

- Instructor:** Dr. K. Walters
SC 348
572-5315
walterske@nku.edu
<http://www.nku.edu/~walterske>
- Office Hours:** I have an open office policy, so stop by whenever you have a question (I will not always be in my office but will always indicate where I can be found or when I will return). My formal office hours are as follows: MWF 10:00 – 11:30, TR 9:15 – 10:30 and 12:30 – 1:40. Feel free to make an appointment for any other time (there are scheduling links in Blackboard). I will also schedule “online” office hours on Blackboard from time to time.
- Prerequisite:** CHE 310 (Organic Chemistry I) or equivalent
- Student Learning Outcomes:** CHE 505 fulfills the following NKU chemistry department student learning outcomes:
1. Explain the major concepts and experimental findings in the chemical sciences.
 2. Compile, critically evaluate, and interpret scientific information and data.
 3. Evaluate the relationships between chemistry and mathematics, physics, biology, and other disciplines and between chemistry and society.
 4. Apply computer technology and other technologies in the comprehension, interpretation, and presentation of the chemical sciences.
- Objectives:**
1. Explore ancient alchemy and how it connects to “modern” chemistry through individuals involved with the scientific revolution.
 2. Learn about the various individuals involved with the significant advances in chemistry and science, and how the advances impacted society and human civilization.
 3. Gain a better appreciation for the changing public perspective of chemistry from the 18th century to current times.
 4. Demonstrate written and oral presentation skills by completing assignments that share your gained knowledge obtained in the previous objectives.
- The Student:**
1. ...should always come to lecture on time.
 2. ...should review material from previous courses as needed to understand new topics.
 3. ...should come to lecture already having read the anticipated material to be covered.
 4. ...should participate in lecture at every opportunity to demonstrate comprehension.
 5. ...should complete all assignments on time.
 6. ...should try to have at least a little fun learning about the history of chemistry.
- The Instructor:**
1. ...should always be on time for lecture and be prepared to teach.
 2. ...should present material in a clear, organized manner at a speed necessary to cover all topics.
 3. ...should encourage the student to think about the presented material creatively.
 4. ...should prepare fair, thorough exams that cover the presented material.
 5. ...should be absolutely impartial in all matters grading.
 6. ...should have lots of fun teaching the history of chemistry.
- Required Texts:** The following texts are required for the course. Please note that we will not be covering all topics in each text, so follow the course outline’s suggested readings. You should always have read the prescribed sections before we are scheduled to have covered these in lecture!
1. Trevor H. Levere, “Transforming Matter: A History of Chemistry from Alchemy to the Buckyball”, Johns Hopkins University Press, 2001.
 2. Richard Morris, “The Last Sorcerers: The Path from Alchemy to the Periodic Table”, Joseph Henry Press, 2003.
 3. Eric R. Scerri, “The Periodic Table: Its Story and Its Significance”, Oxford University Press, 2007.
 4. William H. Brock, “The Chemical Tree”, W.W. Norton and Company, 1992.
- Course Content:** This course will likely be very different than any other science course you’ve taken at NKU. We will be examining the incredibly important role chemistry (and science in general) has had in the progress of human history. The course will largely be discussion in nature, so it’s critically important that you have read the assigned material prior to coming to lecture (this reading may be tested with a short quiz at the start of the lecture) and make every effort to participate in the discussion. The course may also involve field trips, depending on scheduling and interest by the class. A more detailed description of the various topics to be covered are provided on the course outline.
- Blackboard:** The NKU Blackboard website is used extensively in this course (<http://learnonline.nku.edu>). Course announcements, grades, online supplementary materials, and discussion boards, are available *only* through the site, and you are responsible for all posted information. Take advantage of all the presented material (especially the discussion board), and please post questions to me on the discussion boards if possible rather than sending me email.

