Dr. Craig M. Davis (DavisC@xavier.edu)  Office: Logan 206A  Phone: (513) 745-2066
Office Hours: Monday 1:30-2:30; Tuesday & Thursday 10:00-12:00; and by appointment.
Prerequisite: Junior standing.  Format: One lecture each week, W 2:00-2:50, in Logan 100.

Text: On Fact and Fraud; D. Goodstein; Princeton University Press; 2010.

Description: This course examines the generation, dissemination, and searching of chemical information. We will explore how research is accomplished (including discussions on ethics and an introduction to molecular modeling), shared with the scientific community (through journals, patents, and oral and poster presentations, and the role of peer review), and uncovered by other chemists (especially with SciFinder).

Attendance: Mandatory; each unexcused absence results in loss of a plus/minus letter grade.

Assignments: Students will complete SciFinder assignments (80 pts.) and an ethics program (50 pts.), perform molecular modeling (40 pts.) and deliver a “pre-lab” talk (50 pts.) (see back).

Tests: One test (80 points) will be given on October 21.

Special Needs: It is the responsibility of the student to inform the instructor at the beginning of the semester of any individual conditions, medical or otherwise, that may require special attention. Appropriate consideration will be given in these situations.

Academic Honesty: Cheating on any assignment will result in a grade of “F” for the course. The student may appeal according to normal procedures as stated in the University Catalog.

Grading Scale:  A 288+;  A- 279-287;  B+ 273-278;  B 267-272;  B- 261-266;
C+ 255-260;  C 249-254;  C- 243-248;  D+ 233-242;  D 225-232;  F 224 and below.

Upon review at the end of the semester, this scale may be adjusted downward.

NOTE: University Catalog states a grade of “A” is earned for “Exceptional” performance; this is also the policy of the Chemistry Department Faculty. Department Grading Policies: http://www.xu.edu/chemistry_dept/courses.htm

CHEM 300 Satisfies NSTA Reporting Standards for Teaching Science Numbers 1a, 1b, 1c, 1d, 2a, 2c, 3a, 4b, 5d

TENTATIVE SCHEDULE

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<td>Introduction; 1°, 2°, 3° Literature; Journals vs. Open Source; Impact Factor</td>
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<td>Sep. 2</td>
<td>Process; Peer Review; Patents; Posters and Talks</td>
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<td>Sep. 9</td>
<td>SciFinder Scholar (Phrase &amp; Structure Searches; Registry Numbers; References)</td>
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<td>Sep. 16</td>
<td>Science Citation Index; Discuss On-Line Ethics Program; Plan Student Talks</td>
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<td>Sep. 23</td>
<td>Ethics in Research (Part One)</td>
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<td>Sep. 30</td>
<td>Ethics in Research (Part Two)</td>
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<td>Oct. 7</td>
<td>Molecular Modeling (Principles; Demonstration; Discussion of Assignment)</td>
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<td>Oct. 14</td>
<td>Library Tour (Guest Lecturer: Ms. Vicki Young)</td>
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<td>Dec. 2</td>
<td>Molecular Modeling (Review Assignment); Careers/Graduate School</td>
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<td>Dec. 9</td>
<td>Discuss Faculty Research Projects; Evaluations</td>
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<td>Dec. 16</td>
<td>Turn in Faculty Choices (students beginning research next semester)</td>
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1. Substance Search on SciFinder (10 Pts.). DUE: Sep. 23
   Choose a drug from among the top 100 drugs for 2013 by retail sales:
   http://www.drugs.com/stats/top100/2013/sales
   Add your choice to the Discussion “Top 100 Drugs (Student Choices)” on Canvas.
   Check that you did not duplicate another student’s choice; then do this:
   A. Open SciFinder Scholar, and select the “Explore” drop-down menu along top (default).
   B. Select “Substance Identifier” (bottom entry of “Substances” column).
   C. Type in the chemical name (not the brand name); e.g., atorvastatin, not Lipitor.
   D. Click on the structure of your molecule; print the first page; write chemical name on top.

