UW OSHKOSH CHEM 490: Chemistry Seminar I Syllabus Fall 2025

Seminar meetings: Fridays 1:50 – 2:50 p.m., Halsey Science 266; 1 credit

Seminar Director Dr. Jonathan Gutow HS 412 920-424-1326 gutow@uwosh.edu
office hours: MWF 10:15 – 11:15, T 10 – 11, Th 12:15 – 1:15 or by appointment

Course Description and Course Responsibilities:

The student will work with a faculty member adviser to prepare a major research paper involving the student's own research or a critical analysis of recent scientific literature on an agreed-upon chemical topic.

Chemistry Seminar I and II are the required senior capstone courses for all Chemistry majors. The paper you write in CHEM 490 will be the basis for an oral presentation in CHEM 491.

Learning Outcomes: Students in Chemistry Seminar I will be able to:

1. retrieve specific chemical information from the chemical literature;
2. read and understand technical material;
3. prepare effective written scientific papers;
4. find career opportunities for persons with chemical training.

Role of the Seminar Director: The seminar director is responsible for scheduling seminars and for helping students find suitable topics and advisors. The seminar director has the ultimate responsibility for assigning course grades.

Role of the Faculty Advisors: Each student will choose or be assigned a faculty advisor who will help determine a suitable topic and guide the student in preparing the seminar paper and oral presentation. The student and faculty advisor are expected to meet at least six times during the semester. The faculty advisor will submit periodic reports to the seminar director to indicate the student's level of performance, and whether the student has met the deadlines.

Role of the Student: Each student is responsible for scheduling all appointments with his or her seminar advisor, and for meeting all deadlines. The student must ensure that the paper is professionally written and meets all the requirements described in this syllabus.

Attendance Policy: Each student is required to attend all seminars, and evaluate the student speakers. Whenever possible, you are expected to attend class synchronously, either onsite or virtually. Students attending via Zoom should put questions in the chat.

If you need to miss a class during our regular meeting time, please notify the instructor before class via email. To make up an absence, a student must (1) watch the recording; (2) complete an evaluation form for the seminar (if a student seminar); and (3) write a two-page report (double spaced, 12 point font, 1 inch margins) containing a summary of the presentation, and at least two questions that you would have liked to ask the speaker. This report will be due within one week of the absence.

Process for Creation of a Seminar Paper

Due Date	Tasks to accomplish
1:50 PM 9/12/25	Find a faculty member who agrees to act as your seminar advisor. Select a **topic** of mutual interest and formulate an overall plan for the paper (1st meeting). Turn in topic and advisor name to the Canvas assignment.
1:50 PM 9/19/25	Meet your advisor to plan and execute a Chemical Abstracts **search** (2nd meeting).
9/21/25	Export your search terms and list of articles from SciFinder^{n}, then submit it to Canvas.
9/28/25	Submit an **annotated bibliography**, *in ACS format*, of at least five key references (from primary or secondary scientific literature) to Canvas. Share pdf copies of the references with your advisor.
1:50 PM 10/3/25	Meet your advisor to discuss your bibliography, decide if more references are needed (3rd meeting).
10/12/25	Submit a detailed **outline** to Canvas.
1:50 PM 10/17/25	Meet your advisor to discuss your outline and plan your draft (4th meeting).
10/26/25	Submit a **5 page draft** of your paper to Canvas.
1:50 PM 10/31/25	Meet with your advisor to discuss your 5 page draft (5th meeting).
11/16/25	Submit a **15 page draft** of your paper to Canvas.
1:50 PM 11/21/25	Meet with your advisor to discuss your 15 page draft (6th meeting).
12/7/25	Submit your **final, 20-25 page paper** to Canvas.

Additional Assignments:

- career planning assignments, due 9/12 and 9/21

Selection of Seminar Topics and Faculty Advisor:

A seminar paper describes recent research in Chemistry or in a closely related field. Students who have done or are currently doing research may write a paper on their own and related research, provided that their research advisor agrees. In such a case, the student's research advisor will also act as the seminar advisor. Students who will not be describing their own research should discuss possible topics with faculty members before making a selection. The topic is expected to evolve as literature references are studied. If you are not sure who would be an appropriate advisor for your preferred topic, contact the seminar director before the first seminar meeting for assistance in finding an adviser.

A seminar topic should meet the following criteria: (1) It has a substantial component of chemistry; (2) It concerns research near the forefront of science which is described in recent articles from the primary literature; (3) The seminar director approves the topic; and (4) a faculty member is willing to act as an advisor.

Identification of References:

Use of References: References can be classified as primary, secondary, tertiary, and quaternary. Primary references include articles in peer-reviewed journals that publish original scientific papers (*e.g., Journal of the American Chemical Society*). Secondary references include single-topic review articles or monographs (*e.g., Accounts of Chemical Research*, *Chemical Reviews*). Usually, the author of a secondary reference is an active researcher in the field. Tertiary references include textbooks (*e.g., Advanced Organic Chemistry*) and specialized encyclopedias (*e.g., Encyclopedia of Chemical Technology*). Quaternary references include most encyclopedias, all news articles, and most general articles in trade magazines (*e.g. Chemical and Engineering News*).

