

3 GUIDELINES FOR SECOND-YEAR SEMINAR PREPARATION
MCMP GRADUATE STUDENT SEMINAR PROGRAM
MCMP 696

I. The Departmental Seminar Course

Four important skills critical to the professional development of graduate students are: (1) The ability to learn and integrate information from the primary scientific literature; (2) The ability to critically evaluate the primary literature; and (3) The ability to formulate hypotheses and design experiments to test these hypotheses; and (4) The ability to deliver accurate, concise, and clear oral presentations. To promote the development of these skills, the Department of Medicinal Chemistry and Molecular Pharmacology (“MCMP”) is requiring graduate students to participate in a seminar program. Each Ph.D. student in the MCMP department will be required to participate in MCMP 696. The requirement is the same not only for students who entered Purdue with a B.S. degree, but also for those who entered with an M.S. degree from another institution. Neuroscience students pursuing dissertation research in the laboratory of an MCMP faculty member will participate in MCMP 696 during the second semester of their first year of graduate study and both semesters of their second year of graduate study. They may present a seminar during the second year of graduate study.

II. Topic Selection

The first (second-year) seminar will be given on a topic not directly related to the student's research. A faculty member other than the student's dissertation advisor will serve as seminar advisor by assisting the student in selecting a seminar topic and in preparing the seminar. To help in identifying a topic and an advisor, the student should consult the list of topics and advisors provided by the Seminar Coordinator. The students should consult with potential seminar advisors prior to selecting a topic to ensure availability of topic and advisor.

THE FINAL APPROVAL OF THE SEMINAR TOPIC AND ADVISOR RESTS WITH THE SEMINAR COORDINATOR.

III. Preparation of the Seminar

A. Timeline for Seminar Preparation

Prior to the beginning of the Fall semester, the Seminar Coordinator will convene a meeting of all second-year graduate students participating in the seminar program. At this meeting the Seminar Coordinator will review these guidelines with the students and the students will begin the process of identifying a seminar topic. Recent articles in high profile journals (Science, Nature, JACS, PNAS, etc.) and broad review articles (like those found in Current Opinion journals) are particularly good sources for finding good topics suitable for a fifty-minute seminar. The student must inform the Seminar Coordinator of the proposed topic and the potential seminar advisor for approval no later than six weeks before the seminar date. After approval and consultation with a potential seminar advisor, the Seminar Coordinator will provide you with a checklist of seminar obligations. The seminar date should be considered flexible in the unlikely event that there could be difficulty in scheduling outside speakers. Once your topic and advisor are approved, you should contact the faculty member who provided the topic (the seminar advisor) for leading references. During this time period all presenters will be required to meet with the Seminar Coordinator to review seminar guidelines.

During the next two to four weeks the student should read primary literature germane to the seminar topic. Reading selections should be directed in part by the seminar advisor. During this period the student should have periodic meetings with the seminar advisor to discuss the readings and to begin formulating the seminar and seminar abstract.

Four weeks prior to the seminar date, the student must provide the Seminar Coordinator with the hypothesis to be discussed and a rough draft of the presentation. Three weeks prior to seminar the student should have a "dry run" of the seminar with the seminar advisor. This will ensure that sufficient time would remain for additional literature work and extensive changes. At the same time, the student must have a draft version of the PowerPoint presentation available for review by the Seminar Coordinator.

The student must prepare a seminar abstract (see guidelines below) and have it approved by the seminar advisor and the Seminar Coordinator two weeks prior to the seminar date. This will ensure that the Seminar Coordinator has sufficient time to duplicate and distribute the abstract. Students should not request a postponement of their seminar for other than serious reasons (sickness, etc.). The purpose of the firm guidelines and dates is to ensure that the student is given adequate time to prepare the seminar by the required date. An example timeline for seminar preparation is attached to this document.

B. Seminar Abstract

A portion of the seminar grade will be based on the abstract. The abstract will be graded according to the adherence to accepted principles of English grammar and according to the adherence to the format described below.