- Communication:** You should always feel free to seek any appropriate out-of-class assistance from the instructor in your efforts to master the materials presented in this course. While you should feel free to contact your instructor, please keep the following in mind:
- Use the posted office hours of the instructor or schedule an appointment if you have many questions to answer or if the explanation is better conducted in person than via email. The instructor reserves the right to request that you come to their office if he cannot adequately respond to questions posed in emails or voicemails.
 - Come to the instructor's office with specific questions to address, which will make the interaction more productive.
 - Do not make a habit to only visit the instructor's office a few minutes before a homework deadline or exam period. In general no significant assistance will be provided within 2 hours of such a deadline.
 - Emails sent to your instructor should have a specified subject in the subject line that starts with CHE 505 (e.g., CHE 505 - Question on tomorrow's lecture material). Emails not conforming to this structure will be considered spam mail by the instructor and likely deleted with no response. When possible, use your NKU email account to send the email, and sign all emails with your full name!
 - Emails sent from your instructor will be sent to your NKU email account and will include CHE 505 in the subject line. Make sure you check your email account on a regular basis or have your messages forwarded to the account you regularly use. NKU email accounts also regularly get full with email, which will cause new messages to "bounce" and not be received. Make sure you keep this account under the size limit!
 - Do not expect an instant reply to your email or voicemail messages! The instructor deals with messages in the order received, and usually can respond within 24 hours (possibly longer on the weekends).
 - Refer to the "Talk and Email" section later in the syllabus for more tips on communication with your instructor (and all instructors in general).
- Attendance:** Attendance is not taken in this course. You are all adults, so it is up to you to make the effort to attend or not. However, it will be very difficult to be successful in this course if you do not attend all lectures, and your participation grade will be adversely affected.
- Seminars:** All students are **required** to attend at least two seminars during the term (attending additional seminars will result in extra credit). Qualifying seminars are provided by the NKU science departments, UC chemistry department, or NKU SAACS seminars. Appropriate documentation (a form posted online) must be provided to indicate your attendance. Seminar attendance is counted as a portion of your participation grade. Should your schedule not permit you to attend seminars, arrangements can be made for additional writing assignments to cover this portion of your grade.
- Studying:** It has been said that students should spend 2-3 hours studying for each hour of lecture. Science courses tend to err on the high side of this estimate, so you should commit yourself to studying **7-10 hours** each week during the course. Cramming the last night or two before exams will not be sufficient to comprehend the material.
- Assignments:**
1. **Scientist Profiles and Presentations:** You are to research two significant figures in the history of chemistry and write a 3-4 page typed paper (12 point font, 1 1/2 line spacing, 1" margins, check your spelling and grammar!) on each individual covering their contributions to chemistry. Individuals to consider this assignment are listed on the course outline. You must select one individual from each half of the course (e.g., one from weeks 1-7 and one from weeks 9-14). You must indicate your selection by the end of the first lecture period (January 16), but may indicate your selection earlier via email. There will be no duplications between students. This profile should contain information found in sources (both traditional and electronic) other than the required texts for the course (a bibliography should also be included in typical ACS style). The profile should be submitted electronically to the instructor via Blackboard **no later than 11:59AM on the day when your scientist is to be covered in lecture** (this includes those that will be discussed the first week of lecture!). You will also be responsible in leading the discussion on these individuals, including making a 5-10 minute oral presentation summarizing their contributions.
 2. **Reflection on Discussions:** At the conclusion of each lecture period, the instructor will provide you with a question (or series of questions) stemming from the topics presented during that lecture for your reflection. You are to write a response answering the question(s) and post it on the appropriate Blackboard discussion board **no later than 5PM the following Wednesday**. These reflections will be used by the instructor as a starting point for further discussions in ensuing lectures.
 3. **Research Paper and Presentation:** The "final project" for this course is to prepare a full research paper (12-15 typed pages, same format as above) on one area/topic of chemistry of interest to you. Your paper should include at least three (possibly more) significant scientists as key figures in this area/topic and should provide details on their lives, their major contribution(s), and who influenced their work. Particular attention should also be paid to the reaction of both the scientific and general public on the work(s) of these individuals and how their ideas have changed (or remained the same) in the chemical world today. Your topic must be presented to the instructor for approval in the form of an abstract (0.5-1 page, indicate the topic, scientists to be included, and one paragraph summarizing the significance of the topic and its impact on society) no later than the middle of the term (Friday March 6). No duplication of topics will be permitted between students. Your paper should include information from both traditional and electronic sources above and beyond the assigned texts for the course. The paper should be properly referenced and a bibliography provided using current guidelines published by ACS. The finished paper should be submitted electronically to the instructor via Blackboard **no later than 11:59PM on Wednesday April 29**. You will also make a 10 minute presentation on your area/topic during the last lecture period (May 1) that summarizes your report. You should include powerpoint slides as part of your presentation and be prepared to answer questions from the instructor and your classmates.

