Prof. Lou Messerle
Office: E435 Chemistry Building; phone: 335-1372
Course eMail: chem-course-messerle@uiowa.edu. Please send all course correspondence to this
address, not to Prof. Messerle’s regular email address.

Lecture: Wednesday 4:30-5:20, E203 Chemistry Building
Course credit: 1 semester hour

Office hours: Wednesday 9:30-10:15 AM, Thursday 3:00-4:00 PM, and by appointment; held
in CB E427

Textbook: Frank Barnaby, “How to Build a Nuclear Bomb, and Other Weapons of

Course Reserves: A significant number of interesting books on WMC/WMD, including a
folio-size photoessay showing pictures of all US above-ground nuclear tests, and books on
cultural aspects of the arms race, weapons scientists and their motivations, and the cold
war have been placed on reserve at the Sciences Library, which is located behind the old
Biology Building with access from Iowa Avenue via a green area between the foreign
languages (Phillips Hall) and biology buildings. These books can be checked out for
several days. More will be added during the semester after evaluation of each by Prof.
Messerle.

Course ICON Website: under construction

Course Description
Weapons of mass casualty (e.g., chemical, biological, radiological weapons) and weapons
of mass destruction (thermonuclear weapons, strategic firebombing with conventional
weapons) transformed ancient, 20th century, and modern warfare and have dramatically
altered geopolitics and security in the contemporary era. What are the scientific
(biochemical, chemical, nuclear, physical) bases for these weapons? What are the
environmental implications of their possible use and the environmental legacies from their
production? Is it ethical for scientists and engineers to envision and develop such weapons,
for political leaders to authorize and support their production, for citizens to financially
support their existence and possession by their own government, and for military leaders to
deploy and employ these weapons against civilian and/or military adversaries? Or is the use
of WMC/WMD any different fundamentally from that of conventional armaments in
warfare? Why in many cases were such weapons employed against an adversary’s
population and/or military without warning, instead of demonstrations of their
destructiveness on strategically unimportant targets? Why were such weapons not
employed in cases where they would have provided the first user with a major tactical or
strategic advantage? How has the existence of modern WMC/WMD impacted
contemporary culture? What are the implications for nations of the acquisition and potential
use of such weapons by non-state actors (e.g., terrorists) for whom deterrence is ineffective?

Students in this course will actively participate in exploring these and related topics by
way of class meetings, several office hour discussions between individual students and Prof.
Messerle, in- and outside-class viewing and discussion of movies, readings of printed and
web-based resources, and written assignments of mutual interest to the student and
instructor. Grades will be based on the degree of student participation in course activities
and several short writing assignments.

Course Objectives and Academic Expectations
The objectives of this course are to introduce students to a continuing contemporary issue
of major, even ultimate, importance to humanity and life’s existence and to becoming a
member of an informed citizenry, to increase student’s scientific literacy, to explore the
ethical aspects of scientific research, and to learn more about intellectual inquiry at the
college level.
Students are expected to set high academic standards for themselves, in order to get the most from the college experience at the University of Iowa. You will have to work with dedication in order to achieve academic success. There is a tremendous feeling of accomplishment as you rise to the intellectual and academic challenges and pressures of college. One of Prof. Messerle’s goals at the direction of the Provost’s Office is to provide that challenge. The University of Iowa’s tradition and guidelines for classwork are that each semester hour of class time entails two hours per week of preparation outside of class for the average student. The IOWA Challenge (http://thechallenge.uiowa.edu/meet/excel.html) as described to entering students bears repetition, as it is more than a group of slogans:

“Excel” Academic excellence means setting and meeting high standards for yourself as a student. Faculty, staff and other students will ask you to work hard and push yourself intellectually. We expect a lot of you; you should expect only the best from yourself and the University.

“Stretch” At The University of Iowa, you will find a diversity of people, ideas, opportunities, and experiences. That diversity is one of the benefits of being an Iowa student. Step away from the familiar, try new ideas, experience new cultures, and learn from people different from yourself.

“Engage” You will be a more successful student and enjoy yourself more if you spend your time and energy on activities that matter. The University of Iowa offers almost limitless opportunities and the resources to help you become a leader in and out of the classroom. Take advantage of them.

“Choose” Every day you make decisions that affect your education and your future. Take your choices seriously and use your freedom wisely. Your University of Iowa education is what you make it. Make it something you and your university can be proud of.

“Serve” As a University of Iowa student you are a member of many communities, on and off campus. You have the opportunity and responsibility to be a good neighbor and citizen and to serve the community. Make your community a great place to live.”

