

Syllabus for Chemistry 4070

Course title: Historical Perspectives in Chemistry
Course meetings: TR, 11:00 am--12:15 pm
NES 108
Instructor: Dr. Xiaodong Michael Shi, Professor
Office: BSF 310
Office Hours: *In-person* 12:30 pm-1:30 pm Tuesday, room BSF 310
Email: xmshi@usf.edu
Phone: 240-350-4723

TA: Ms. Mengjia Liu, Email: mengjialiu@usf.edu

Course Description: This course is an exploration of the history of chemistry in terms of developments within the discipline itself and also relating to how chemistry fits in with the other sciences and society in general. Major goals of this course will be in improving your communication skills, mainly through writing and presentation communication. A comprehensive study comprising various steps in the development of chemistry (from prehistoric era to modern times) will be provided.

Prerequisites: One year of college chemistry.

Note: This course is a Gordon-Rule course as described in the USF catalog. According to the catalog, the Gordon rule designation means that each student must write at least 6000 words as part of his or her course work. Note that Gordon-Rule course cannot be taken as S/U.

Recommended Course Materials: The instructor will not require a textbook for this course, but the following books are recommended for general interest:

- 1) *The Chemical Tree: A History of Chemistry*,
W. H. Brock, W. W. Norton and Company, New York, NY, 2000, ISBN-10: 0393320685.
- 2) *Crucibles: The Story of Chemistry – From Ancient Alchemy to Nuclear Fission*
Fourth Revised Edition, B. Jaffe, Dover Publications, Inc.: Mineola, NY, 1976, ISBN-10: 0486233421.
- 3) *From Caveman to Chemist: Circumstances and Achievements*
H. W. Salzberg, American Chemical Society: Washington, D. C., 1991, ISBN-10: 0841217874.
- 4) *Seven Elements That Changed the World*
John Browne (Early Bird Books, e-book)
- 5) *The Story of Alchemy and the Beginnings of Chemistry*
M. M. Pattison Muir, (Public Domain, Free, 1931)
- 6) *Periodic Tales*
Hugh Aldersey-Williams (Harper Collins e-books)

Also, there is an excellent Wikipedia article on the history of chemistry which you can access at the following link: https://en.wikipedia.org/wiki/History_of_chemistry.

Student Learning Objectives: Students in this course will:

- Become familiar with discoveries from ancient and modern times that contributed to the development of chemistry.
- Understand alchemy, including how it was practiced in different regions.
- Become familiar with important published works of alchemists and scientists and their significance.
- Learn about the life, viewpoints, and accomplishments of various philosophers, alchemists, scientists, and chemists and their contributions to science and society.
- Develop and practice writing and oral communication skills.

Attendance Policy: Class attendance will be a part of the student's grade in this course (see "Grading Policy" below). Students are strongly encouraged to attend all scheduled class meetings. Note-taking in real-time is an essential part of learning. Therefore, if you would like to *learn* the material, it is your responsibility to attend the live lectures and take notes on the presented information yourself. If a student misses a lecture for any reason, it is his/her responsibility to obtain pertinent materials or information from the missed class, such as class notes or announcements, preferably from another student in the class (although the instructor may work with students in certain extreme cases). Students will NOT receive credit for attendance for a class that he/she misses for an unexcused reason. In addition, students that are tardy for a given class (for an unexcused reason) will be penalized for attendance for that class period.

Participation Policy: Participation is anticipated at every lecture to maximize learning and performance. If the instructor presents a question during lecture and you think you know the answer, please raise your hand for permission to speak or shout out a response. Even if you are not completely confident with your answer, you may attempt to provide a response anyway. This is not only beneficial to your learning, but it also helps make this an interactive environment in the classroom! Moreover, participation will represent a portion of the student's grade in this course (see "Grading Policy" below).

Disruption to Academic Progress: Please see USF Regulation 3.025. Please do not engage in conversations in the classroom. Every student has the right to a comfortable learning environment where the open and honest exchange of ideas may freely occur. Each student is expected to do his/her part to ensure that the classroom (and anywhere else the class may meet) remains conducive to learning. This includes respectful and courteous treatment of all in the classroom. Further, students that are seen using electronic devices such as laptops, cell phones, iPads, etc. for reasons other than note-taking or taping/recording will be asked to leave the classroom to prevent distractions.