Exams: There will be midterm and final exams in this course as indicated on the course outline. These exams will include both short answer and longer essay questions that are derived from discussions held during lecture. Review outlines will be provided before each exam, and may include some questions you can prepare for in advance of the exam. Review sessions will be scheduled prior to the exams should the class like them.

Honor Code: The work you will do in this course is subject to the Student Honor Code. The Honor Code is a commitment to the highest degree of ethical integrity in academic conduct, a commitment that, individually and collectively, the students of NKU will not lie, cheat, or plagiarize to gain an academic advantage over fellow students or avoid academic requirements. You should familiarize yourself with the Honor Code at the following website:

<http://www.nku.edu/~deanstudents/documents/StudentCodeUpdated8-07.pdf>

Cheating: Cheating will not be tolerated in this course. In accordance with the Code of Student Rights and Responsibilities, faculty members have the right to determine actions to be taken when a student is caught cheating. In this course, students caught cheating and/or plagiarizing is grounds for immediate dismissal and an F course grade, along with a report filed with the Dean of Students.

Electronic Devices: Cell phones, pagers, and watch alarms **should be turned off and put away during lecture**. If you anticipate an emergency call (e.g., child sick), please leave your phone on vibrate but put away (in your pocket, not on the desk) and sit in the back of the room. Should you receive a call, please quietly leave the lecture room to answer it. Should your device audibly ring during class, you will be asked to leave with no further discussion and receive an unexcused absence for the day. **Use of a cell phone or pager during an in-class quiz or exam will be considered cheating**, and appropriate actions will be taken by the instructor. You are welcome to use computers during lecture for note-taking purposes, but should the instructor notice other computer usage not relevant to the lecture (e.g., email, web surfing) your computer privileges will be removed for the remainder of the course.

Assessment: Assessment of topics learned in this course will be achieved through the completion of the assignments listed above and successfully answering critical thinking problems on exams. Course grades are assigned based on the following scheme:

Discussion Participation	10%
Scientist Profiles	10%
Online Discussion Reflections	10%
Research Paper	20%
Research Presentation	10%
Midterm Exam	20%
Final Exam	20%

<u>Point Total</u>	<u>Grade</u>
90-100%	A
80-89%	B
70-79%	C
60-69%	D
0-59%	F

Talk and Email:

- Be mannerly. Before asking "What are your office hours?", check your syllabus. If hours aren't listed or won't work, ask your professor when he or she can meet with you. A reasonable professor will understand that office hours cannot accommodate every student's schedule.
- When you arrive at the professor's office, knock on the door, even if it's open, and greet your professor by name.
- If you're coming in to talk because you're having difficulty in a course, there are a few familiar sentences to avoid: "Will this affect my grade?" Whatever "this" is, it will play a part in your grade. How much or how little depends upon the rest of your work. "Can I still get a A/B/C/D/Pass?" This question will usually lead a professor to think that your grade-point average, not learning, is your priority. "I'm an A student." Grade inflation is widespread, and some of those As may not be the most accurate evaluations of your work. Even if they are, your professor won't grade you on the basis of your reputation.
- If you want to talk to a professor in some other way (about a question that you didn't get to ask in class or an idea that you want to discuss) just do the best you can. Your professor will very likely meet your genuine interest with kindness and encouragement.
- If you are having difficulty in a course, let your professor know that you realize it, and ask what you can do to improve.
- Ending the conversation can be tricky. Some professors will wrap things up for you, while others will be happy to just keep talking. In other words, a signal that you're "dismissed" may not be coming. So don't hesitate to take the initiative in bringing the conversation to an end, especially if you have other obligations.
- In emails, choose an appropriate greeting. "Hi/Hello Professor [Blank]" is always appropriate. Substitute "Dear" and you've ended up writing a letter; leave out "Hi" and your tone is too brusque.
- Avoid rote email apologies for missing class. Most professors are tired of hearing those standard apologies and acts of contrition.

- Ask politely. "Could you e-mail me the page numbers for the next reading? Thanks!" is a lot better than "I need the assignment."
- Proofread what you've written. You want your e-mail to show you in the best possible light.
- When you get a reply, say thanks. Just hit Reply and say "Thanks," or a little bit more if that's appropriate. The old subject line (which will now have a "Re:" in front) will make the context clear.