The seminar abstract is an important record of the coverage of your topic and provides a valuable source of leading references for students and faculty alike. Accordingly, the abstract must serve as an introduction to your seminar topic. It will include the key hypotheses, the major scientific findings and a brief conclusion. **The abstract will be limited to 500 words, excluding figures, tables and references.** The abstract will include references to the research articles upon which the seminar is based as well as research articles that have served as key background material. The references should be listed using a standard format that includes the title of the article as well as all of the authors of the article.

C. The Seminar

The following points are particularly important and should be noted carefully!

- 1. The seminar should not be merely a recital of facts. This means that the seminar should not be overly general, and the scope should be carefully defined and restricted. Seminars in the nature of very general overviews with little or no data in the style of *Scientific American* articles will receive a failing grade.**
- 2. *The scientific hypotheses/questions must be clearly articulated and not contrived (i.e. "chemical agents might kill cancer cells"). The hypothesis needn't be presented as 'your hypothesis' – rather, it can be presented as a prevailing hypothesis in the field that follows logically from the background information that you have presented.***
3. Background information required to place the hypothesis in appropriate context must be presented.

4. Experimental methodology used to test the hypothesis must be described in enough detail so that the audience can understand the techniques.
5. The data used to support or refute the hypothesis must be presented in sufficient detail so that the audience can evaluate the conclusions drawn from the data.
6. The conclusions should be brief, yet bring together the seminar in the context of the original hypotheses.
7. The seminar should conclude with speculation about the directions of future scientific research in this area.
8. The seminar should be approximately 45 minutes in length with 5 minutes left for questions. The following format is suggested: Introduction of hypothesis and background (10-15 minutes); Experimental methods and results (20-25 minutes); Conclusions and future directions (5-10 minutes).
9. Presentations using PowerPoint are preferred; other visual aids such as slides, overhead transparencies, etc. may, however, be used at the student's discretion.
10. General Information:

The research under discussion should not be limited to only one paper; the seminar is not a "journal club," but rather is meant to teach you by experience to search and integrate a body of literature. It is entirely permissible that different students can present more than one seminar on different aspects of a research area. **The student should NOT necessarily serve as an advocate for the investigator whose work is being discussed (see item '2' above).** The student should feel free to criticize or question conclusions if this is warranted. The student should become familiar with novel techniques or reagents through appropriate background readings to the point that the student can answer basic questions on these subjects.

D. Plagiarism

Plagiarism is the unauthorized use of another person's ideas or words resulting from improper citation of one's sources. **It is considered a very serious academic infraction that can lead to failure in a university course.** Before starting your preparation for the seminar, please consult the following websites:

<http://owl.english.purdue.edu/workshops/hypertext/ResearchW/plag.html>

<http://www.georgetown.edu/honor/plagiarism.html>

<http://www.indiana.edu/~wts/pamphlets/plagiarism.shtml>

Examples of plagiarism in the context of the seminar include (i) using another person's phrase or sentence word-for-word without quotation marks in your abstract, even if the phrase or sentence is followed by the appropriate reference number from your reference list; and (ii) showing a figure from a journal article in your Powerpoint presentation without including the appropriate bibliographic information at the bottom of the figure.

Please consult with the Seminar Coordinator, Seminar Advisor, or any other faculty member if you have questions about plagiarism.

E. Grades

The grading of the seminar will be based on the following:

1. Did the student adequately describe the hypotheses for the seminar?
2. Was sufficient background material presented?
3. Were experimental techniques adequately explained?
4. Were the results critically presented and evaluated?
5. Did the student provide alternative explanations or hypotheses for the data where appropriate?
6. Did the student explain how conclusions and future directions could be drawn from the data?
7. Was the seminar presented in a professional manner (voice, pace, use of visual aids, enthusiasm)?
8. Did the student exhibit appropriate knowledge of the seminar topic through their ability to field questions?
9. Was the abstract informative and did it adhere to guidelines for content and format, including proper use of English?

