2014

300-01 Intro to Chemical Research

Craig Davis

Follow this and additional works at: http://www.exhibit.xavier.edu/chemistry_syllabi_fall_2014

Recommended Citation
http://www.exhibit.xavier.edu/chemistry_syllabi_fall_2014/19

This Restricted-Access Syllabus is brought to you for free and open access by the Chemistry Syllabi 2014 at Exhibit. It has been accepted for inclusion in Chemistry Syllabi Fall 2014 by an authorized administrator of Exhibit. For more information, please contact exhibit@xavier.edu.
XAVIER UNIVERSITY  CHEM 300-01 (Intro. to Chemical Research) (1 credit)  FALL 2014

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 (45 pts.) and deliver a “pre-lab” talk (45 pts.) (see back).

Tests: One test (80 points) will be given on October 22.

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

<table>
<thead>
<tr>
<th>CLASS</th>
<th>TOPIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug. 27</td>
<td>Introduction; 1°, 2°, 3° Literature; Journals vs. Open Source; Impact Factor</td>
</tr>
<tr>
<td>Sep. 3</td>
<td>Process; Peer Review; Patents; Posters and Talks</td>
</tr>
<tr>
<td>Sep. 10</td>
<td>SciFinder Scholar (Phrase &amp; Structure Searches; Registry Numbers; References)</td>
</tr>
<tr>
<td>Sep. 17</td>
<td>Science Citation Index; Discuss On-Line Ethics Program; Plan Student Talks</td>
</tr>
<tr>
<td>Sep. 24</td>
<td>Ethics in Research (Part One)</td>
</tr>
<tr>
<td>Oct. 1</td>
<td>Ethics in Research (Part Two)</td>
</tr>
<tr>
<td>Oct. 8</td>
<td>Molecular Modeling (Principles; Demonstration; Discussion of Assignment)</td>
</tr>
<tr>
<td>Oct. 15</td>
<td>Library Tour (Guest Lecturer: Ms. Vicki Young)</td>
</tr>
<tr>
<td>Oct. 22</td>
<td>TEST</td>
</tr>
<tr>
<td>Oct. 29</td>
<td>Student Talks #1</td>
</tr>
<tr>
<td>Nov. 6</td>
<td>Student Talks #2</td>
</tr>
<tr>
<td>Nov. 12</td>
<td>Student Talks #3</td>
</tr>
<tr>
<td>Nov. 19</td>
<td>Student Talks #4</td>
</tr>
<tr>
<td>Dec. 3</td>
<td>Molecular Modeling (Review Assignment); Careers/Graduate School</td>
</tr>
<tr>
<td>Dec. 10</td>
<td>Discuss Faculty Research Projects; Evaluations</td>
</tr>
<tr>
<td>Dec. 17</td>
<td>Turn in Faculty Choices (students beginning research next semester)</td>
</tr>
</tbody>
</table>
   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. 24
   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 your own research topic on SciFinder (20 Pts.). DUE: Oct. 1
   A handout will be distributed on September 5.

   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!)

   Each student will select a laboratory exercise from the Journal of Chemical Education, 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. Details distributed on Sep. 17.
   Note: Part of your grade for this item will be determined by your assessment of your peers.

6. Molecular Modeling (45 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.