Other Notes:

- All items on this syllabus are subject to change by the instructor. Check the NKU Blackboard website regularly for updates.
- Students are responsible for reading and understanding all items on the syllabus. Any items not understood must be brought to the attention of the instructor within the first two weeks of class.
- Faculty members reserve the right to dismiss or to have removed a disruptive student from their classrooms.
- No smelly, messy, or loud food is allowed in class. Violators will be asked to leave.
- Students with disabilities who require accommodations (academic adjustments, auxiliary aids or services) for this course must register with the Disability Services Office. Please contact the Disability Service Office immediately in the University Center, Suite 320 or call 859-572-6373 for more information. Verification of your disability is required in the Disability Services Office for you to receive reasonable academic accommodations. Visit the Disability Services website at www.nku.edu/~disability/.
- As stated in your catalog, a grade of incomplete is given only at the student's request and where there is reasonable possibility that a passing grade will result from completion of the work.

Course Outline

First, a few words about the “history” behind this course. Although my “love” will always be physical inorganic/organometallic chemistry, I have also been interested in chemistry’s “story behind the story” (as well as other areas of life and society). Hence, the desire to understand the scientists (and their work) behind what we read in a textbook has always been strong within me. Unfortunately, the history of chemistry/science course at my undergraduate college was pulled from the curriculum before I was able to take it (the instructor retired...). However, I continued over the years to pick up stories and interesting tidbits, and anyone who has taken a chemistry course from me has been subjected to many of these stories. I have recently been given the opportunity to teach such a chemistry course at my home institution, and at almost the same time explored the opportunity to teach this topic abroad (which was first offered in 2005). So, here we are, ready to dive into the history of chemistry...

Listed below is a general outline of the course, along with assigned readings. Topics are broadly defined, as I am interested in talking about those areas of chemistry you want to discuss. This outline is subject to change, based on pacing and the lengths of our discussions.

<i>Date</i>	<i>Topic</i>	<i>Profiles</i>	<i>TCT</i>	<i>TM</i>	<i>LS</i>	<i>TPT</i>
1/16	Alchemy 1	Paracelsus Boyle	Ch. 1-2	Ch. 1,2,4	Ch. 1-5	
1/23	Alchemy 2 / Phlogiston	Stahl Cavendish Priestley				
1/30	The Scientific Revolution	Lavoisier	Ch. 3	Ch. 5-6	Ch. 6	
2/6	Atomic Theory	Dalton Gay-Lussac Avogadro	Ch. 4	Ch. 7	Ch. 7-8	Ch. 2
2/13	Electricity and Chemistry	Davy Faraday	Ch. 3,10			
2/20	Periodicity and Classification	Newlands Meyer Mendeleev Moseley		Ch. 9	Ch. 9	Ch. 3-5
2/27	Organic Chemistry	Laurent Berzelius Liebig Kekule Van't Hoff Franklin	Ch. 5,7,14	Ch. 8,11,14		
3/6	Midterm Exam					
3/20	Atomic Structure/Radioactivity 1	Becquerel Curie Thomson Rutherford Millikan Bohr	Ch. 9,13	Ch. 13		Ch. 6-7
3/27	Atomic Structure/Radioactivity 2	Chadwick de Broglie Heisenberg Schrodinger Pauling Lewis				
4/3	Inorganic/Analytical/Physical	Werner Smalley Ostwald Arrhenius	Ch. 5,10,15	Ch. 11-13		
4/10	Industrial Chemistry	Muspratt Mansfield	Ch. 8,16			
4/17	Nuclear Chemistry	Oppenheimer Fermi Seaborg				
4/24	Chemical Education/Chemistry and Society		Ch. 11,12,16	Ch. 10,14		
5/1	Student Presentations					
5/8	Final Exam (10:10-12:10)					

TCT = Brock “The Chemical Tree”; TM = Levere “Transforming Matter”; LS = Morris “The Last Sorcerers”; TPT = Scerri “The Periodic Table”

CHE 505-001: History of Chemistry – Spring 2009

Student's Acceptance of Course Policies

Please fill out and sign the following form and **return it no later than January 23, 2009** to the instructor. Use **a blue or black pen (no pencil)**.

I, _____, have read the entire syllabus describing the course policies for CHE 505-001, History of Chemistry, taught by Professor Keith Walters. I fully understand these policies and I agree to comply with them during the entire spring 2009 semester.

Signature: _____ Date: _____