In terms of this course, class attendance and participation is expected. Poor attendance will result in grade reduction, except for documented cases of illness, family emergencies, mandatory religious obligations, and authorized University activities (e.g., participation in intercollegiate sports, when accompanied by a request from the Athletics Department). Assignment deadlines count and should be adhered to, with allowances made only for documented cases of illness, family emergencies, mandatory religious obligations, and authorized University activities. Please contact Prof. Messerle (chem-course-messerle@uiowa.edu) before or immediately after the missed class or missed assignment.

Please do not hesitate to come to office hours with any questions or concerns, no matter how small in your estimation. Faculty are here (and enjoy, as we learn and grow ourselves during the process of teaching active learners) to engage you intellectually and help you to help yourself grow as a person. Excerpted from the RISE (Research on Iowa Student Experiences, on academic engagement) Report (http://www.education.uiowa.edu/crue/publications/documents/RISE_Brief_Academic_Engagement.pdf): “When asked about advice they would give to prospective or new UI students, most (UI) seniors offered some form of “Get to know your professors” and “Go to office hours so they know you care.” Across the board, however, students asserted that positive, meaningful interactions with faculty had to be initiated by students, something that most—but particularly first-year students—described as difficult and intimidating.”

Refuse to be intimidated!
Course Grading:
Written assignments: 60%  Classroom, office hour participation: 40%
+/- Grading system will be used. Based on guidance from the Associate Dean of the
College of Liberal Arts and Sciences (CLAS), the final grade distribution may not
conform to a standard grade distribution as defined by CLAS for an introductory
class, given the class size and the preclusion of exams and objective grading criteria
typical for a science class. Any questions about grades and scores received for course
assignments should be directed to Prof. Messerle. Federal privacy rules mandate that
individual scores and grades cannot be publicly posted.

Tentative Lecture Schedule (subject to change)

Wednesday August 25  course overview and purpose; definitions of WMC/WMD;
           Does it matter how one kills another person or many people, assuming one is forced or driven to do so?
Wednesday September 1  chemical weapons – history of use, classes of chemical weapons
Wednesday September 8  chemical weapons – biomedical aspects of how they “work”;
           Are they easy to make? Easy to deploy? Easy to decontaminate? What does it mean to be “persistent”?
Wednesday September 15 chemical weapons – their threat; more or less humane?
           NIMBY and their destruction
Wednesday September 22 biological weapons – history of use
Wednesday September 29 biological weapons – biomedical aspects of how they “work”
Wednesday October 6  biological weapons – the threat in an era of molecular
           biology and biotechnology; weaponizing the truly nasties: hemorrhagic fevers such as Ebola virus
Wednesday October 13 midterm; midterm paper due;
           nuclear and thermonuclear weapons – history of development and use of bombs and superbombs;
           What does William Shatner have to say about them?
Wednesday October 20 Did the US have to bomb Hiroshima? Nagasaki?
Wednesday October 27 How do nuclear/thermonuclear weapons work from physics
           and chemistry standpoints? demonstrations of radiation and fission; “touching” a piece of trinitite from Alamogordo, NM
Wednesday November 3 nuclear and thermonuclear weapons – biomedical aspects of their use
Wednesday November 10 environmental legacies of nuclear weapons production; of
           “nuclear winter”: what would be the environmental impact
           of nuclear weapon detonations in a world war? What did we learn from Chernobyl? Threads (1984)
Wednesday November 17 of “dirty” (radiological), suitcase, and neutron bombs; What
           is on the horizon? What about the pursuit of/fixation on
           technological advances in weaponry: nonlethal “magic”
           bullets, “wonder” weapons, laser weaponry, millimeter-wave crowd control, psychoactive chemical weapons;
           crackpot ideas and the military-industrial complex
Wednesday November 24 no class – Thanksgiving break (don’t nuke the turkey)
Wednesday December 1 WMC/WMD in popular culture – what has changed over
           the decades?
Wednesday December 8 Armageddon/Götterdammerung: Where does the world go
           from here, particularly in an era of terrorism? Have there been disarmament successes?
Friday December 10  final paper due, 5:00 PM, CB 435
Course Administration
Please go to the Chemistry Center, E225 CB, for drop/add signatures. M–F, 8:00 AM-12:00, 1:00-5:00 PM (F, 4:30 PM). Manager: Lin Pierce (335-1341, lin-pierce@uiowa.edu).