Exams: Three exams will be given throughout the semester to assess the student's understanding of the material as taught during the lectures (exams 1&2) and student presentations (exam 3; see below). Exam dates are provided in the tentative course schedule below. Each exam will consist of multiple choice and matching questions related to the material discussed in class. NO MAKE-UP exams will be given unless there is a reasonable excuse approved by the instructor (see the "Make-Up Exam Policy" below). If an exam is missed without an acceptable documented reason, the student will be given a "0" for that exam.

Term Paper: In order to meet the 6ACT - Gordon Communication Requirement, each student will write a term paper of at least 6,000 words on an assigned Nobel Laureate in Chemistry. The term paper should include, at minimum, the following for the Nobel Laureate:

- 1) Biography (childhood, education, colleagues)
- 2) Influences
- 3) Viewpoints/perspectives
- 4) Major contributions to chemistry (area of study, how he/she arrived at the contributions, and consequences of discoveries).

The term paper needs to include a bibliography (not considered part of the word count) using a formal reference style (e.g., MLA, APA, ACS) and have 10–20 different sources cited. Each student will be assigned a Nobel Laureate during the second week of classes (see tentative course schedule).

The term paper will be due on **November 1st, 2022 by 11:59PM** (see tentative course schedule): **NO EXCEPTIONS** (unless under extreme circumstances approved by the instructor and provided that the student shows evidence of a legitimate effort of working on the term paper throughout the semester). The students will upload their term paper on Canvas where it will be checked using a plagiarism detection software. Only Microsoft Word formats (.doc or .docx) are acceptable. *Term papers in which the Turnitin plagiarism percentage is greater than 25% will NOT be considered for grading. Late term papers will NOT be accepted.*

Presentation: Each student will give a PowerPoint presentation of 13–17 minutes on their assigned Nobel Laureate in Chemistry during the scheduled lecture times starting **October 25th, 2022** (see tentative course schedule). The students should also be prepared for up to 5 minutes in questions from the class following their presentation. All students are expected to present on the day of his/her scheduled presentation (determined during the second week of classes). NO MAKE-UP presentations will be allowed unless there is a reasonable excuse approved by the instructor. All students are expected to attend the students' presentations to discuss, ask questions, and grade each presenter; these will be a part of the student's attendance and participation grades.

Grading Policy: A student's overall grade will be determined by his/her score in the following assignments with the indicated points possible:

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|-----------------|--------------|--------------|
| • Exams | 150 each (3) | 450 points |
| • Term Paper | | 300 points |
| • Presentation | | 150 points |
| • Attendance | | 50 points |
| • Participation | | 50 points |
| • Total: | | 1,000 points |

Letters grades will be assigned based on the percentage EARNED by the student as follows:

A+	≥ 95.0%	A	90.0–94.9%	A–	85.0–89.9%
B+	80.0–84.9%	B	75.0–79.9%	B–	70.0–74.9%
C+	65.0–69.9%	C	60.0–64.9%	C–	55.0–59.9%
D	45.0–54.9%				
F	≤ 44.9%				

An “I” grade may be awarded to a student only when, due to circumstances beyond the control of the student, a small portion of the student’s work remains incomplete, and the student is otherwise earning a passing grade. Since this course satisfies the State Communication Requirement, it may not be taken on an S/U basis.

Communication: Please communicate with Dr. Shi via e-mail at xmshi@usf.edu. All e-mail communication must come from your official USF e-mail address. Please also indicate your name, course number, and section number in the e-mail. The instructor will do his best to respond to e-mails within 24–48 business hours. Do not anticipate a response from Dr. Shi on weekends or holidays.

Dr. Shi will only respond to professional e-mails that relate to (1) any information mentioned in the syllabus, (2) clarification on lecture material, (3) questions related to the term paper or presentation, (4) appointment for office hours, (5) potential legitimate reasons for missing class, and (6) potential errors regarding posted grades. Any e-mails that are NOT related to these matters (e.g., asking to make up a missed assessment for an unexcused reason, asking to retake an exam or take the make-up exam because of dissatisfaction of performance, expressing disapproval of course performance or instructor’s policies/methods, expressing belief that a given assessment is too difficult, asking for a “bump up” in grade at the end of the semester) are considered unprofessional and will be ignored.