Each student is to rely, for the most part, on **recent primary chemical literature**. References to secondary literature are appropriate, but should be limited. References to tertiary and quaternary literature should be kept to an absolute minimum.

How to Find References: The internet has many sources of information but few are peer reviewed so should be used cautiously. The best way to identify chemistry references is with a **SciFinder search** of the Chemical Abstracts and MedLine databases. Although Polk Library offers other research databases for STEM, they are less complete than Chemical Abstracts. The Canvas site has a link you can use to create a SciFinder account. The account works on UW Oshkosh computers; if you are off campus, log in through the Polk Library website. If you need assistance with the search, schedule a meeting with your advisor, the seminar director, or a reference librarian.

Another way to identify appropriate references is to start with a key reference and find the references that its authors cited. You can then take those papers and look up their references. You can also find newer articles that cite your key reference by using the Science Citation Index (part of the Web of Science).

How to Get the References that You Need: Many journal articles are available electronically via the Polk library website. If Polk library does not have what you need, you may order the article through their interlibrary loan program. Articles usually arrive in a few days. However, for some items (especially books) it may take longer. Universal Borrowing, from other UW System institutions, may be a faster way to get books.

Selection of Information:

Each student is expected to prepare a well-researched, scholarly paper. To do this, you will read current articles from the primary literature, then use your own words to describe experiments and their results. In addition, you should analyze the information, using your own knowledge of chemistry to make significant conclusions. Since reading and understanding chemistry articles can be challenging you will practice with a **journal article reading assignment**.

The first stage in writing the paper is creating an **Annotated Bibliography**. Compile the citations for the references you want to use for your paper, using American Chemical Society format (see the *ACS Style Guide*). For each reference

- list what information from the article will be used in your seminar paper (i.e. synthetic steps & spectra for a molecule; instrument design);
- explain why you find the reference to be interesting;
- explain how the information in the reference is relevant to your paper topic.

Organization of Information:

The next stage in writing the paper is creating an **Outline** containing information from the annotated bibliography. Papers will need an introduction which provides context for their topic, including the background and significance; the main body which describes experiments and discusses results; and a conclusion in which you apply your knowledge of chemistry to analyze, synthesize, and interpret the information, drawing conclusions about the current state of research on the topic and describing areas in which more research is needed. Other headings and subheadings may be used to help the reader understand the organization of your paper.

Formatting Guidelines:

All submissions must be double-spaced, in 12 point font, with 1 inch margins, and at least 23 lines of text per page. Indent new paragraphs rather than skipping lines, unless you are starting a new section.

To avoid plagiarism be sure that ideas and information (as well as direct quotes and paraphrases) from references are indicated with in-text citations, as described in the *ACS Style Guide* and *Purdue OWL* "Using Research" website. If you use an AI-based tool for writing assistance, you must cite it (see "AI tool citation in APA Style" in Canvas). Since these tools learn by copying published text, check the output before using it in your paper, to be sure that you are not inadvertently plagiarizing from another source. The goal of the paper is for you to demonstrate that you can apply knowledge gained in foundational courses to understand new scientific discoveries and inventions. Therefore, no more than 1-2 pages should be AI-generated.

The **Final Paper** will include:

1) A title page with the title, the author's name, the name of the faculty advisor, and an abstract of 80 to 120 words in length.
2) The text of the paper which typically contains the following sections: Introduction, Results and Discussion, and Conclusion. More sections and subsections can be used as needed. The paper should be 20-25 pages long, excluding the title page, references, figures and tables.
3) A list of endnotes and references, in appropriate ACS format.
4) All figures and diagrams must be attached at the end of the manuscript. These do not count toward the 20-25 pages. Number each figure (Figure 1, Figure 2, etc.) and provide a caption.

Campus Resources can be found at the One Stop for Student Success link in Canvas.

> The ***Writing Center*** is a relaxed, friendly place to get free feedback on assignments such as papers, resumes, presentations, and speeches.
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> It is the University's policy to provide reasonable accommodations to students who have documented disabilities that may affect their ability to participate in course activities or to meet course requirements. If there are aspects of the instruction or design of this course that result in barriers to your inclusion, please notify the seminar director as soon as possible. For more information about ***accommodations***, visit the Dean of Students Office's Center for Accessibility and Disability Resources.

Grading: Final papers will be evaluated on the basis of their content, quality of writing, and the degree to which they meet the indicated guidelines (*e.g.* length and appearance, use of suitable references, *etc.*). Refer to the attached **evaluation form** and *rubric* for more information.

The student's seminar advisor will critically read the paper and recommend a grade to the seminar director. Based on this recommendation, as well as her own evaluation of the paper, the seminar director will assign a preliminary grade for the paper. The preliminary grade will be adjusted for any demerits due to late assignments. Any unexcused absence or overdue assignment results in a reduced or failing grade for the course, at the sole discretion of the seminar director. Note that completion of CHEM 490 is a prerequisite for CHEM 491.

