

CHEMISTRY 301-The Preparation of Scientific Documents for Chemistry

Southern Connecticut State University

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Lectures: W 12:10 - 2:00 (JE306)

Office Hours: T,R: 10:00 AM - 11:00 AM
W: 3:00 PM - 5:00 PM
F: 11:00 AM - 12:00 PM

Required Texts:

Dodd, J. C. *The American Chemical Society Style Guide*; ACS Press: Boca Raton, 1997. (ISBN: 0841234620)

Course Objectives:

The course will focus on the organization of scientific reports including styles commensurate with the American Chemical Society, Royal Society of Chemistry and additional journal publications, as well as the use of software programs designed specifically for the field of chemistry in the preparation of scientific documents. This includes but is not limited to, ChemDraw, Microsoft Word, Excel and the manipulation of materials between these software programs. This is part of an ongoing revision in the Chemistry department that has begun with the revised outline for the preparation of scientific documents in the General Chemistry sequence. The content of CHE 301 will expand on this knowledge by incorporating an advanced level of teaching commensurate with training for majors as opposed to the general science based student body for which field specific styles may vary. The course content will address basic writing skills and application of these skills to actual writing styles of scientific journal articles through a variety of assignments aimed at progressively enhancing skills. An emphasis will also be placed on the generation of appropriate documents utilizing many of the special features of the software described above.

Learning Outcomes:

Students enrolled in this course are expected to learn how to utilize the software programs necessary to prepare scientific reports for courses, publication, etc. in a professional manner. This includes training with the various software programs and demonstrating their proficiency on assignments. Specific objectives are listed below:

- Learn what it means to plagiarize work and how to avoid this.
- Learn proper referencing styles commensurate with the American Chemical Society (ACS) guidelines and additional journal guidelines associated with the Royal Society of Chemistry (RSC) and the Chemical Institute of Chemistry (CIC).
- Learn how to use the library resources available for searching the chemical literature.

- Learn how to report scientific data by accepted professional standards for spectroscopic interpretation of data including NMR (Nuclear Magnetic Resonance) and IR (Infrared) spectroscopy.
- Learn how to use style sheets, set up toolbars, and other formatting techniques (Track Changes) using MS Word. This includes but is not limited to writing proper chemical formulas in reports, formatting and importing tables of data, spell checking, grammar checking, and utilizing special characters pertinent to the study of chemistry.
- Learn the use of Excel software for the presentation of data in graphical formats suitable for interpretation of data.
- Learn how to import the data from Excel into other software programs.
- Learn how to use drawing software specific to the discipline (ChemDraw) in the preparation of professional reports. This includes but is not limited to setting drawing and caption preferences, utilizing toolbars and rulers to prepare drawings suitable for importing into other programs such as MS Word, utilizing templates, formatting drawings for consistency and appearance.
- Learn how to write scientific documents in a professional fashion in terms of content and overall presentation quality.

Course Outline:

Week 1: Discussion on plagiarism. Review of basic report writing formats. Discussion of different journal styles including accepted citation styles for journals, books, and proceedings of conferences using the ACS style guide. Comparison between journal and laboratory report styles.

Week 2: A session will be scheduled for a demonstration of the online resources at Buley Library. Guest lecturer: Chemistry Librarian – Rebecca Hedreen

Week 3: Using Microsoft Word software. Demonstrations of the various tools in the program including defining style sheets, formatting documents, formatting characters, setting up toolbars, inserting and formatting tables of data, using spelling and grammar tools. Discussion of the previous weekly assignment.

Week 4: Using Microsoft Word software continued. Demonstrations including the use of special characters, using the equation editor program, reporting spectroscopic data in laboratory reports. Discussion of the previous weekly assignment.

Week 5: Using Excel software. Demonstrations of spreadsheet formatting, entering formulas, setting styles, and using graphing tools. Discussion of the previous weekly assignment.

Week 6: Using ChemDraw software. Demonstrations of how to set drawing and text preferences, drawing chemical structures using the various tools and templates, formatting files, drawing advanced chemical structures. Discussion of the previous weekly assignment.

Week 7: Using ChemDraw software continued. Advanced drawing techniques. Preparation of reaction schemes such as organic reaction mechanisms, catalytic cycles, and chemical

reactivity summaries. Importing ChemDraw files into MS Word. Using the NMR calculators and 3D functions.

Week 8: Final examination due.

Method of Evaluating Students:

Student evaluations will be determined on the basis of weekly assignments (70%) and a final examination (30%, take-home). Attendance is mandatory and absences will result in the lowering of the final grade as noted below. The weekly assignments will involve a series of exercises using the computer programs discussed in class in conjunction with laboratory reports, spectroscopic data, sample data, and journal articles obtained through on-line services. The final examination will involve writing a scientific report incorporating the use of the scientific software, referencing styles, and content commensurate with journal quality publications.

Late/Missed Work: Late assignments/exams will not be accepted for grading unless accompanied by a doctor's note.

Attendance: Regular and prompt attendance of scheduled classes is necessary for the student to derive the intended benefit of the hands-on learning experience. **Attendance is mandatory!** Students should arrive 10 minutes early to sign out a computer and login. There will be several demonstrations throughout the lectures that are important for the optimization of student academic progress. Since this course runs for half of the semester, each absence will result in a lowering of the final grade by 10%.

Accommodating Students With Disabilities: If any student has a particular disability-related need in order to participate in this course they should contact the Disability Resources Office (DRO) as soon as possible to obtain the appropriate documentation. Every effort will be made to accommodate students in this course.

Inclement Weather: When inclement weather threatens, call the university's WeatherChek voice mail message line (203-392-SNOW) to hear the latest official information on possible delayed openings, class cancellations, or the closing of the university.

Academic Dishonesty: Unfortunately, the question of academic dishonesty occasionally becomes an issue between an instructor and a student. The best way to avoid this is to be sure that no suspicion arises. **Copying assignments, laboratory reports or any other portion of this course will not be tolerated. The student handbook outlines the various prerogatives of the instructor in cases of academic dishonesty.**

Additional Thoughts: The student should read the appropriate text sections prior to attending class since lectures will cover the material at a reasonably rapid pace. The student will be expected to adapt to this pace. Attempting related problems prior to class is also strongly suggested. If you encounter difficulties when problem solving it often helps to return to the pertinent section in the text and review the material and sample problems. If you are still

encountering difficulty with a particular problem don't get frustrated or spend excessive time on that problem. Please come talk to the professor and we can review the problem(s) together. Alternatively you can use the online resources for that accompany the text to test your problem solving skills.

Your grade will not be based upon any claimed "need" which you may have. If you "need" a B in this course in order to gain admission into some program or transfer the course credit, then it is incumbent upon you, the student, to perform at the level that will fulfill the specific "need." It is not the professor's role to alter his or her evaluations of your work so as to take your "needs" into account.

There is no provision in this course to do work for "extra credit." It stands to reason that if a person is not performing adequately in the assigned tasks of a course, there is no point in giving that person "extra" work. Requests to do work for "extra credit" will not be honored.

Additional Resources:

1. Selected journal articles from within the discipline including:
 - (i) Journal of the American Chemical Society (ACS)
 - (ii) Inorganic Chemistry (ACS)
 - (iii) Chemical Reviews (ACS)
 - (iv) Chemical Communications (RSC)
 - (v) Journal of the Chemical Society, Dalton Transactions (RSC)
 - (vi) Canadian Journal of Chemistry (CIC)
2. This course will involve the use of a variety of software programs that are available through the use of on campus computing facilities. The ChemDraw software is available in the Chemistry Department Computer Room (JE 306) at posted times outside scheduled lectures.