Academic Integrity: Please see USF Regulation 3.027. Copying from or communicating with other students during any exam is NOT permitted. The use of outside materials such as class notes, textbooks, cheat sheets, etc. is NOT allowed for the exams. Such actions will NOT be tolerated as any attempts to cheat on an exam will result in a “0” for that assessment and possibly an “F” for the course, depending on the severity of the cheating. Students receiving an “F” as a result of academic misconduct will receive an “FF” on their record and will be referred to the Dean of Undergraduate Studies for further action.

Plagiarism and other forms of academic dishonesty are NOT acceptable and will result in negative consequences. Plagiarism is intentionally or carelessly presenting the work of another as one’s own. It includes submitting an assignment purporting to be the student’s original work which has wholly or in part been created by another person. It also includes the presentation of the work, ideas, representations, or words of another person without customary and proper acknowledgement of sources. It also includes collaborative work that is not authentic at the time of submission, such as working on a paper together but submitting the same or near similar work. Students must consult with their instructors for clarification in any situation in which the need for documentation is an issue, and will have plagiarized in any situation in which their work is not properly documented.

- a) Every direct quotation must be identified by quotation marks or appropriate indentation and must be properly acknowledged by parenthetical citation in the text or in a footnote or end note.
- b) When material from another source is paraphrased or summarized in whole or in part in one’s own words, that source must be acknowledged in a footnote or endnote, or by parenthetical citation in the text.

- c) Information gained in reading or research that is not common professional knowledge must be acknowledged in a parenthetical citation in the text or in a footnote or endnote.
- d) This prohibition includes, but is not limited to, the use of papers, reports, projects, and other such materials prepared by someone else.

The University of South Florida has an account with an automated plagiarism detection service (Turnitin) which allows instructors and students to submit student assignments to be checked for plagiarism. The instructor reserves the right to:

- 1) Request that assignments be submitted as electronic files.
- 2) Electronically submit assignments to this program when appropriate.
- 3) Perform an oral examination to determine the students' knowledge related to an assignment.
- 4) Ask students to submit their assignments to this program through Canvas. Assignments are compared automatically with a database of journal articles, web articles, and previously submitted papers. The instructor receives a report showing exactly how a student's paper was plagiarized.

The use of online tutoring sites such as Chegg, Course Hero, Quizlet, etc. for graded assignments is NOT allowed. Any student discovered using information from these (and similar) sites, or found uploading information to such sites, will receive an "FF" for the course and will be subject to student conduct.

Make-Up Exam Policy: A make-up exam will be provided only for excused absences. Reasons for excused absences include documented illness, deaths in the immediate family and other documented crises, call to active military duty, court-imposed legal obligations (e.g., jury duty and subpoenas), religious days, special requirements of other courses and university sponsored events (e.g., performances, games/meets, judging trips, field trips), and severe weather conditions. Employment schedules and athletic training/practice schedules of students do not comprise a valid excuse for absences.

Unexcused absences from any exam will be scored as a zero. A make-up exam for those with an approved excuse will be conducted on the last day of class, time and place to be announced, but not during class. The make-up exam will be cumulative in nature. A student wishing to take the make-up exam for an approved excused absence would have to notify the instructor in writing within the first two weeks of the class and provide documentation. If there is an unexpected excused absence, the student would have to follow the same process above within three days in order to take the make-up exam.

Prohibition Regarding Selling Course Materials: Selling or distributing class notes, tapings/recordings of lectures, homework problems, exams, etc. without authorization, or using them for any commercial purpose without the express written permission of the University of South Florida and the instructor is a violation of the USF Student Code of Conduct ([USF Regulation 6.0021](#)).

Disability Access: Students in need of academic accommodation for a disability may consult with Student Accessibility Services (SAS) (SVC 1133) to arrange appropriate

accommodations. Please visit the SAS website (<https://www.usf.edu/student-affairs/student-accessibility/>) for more information. Students are required to give reasonable notice prior to requesting an accommodation (preferably this is done during the first week of class, but at least **one week notice** is required prior to the accommodation).