Incompletes will be granted only when required by University policy. Specifically, the student must have completed two-thirds of the assigned work. This consists of a 15 page rough draft of the seminar paper, which the student's adviser and the seminar director deem acceptable. If the student does not meet these requirements, he or she will receive a failing grade. Exceptions will be made only in cases of illness or injury. A student with an Incomplete grade in CHEM 490 may not register for CHEM 491 Chemistry Seminar II.

Academic Honesty: The University of Wisconsin Oshkosh is built upon a strong foundation of integrity, respect, and trust. All members of the university community have a responsibility to be honest and the right to expect honest from others. Any form of academic dishonesty is unacceptable to our community and will not be tolerated. The State of Wisconsin Administrative Code states: "Students are responsible for the honest completion and representation of their work, for appropriate citation of sources and for respect of others academic endeavors." (§ UWS 14.01)

Plagiarism (representing the work/words of others as your own) or cheating on any assignment will lead to a zero on that assignment, with no opportunity for a make-up or extra credit. The best way to avoid issues of plagiarism is keep track of all sources you read or skim, and work through multiple rough drafts with your advisor. Offenses will be reported to the Dean of Students. A second offense will lead to an F in the course and disciplinary action by the Dean of Students. These sanctions will be applied in accordance with state statutes as specified in UWS 14.01 – 14.06. For more details see the information on the Dean of Students Office website and the portions of Wisconsin State Law referenced there.

SEMINAR PAPER EVALUATION FORM

Student Name _____ Advisor _____

_____1. Format
- ☐ Typed, double spaced
- ☐ 12 point type
- ☐ 1 inch margins
- ☐ at least 23 lines of text per page
- ☐ Page numbers

____ pages long (body 20-25 pages)
- ☐ title page
- ☐ reference list
- ☐ figures and tables attached

_____2. Organization

Title page:
- ☐ Title
- ☐ Author's name
- ☐ Advisor's name
- ☐ Abstract (80-120 words)

Text with subsections, at least:
- ☐ Introduction
- ☐ Experiments & Results
- ☐ Conclusions

_____ 3. Grammar & Spelling

_____ 4. Mathematical Representations

_____ 5. Quality Figures & Tables
- ☐ captioned
- ☐ support the text

_____ 6. References and Citations

___ primary sources
___ recent sources
- ☐ cited in text
- ☐ ACS format

_____ 7) Scientific Accuracy

_____ 8) Depth of Coverage

_____ 9) Synthesis and Interpretation

Comments

Advisor Recommended Grade _____
Final Grade (includes demerits for missed deadlines)_____

rubric for Evaluation of Seminar Paper Content (categories 6-9)

	Advanced	***Intermediate***	***Novice***	***Unsatisfactory***
6. References and Citations	mostly primary mostly recent cited in text ACS format	many primary many recent cited in text ACS format	≥ 5 primary/secondary references; or minor errors in citation, reference format	< 5 primary/secondary references; or failed to cite a reference
7. Scientific Accuracy	no significant errors	few errors in advanced material	minor errors in material covered in classes	major errors in material typically covered in classes
8. Depth of Coverage	information not familiar to professors	some information rarely covered in classes	mostly information covered in classes or tertiary sources; and/or missing information needed to understand the paper	
9. Synthesis and interpretation	interprets results using chemical models and theories	only interprets some results, or exhibits minor misunderstandings	omits interpretation	

Seminar Paper grading scale

A range	B range	C range	D range	F
≥ 20 pages; mostly Advanced in categories 6-9, no N or U ratings	≥ 18 pages mostly Advanced or Intermediate in categories 6-9, no U rating	≥ 16 pages Intermediate in at least two of the categories 6-9; no U rating	≥ 15 pages at least Novice in categories 6-9	< 15 pages or any Unsatisfactory rating

- up to 1 letter grade deduction for errors in categories 1-5
- up to 1 letter grade deduction for missed deadlines

Professional Working Environment

The classroom is a professional working environment and you are expected to act in a professional manner. UW Oshkosh is committed to providing the safest campus possible for our students, faculty and staff. Students experiencing any form of prohibited discrimination or harassment, including but not limited to sex or gender based violence, can report it by contacting Equal Opportunity, Equity & Affirmative Action/Title IX office (920-424-1166), or Dean of Students office (920-424-3100).

If you choose to contact one of these offices, your information will be private but may not remain confidential. There are employees on campus that are required and trained to handle confidential information. Students who desire anonymity should share with or report to a confidential employee. These employees include Counseling Center Employees, the Campus Victim Advocate (https://www.uwosh.edu/cvpp), and Student Health Center Employees. You can also find more information on policies and resources at https://uwosh.edu/titleix/ and https://uwosh.edu/hr/policies-procedures/ .

Students are advised to see the following URL for disclosures about essential consumer protection items required by the Students Right to Know Act of 1990: https://uwosh.edu/financialaid/consumer-information/