2. Author Search on SciFinder (20 Pts.) DUE: Sep. 23
   Choose a chemist the file “Nobel Prizes (Inorganic)” on Canvas.
   Add your choice to the Discussion “Nobel Prizes (Student Choices)” on Canvas.
   Check that you did not duplicate another student’s choice; then do this:
   A. Open SciFinder Scholar, and select the “Explore” drop-down menu along top (default).
   B. Select “Author Name” (second entry of “References” column).
   C. Find an article by your Nobel Laureate that contains the topic for which the award was
given (mentioned in either the title or the abstract); print the first page of that article.
   D. Click on the “Get Citing” option. Find an article that is available through our Electronic
Journal Center. Print the title page and whichever page shows your original article;
highlight (or circle) that reference.

3. Pursue a research topic on SciFinder (20 Pts.). DUE: Sep. 30 (Handout will be distributed.)

   You will be assigned three structures. For EACH structure, do the following:
   A. Open SciFinder Scholar, and select the “Explore” drop-down menu along top (default).
   B. Select “Chemical Structure” (first entry of “Substances” column).
   C. Draw structure, paying attention to stereochemistry.
   D. Find an article for its preparation. Print the title page and whichever page gives the
   experimental protocol for its synthesis; highlight (or circle) that synthesis.
   NOTE: If you cannot find its synthesis, find an article that reports a spectrum or other
data. Print the title page and whichever page shows the spectrum or data.
   (Whether you find a synthesis or other data, please do NOT print the entire article!)

   Select a laboratory exercise from the Journal of Chemical Education (ONLY!), and deliver
   an eight-minute “pre-lab” lecture to the class: a summary of the principle(s) being explored
   and a description of the exercise to be performed. (Be sure to choose a “laboratory
   exercise” and not a “demonstration” or other activity.) One week before your scheduled talk,
give the instructor an outline of your talk and your PowerPoint or Prezi file (15 pts.).
   Note: Part of your grade (5 pts.) will be determined by your assessment of your peers.

6. Molecular Modeling (40 Pts.). DUE: Nov. 19. (Problem set will be distributed on Oct. 8.)

   Go to Canvas for the file “On-Line Ethics Instructions 2014”, and follow the directions.
CHEM 300-01 is an Oral-Communication Flagged Course

Assignments for the semester are listed on the previous page. Assignments related to Oral Communication are #1 (10 pts.) and #3 (20 pts.) – which address the search for information – and #5 (50 pts.) – the actual delivery of a talk. (These account for 27% of your total grade.) The instructor will evaluate all three assignments, while your peers also will evaluate the talk.

Student Learning Outcomes (SLO’s) for this Oral-Communication Flagged Course

OCF SLO #1: “Adapt messages in a variety of communication contexts.”
Our students will need to (a) create messages to Large Groups (research talks at symposia) and Small Groups (their own research group; eventually, their supervisors and other personnel at work), and (b) adapt these messages primarily to professional colleagues, broadly defined (i.e. both their classmates and the faculty; again, eventually to peers and supervisors at work).

OCF SLO #2: “Organize information effectively.”
Our students will need to organize information clearly and succinctly. It is important for our students to be able to (a) synthesize information, (b) create an organizational structure for their message that makes sense to their audience.

OCF SLO #3: “Advocate a supported opinion on complex topics.”
Our students will need to present – and possibly defend – correct interpretation of spectroscopic, chromatographic, computational, or other types of chemical data.

OCF SLO #4: “Critique challenging messages with respect.”
Our students will need to listen actively and critically. They will also need to respond to speakers respectfully. Students must be able to (a) listen actively – comprehend the speaker’s main ideas and ask relevant clarifying questions, and (b) give constructive feedback to the speaker.

OCF SLO #5: “Present messages through a variety of modalities.”
Our students will deliver messages effectively utilizing verbal, nonverbal, vocal, and visual channels of communication. Students must be able to (a) to determine the most appropriate and effective visual medium to enhance a verbal message. This refers to use of visual aids such as models, props, graphs, charts and use of presentation software such as PowerPoint or Prezi, (b) manage technology effectively during public presentations, and (c) learn to write on a blackboard or whiteboard at a scale appropriate to the venue. Moreover, the students will need to generate their own graphs and charts to incorporate in PowerPoint or Prezi presentations.