The Seminar Coordinator has sole responsibility for assigning the final grade in seminar. (Other faculty members will be consulted to help determine the letter grade.) An "A" grade will be given for an excellent seminar. A "B" grade will be given for a good seminar. A "C" grade will be given for an adequate seminar. Students who receive a grade below "C" will have to present another seminar (the topic choice will be discussed with the Seminar Coordinator). Students who receive a grade of "C" may present another seminar in the hopes of earning a better grade.

Additional Helpful Hints for Preparing Your Seminar

I. Abstract

In your abstract, you should endeavor to use proper English. **Students should consult one or more of the following references prior to writing their abstract to familiarize themselves with appropriate scientific writing style.**

Robert Schoenfeld, "The Chemist's English." VCH, 1985. A concise and well-written little book that addresses elements of scientific English that are frequently misused.

Karen Elizabeth Gordon, "The Transitive Vampire." Times Books, 1985. A concise survey of all the elements of English mechanics, illustrated with amusing and often outlandish examples.

Anne Eisenberg, "Writing Well for the Technical Professions." Harper and Row, 1989. A more comprehensive manual that covers stylistic elements.

University of Chicago Press, "The Chicago Manual of Style." This reference work is the ultimate authority on proper usage, right down to punctuation.

John C. Hodges, "The Harbrace College Handbook," Harcourt, Brace. This "mini" version of the Chicago Manual is a very useful reference work. A number of other "Handbooks" of a similar nature also exist.

Robert Day, "How to Write a Scientific Paper."

Strunk and White, "Elements of Style."

Janet S. Dodd, "The ACS Style Guide."

Robert R. H. Anholt "Dazzle 'em with Style; The Art of Oral Scientific Presentation."

Please note some of the following common errors and try to avoid them:

Dangling participles: "The sample was analyzed using mass spectrometry." "Using" is a verb form used as an adjective; consequently, it must modify a noun or pronoun. Better: "The sample was analyzed with mass spectrometry," or "Mass spectrometry was used to analyze the sample." "Based on" is a highly misused construction, as in: "Based on the results, we conclude that the data are valid." "Based" is also a participle, and must modify a noun or pronoun; it certainly does not modify "we." What does it modify? Nothing! Therefore, it is dangling. Better: "The results suggest (or "lead us to conclude," or "show") that the data are valid." A correct use of "based" is: "The results were based on the data." Here "based" is a predicate adjective that modifies "results."

Misuse of "Due to:" "Due" is an adjective, and therefore should be used to indicate causality only when it modifies a noun. Proper: "The rain was due to the high humidity." ("Due" is a predicate adjective modifying rain.) Wrong: "It rained due to the high humidity." Here "Due" is being incorrectly used as an adverb. Alternative: "It rained because of the high humidity." When an adverb is needed, use "because."

Failure to use possessives with gerunds: A gerund is a verb form used as a noun, and invariably ends in -ing. The following is an example of an often-misused construction involving gerunds: "The hypothesis was proved by us running the reaction." "Running" is a gerund; since "us" modifies "running," it must be used as an adjective, namely, as a possessive. Hence: "The hypothesis was proved by our running the reaction."

II. Searching the Literature

One of the most important skills you will learn as a graduate student is the ability to find information in the literature. The seminar presents an excellent opportunity to practice this skill. A good way to obtain important literature is to find a recent review or key paper, and then "snowball" the references from the review. The seminar advisor can provide leading references to assist in the beginning of this process, but the student is ultimately responsible for thoroughly sifting through the literature.

A number of powerful electronic search tools are available for searching the literature. [PubMed](#), the Science Citation Index (accessed through the [Web of Science](#)), and Chemical Abstracts (accessed through [SciFinder Scholar](#)) are extremely useful. Both PubMed and the Web of Science can be used to find review articles (by specifying "reviews" as the document type) and to find other relevant papers that discuss related research. The Seminar Coordinator can provide assistance at using these resources.