Complaints
Complaints and appeals regarding the course and instructor can be filed with the Departmental Executive Officer (DEO, Prof. Mark Arnold) at the Department of Chemistry administrative office, Room E331 CB (335-1350). Students are encouraged to first meet with Prof. Messerle with their concerns about course aspects, lectures, or assignments.

Miscellaneous
Please feel free to discuss with Prof. Messerle any aspect of the course that is of concern or causing you problems. DON’T HESITATE to come to office hours to ask questions that are not covered during class. If you require course adaptations or accommodation because of a recognized disability, please contact Prof. Messerle who will make every effort to accommodate your needs.

COLLEGE OF LIBERAL ARTS AND SCIENCES: POLICIES AND PROCEDURES

Administrative Home of the Course: The administrative home of this course is the College of Liberal Arts and Sciences (CLAS), which governs academic matters such as add/drop deadlines, second-grade-only option, academic fraud, and other related issues. Different colleges might have different policies. Questions may be addressed to 120 Schaeffer Hall or see the CLAS Student Academic Handbook:
http://www.clas.uiowa.edu/students/handbook/

Electronic Communication: University policy specifies that students are responsible for all official correspondences sent to their standard University of Iowa e-mail address (@uiowa.edu). Students should check their account frequently and use this account for their correspondence with Prof. Messerle. Please send your correspondence to the course email address: chem-course-messerle@uiowa.edu.

Student Classroom Behavior: The ability to learn is lessened when students engage in inappropriate classroom behavior, distracting others; such behaviors are a violation of the Code of Student Life. When disruptive activity occurs, an instructor has the authority to determine classroom seating patterns and to request that a student exit the classroom or other instructional area immediately for the remainder of the period. One-day suspensions are reported to Departmental, Collegiate, and Student Services personnel (Office of the VP for Student Services and Dean of Students).

Academic Fraud/Misconduct: Plagiarism and other activities when students present work that is not their own are academic fraud. Academic fraud is a serious matter and is reported to the Chemistry DEO and to the Associate Dean for Undergraduate Programs and Curriculum. Instructors and DEOs decide on appropriate consequences at the Chemistry Department level while the Associate Dean enforces additional consequences at the collegiate level. See the CLAS Academic Fraud section of the Student Academic Handbook (http://www.clas.uiowa.edu/students/handbook/x/#2).

You are expected to work alone. Cheating will not be tolerated. Prof. Messerle believes strongly in fairness for all students and objective appraisal of individual student performance and understanding of course material. Student assignments will be checked via web-based resources for plagiarism. Academic misconduct may result in a grade reduction and/or other serious penalties, up to and possibly including expulsion from the University of Iowa.

Making a Suggestion or a Complaint: Students have the right to make suggestions or complaints and should first visit Prof. Messerle, and then the Chemistry DEO. Complaints must be made within six months of the incident per CLAS guidelines. See the CLAS Student Academic Handbook (http://www.clas.uiowa.edu/students/handbook/x/#5).
Accommodations for Disabilities: A student seeking academic accommodations should first register with Student Disability Services and then meet privately with an instructor to make particular arrangements. See www.uiowa.edu/~sds/ for more information.

Understanding Sexual Harassment: Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. All members of the UI community have a responsibility to uphold this mission and to contribute to a safe environment that enhances learning. Incidents of sexual harassment should be reported immediately. See the UI Comprehensive Guide on Sexual Harassment at www.uiowa.edu/~eod/policies/sexual-harassment-guide/index.html for assistance, definitions, and the full University policy.

Reacting Safely to Severe Weather: In severe weather, class members should seek appropriate shelter immediately, leaving the classroom if necessary. The class will continue if possible when the event is over. For more information on Hawk Alert and the siren warning system, visit the UI Public Safety web site http://www.uiowa.edu/~pubsfty/intlinks.htm

Resources for Students:
Writing Center: 110 English-Philosophy Building (EPB), 335-0188, http://www.uiowa.edu/~Ewritingc/
Speaking Center: 12 EPB, 335-0205, www.uiowa.edu/~rhetoric/centers/speaking
Mathematics Tutorial Laboratory: 314 MacLean Hall, 335-0810, www.uiowa.edu/mathlabTutor
Tutor Referral: Campus Info Center, IMU, 335-3055, http://imu.uiowa.edu/cic/tutor_referral_service
College of Engineering Tutoring Program: www.engineering.uiowa.edu/sdc/tutoring.php
Supplemental Instruction: cde.uiowa.edu/index.php/si.html
University Housing Tutoring: housing.uiowa.edu/departments/reslife/academic_initiatives.html