Religious Observances: Please see [USF Policy 10-045](#). No student shall be compelled to attend class or sit for an examination at a day or time prohibited by his or her religious belief. However, students should review the course requirements and meeting days and times to avoid foreseeable conflicts, as excessive absences may prevent the student from completing the academic requirements of this course. Students are expected to notify their instructors *at the beginning of the semester* if they intend to be absent for a class or announced examination, in accordance with this Policy. If such obligations interfere with an exam, the student will be allowed to take the exam one or two days earlier than the scheduled date (or in extreme cases, as a make-up exam).

Sexual Misconduct/Sexual Harassment: USF is committed to providing an environment free from sex discrimination, including sexual harassment and sexual violence ([USF Policy 0-004](#)). The USF Center for Victim Advocacy is a confidential resource where you can talk about incidents of sexual harassment and gender-based crimes including sexual assault, stalking, and domestic/relationship violence. This confidential resource can help you without having to report your situation to either the [Office of Student Rights and Responsibilities](#) (OSSR) or the [Office of Diversity, Inclusion, and Equal Opportunity](#) (DIEO), unless you request that they make a report. Please be aware that in compliance with Title IX and under the USF Policy, educators must report incidents of sexual harassment and gender-based crimes including sexual assault, stalking, and domestic/relationship violence. If you disclose any of these situations in class, in papers, or personally to an educator, he or she is required to report it to OSSR or DIEO for investigation. Contact the USF [Center for Victim Advocacy](#): (813)-974-5757.

Statement of Academic Continuity: In the event of an emergency, it may be necessary for USF to suspend normal operations. During this time, USF may opt to continue delivery of instruction through methods that include, but are not limited to: Learning Management System, online conferencing, email messaging, and/or an alternate schedule. It is the responsibility of the student to monitor the Learning Management System for each class for course-specific communication, and the main USF, College, and Department websites, emails, and MoBull messages for important general information ([USF Policy 6-010](#)). For additional guidance on emergency protective actions and hazards that affect the University, please visit www.usf.edu/em.

Tentative Course Schedule

<u>Date</u>	<u>Content</u>
8/23/22	Syllabus Review & Introduction
8/25/22	Milestones of Chemistry Development
8/30/22	Distribution of Term Paper Topics and Nobel Laureate introduction
9/1/22	“Modern” Chemistry Before 1900
9/6/22	1900-1945 Era (I): Physics and Chemistry
9/8/22	1900-1945 Era (II): Birth of Organic and BioChemistry
9/13/22	1900-1945 Era (III): Analytical Technology Advancement
9/15/22	Game-Changing Developments After WWII
9/20/22	Exam 1
9/22/22	Making Bond (I): The early day strategy
9/27/22	Study Molecules with Advanced Instrument: IR, UV, NMR and MS
9/29/22	Metal Chemistry: From Inorganic to Organometallic Chemistry
10/4/22	Birth of Modern Bio-Science
10/6/22	New Era of Inorganic Chemistry: Materials and Nanoscience
10/11/22	Making Bond (II): Metal Catalysis
10/13/22	Non-Covalent Interaction: Supramolecular Chemistry
10/18/22	Making Bond (III): Organo-Catalysis
10/20/22	Exam 2
10/25/22	Student Presentations
10/27/22	Student Presentations
11/1/22	Student Presentations
	Term Paper on Canvas Due by 11:59PM
11/3/22	Student Presentations
11/8/22	Election Day (No Classes)
11/10/22	Student Presentations
11/15/22	Student Presentations
11/17/22	Student Presentations
11/22/22	Student Presentations
11/24/22	Thanksgiving Break (No Classes)
11/29/22	Student Presentations
12/1/22	Student Presentations
12/6/22 or TBD	Exam 3 (10:00AM – 12:00PM)

Topics for discussion during any class are subject to change. All exam dates are subject to change due to unforeseen circumstances. Any changes to the course schedule will be discussed in class and posted on Canvas as far in advance as practical.

Note: The deadline to drop from the course with a “W” is **October 29th, 2022 by 11:59PM.**