III. Preparing Effective Transparencies or Slides

1. **Legibility.** For overheads, a vertical (Portrait) format is preferred whereas for slides a horizontal (Landscape) format is more appropriate. Regardless, be sure that the entire content is visible on the screen. For optimum legibility use a modern, **bold** sans serif font (i.e., Helvetica, Arial) rather than a serif typeface such as Times Roman. Remember, "Bigger is better;" thus, prior to the seminar, ensure that the text and graphs on your slides are visible from the rear of the room (RPH 164). That is especially true of slides containing spectra, tables, and structural formulas. If using color, remember to maintain high contrast i.e., white letters on dark background. Avoid dark colors with dark backgrounds as well as red and green since many individuals are red/green colorblind.
2. **"Digestibility."** There is a practical limit to how many bits of new information one can reasonably expect the listener to process from a single slide. Each slide should contain no more than one or two new ideas. Avoid visual aids that are "text heavy." A graph, schematic, cartoon, or diagram is usually a better way of presenting a concept than a laundry list of text.
3. **Simplicity.** Use a simple, uncluttered format to direct the attention of the audience to the main point of each slide. Tabular data is much harder for an audience to process than a simple graph. Keep colors to a minimum, with no more than three different colors per slide. **Be careful not to overuse animations if using PowerPoint presentations, as this can become a distraction.**

For each data slide or transparency the following format may be helpful:

1. A title should be present on all slides. For data slides, this title should either state the question addressed by the experiment or state a conclusion or "take home" message. Description type titles i.e., "The Effect of X on Y" are not as helpful to the listener as "Does X increase levels of Y?" or "X increases levels of Y in a dose-dependent manner."
2. **Give a brief description of the experimental design. Simply state how the experiment was conducted highlighting appropriate controls.**

3. Explain the data. Be sure the audience understands what is being measured or presented. What do the X- and Y-axis represent? What do the symbols, peaks, or other data points represent? The biggest mistake of most presenters (young and old alike) is to assume that your audience knows what you are talking about. The best assumption is that your audience has minimal information about your topic and the types of experiments you are describing.
4. Interpret the data. How do you interpret the results? How do the authors interpret their results? Do you agree or disagree with the authors and what experiments might they perform to strengthen their conclusions?
5. Integrate the present findings with the overall hypothesis. How do the data presented fit into the overall scientific “story” that you are trying to convey to the audience?

IV. Timeline for Completing Second-Year Seminar

Time Period or Deadline	Task to Be Completed
<ul style="list-style-type: none"> • Prior to the beginning of the Fall semester 	<ul style="list-style-type: none"> • Attend meeting with Seminar Coordinator to review guidelines.
<ul style="list-style-type: none"> • Eight to six weeks before seminar 	<ul style="list-style-type: none"> • Discuss potential seminar topics with potential seminar advisors
<ul style="list-style-type: none"> • Six weeks before seminar 	<ul style="list-style-type: none"> • Have seminar topic and advisor approved by the Seminar Coordinator
<ul style="list-style-type: none"> • Four to six weeks before seminar 	<ul style="list-style-type: none"> • Reading period and periodic meetings with seminar advisor
<ul style="list-style-type: none"> • Four weeks before seminar 	<ul style="list-style-type: none"> • Provide Seminar Coordinator with hypothesis to be discussed and a rough draft of the presentation
<ul style="list-style-type: none"> • Three weeks before seminar 	<ul style="list-style-type: none"> • Give “dry run” of seminar for seminar advisor; identify gaps and weaknesses in overall seminar structure
<ul style="list-style-type: none"> • Two weeks before seminar 	<ul style="list-style-type: none"> • Have seminar abstract approved by advisor and the seminar coordinator
<ul style="list-style-type: none"> • One week before seminar 	<ul style="list-style-type: none"> • One or two practice runs of seminar with other students or group members to work out rough spots and develop smooth flow for final presentation