field, explaining their relevance and impact on ongoing research. The student should provide their perspective on the direction in which the field is heading, the potential applications of recent discoveries, and the gaps or limitations that future research needs to address.
3. **Adopt a Critical Approach:** Critique the methodologies, findings, and conclusions of the selected studies, identifying their strengths and limitations. Offer a balanced view that incorporates different perspectives, and suggest potential directions for future research.

B. Manuscript Preparation Guidelines

The manuscript accompanying your research seminar should provide a comprehensive review and critical analysis of recent developments in a selected field of chemistry (such as Analytical

Chemistry, Biochemistry, Inorganic Chemistry, or Physical Chemistry) which can be related to, but must be distinct from, your thesis topic. This document will showcase your understanding of the field, highlight key advancements, and position your own contributions within the broader scientific context.

1. Manuscript Structure:

- i. Title: Choose a concise and informative title that accurately reflects the focus of your review.
- ii. Abstract: Write a brief, original abstract (150–250 words) that provides an overview of your perspective on the topic. The abstract should summarize the main points, significance, and your unique analysis of the chosen field.
- iii. Introduction: Introduce the research field, providing background information to help readers understand the context. Clearly state the scope and objectives of your review, and explain why this field is important.
- iv. Review Topics: Organize the main body of the manuscript into coherent sections that discuss key topics or themes within the chosen field. Highlight recent advancements, emerging trends, significant findings, and ongoing debates. Ensure that each section provides a critical analysis of the research, including a comparison of different studies, methodologies, and findings.
- v. Discussion: Offer a deeper analysis of the findings presented in the review. Discuss the implications of the recent research, identify gaps or limitations in the current knowledge, and suggest potential directions for future research.
- vi. Conclusion and Reflections on Future Directions: Summarize the key points of your review, emphasizing the most important findings and their relevance to the field. Reflect on possible future developments and how your research contributes to these advancements.
- vii. References: Include a comprehensive reference list, formatted according to the style guidelines of the Journal of the American Chemical Society (J. Am. Chem. Soc.). Ensure that all sources cited in the manuscript are listed, and provide in-text citations throughout the document as needed.

2. Formatting Requirements:

- i. Length: Ten (10) single-spaced pages, excluding references.
- ii. Font: Times New Roman, 12-point size.
- iii. Spacing: Double line spacing.
- iv. Margins: 1-inch margins on all sides.
- v. Figures: Include only the most essential figures; if using figures from published articles, use high-resolution versions and properly credit the source. Creating original figures is highly encouraged.

3. Citation and Plagiarism:

- a) **Proper Citation:** All information, data, and ideas drawn from external sources must be accurately cited in accordance with the Journal of the American Chemical Society (J. Am.

Chem. Soc.) guidelines. This includes providing in-text citations for every reference used within your manuscript and a corresponding entry in the reference list. Make sure all references are formatted correctly and comprehensively, covering all necessary details such as authors, title, journal, volume, pages, and year of publication.

b) **Avoiding Plagiarism:** Plagiarism, which involves presenting another's work, ideas, or expressions as your own without proper acknowledgment, is a serious academic offense. To avoid plagiarism:

- Do not copy text directly from other sources, including articles, books, or online content, without using quotation marks and providing the appropriate citation.
- Paraphrase information in your own words and cite the original source to give proper credit.
- Use plagiarism detection tools (such as Turnitin or Grammarly) to check your manuscript for any unintended duplication or similarity with existing literature before submission.
- Ensure that your manuscript represents your original work, ideas, and analysis, even when discussing existing literature.

4. Use of AI Tools:

a) ***Appropriate Use of AI Tools:*** You are encouraged to use AI-based grammar and writing tools, such as, Grammarly or Microsoft Editor, to enhance the clarity, grammar, and overall style of your manuscript. These tools can help you identify errors, suggest improvements, and ensure that your writing is concise and coherent.

b) **Limitations and Responsibilities:** While AI tools can be beneficial for refining your writing, they should not be used to generate content or replace your original ideas, critical thinking, or analysis. The substance of your manuscript, its arguments, interpretations, and contributions, must be entirely your own. Be mindful to review and verify all suggestions made by AI tools to ensure they are accurate and contextually appropriate. Remember, you are ultimately responsible for the integrity and quality of your work.

5. **Submission:** The completed manuscript must be submitted in PDF format to the Graduate Seminar Coordinators at least two (2) weeks before your scheduled presentation date. The coordinators will distribute the document to students and faculty in the Chemistry Graduate Program for review.

C. Seminar Presentation Instructions

1. Consider the seminar as a talk that is supposed to present the most important findings of a current topic.
2. The seminar is not an extended group meeting. It is meant to educate the audience on the topic and should feature sufficient background material to orient the audience on the subject matter.
3. The length of the presentation should be 45 minutes. Use your slides in a one minute per slide rule with just a few exceptions. If you wish to use figures from articles, use the high-resolution HTML versions of the figures and do not copy/paste directly from an article. It is highly recommended to prepare your own figures. Remember to include the appropriate references.
4. It should keep the regular pattern of a presentation: Title, Overview, Introduction, Discussion, Conclusion and Reflections on Future Directions, and Acknowledgements.
5. Use references within each slide.
6. Prepare additional slides to explain difficult concepts. These additional slides will come in handy during the question session.
7. Your presentation will be evaluated by your committee members. However, in the absence of several of your committee members, other faculty will be appointed to evaluate your work. It is of utmost importance to make sure that all of your committee members will be able to attend