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Syllabus

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Syllabus Chemistry 4442 Air Quality Spring 2013

Enabled: Statistics Tracking

Text: Required: Atmospheric Pollution; Mark Z. Jacobson (University of Cambridge: ISBN # 0-521-01044-6)

Class Meeting Time: Meets in Chemistry/Forensic Science Room 104 TTh 11:00 am – 12:20 pm

Lab Meeting Time: Lab Meets in Chemistry Forensic Science Room 309 Tuesday 1:00 pm – 4:50 pm

Office Hours: Dr. Tom Chasteen's Office Hours (Chemistry Forensic Science Building Room 317E)

- 9:00 am to noon MWF
- 9:30 am–11:00 am Tuesday
- E-mail Office hours almost anytime: chasteen@shsu.edu

Chapter	Title	Comments
1	Basics	All sections and section 1.4 especially
2	Evolution of Earth's Atmosphere	All sections
3	Structure of the Modern Atmosphere	All sections
11	Stratospheric Ozone	Sections 11.1 through and including 11.3.2 (exclude sections 11.3.3 and 11.3.4), include 11.4 through and including 11.5, section 11.7 through chapter end; equations 11.2, 11.4, 11.6, 11.7, 11.21, 11.22, 11.23, 11.24, 11.25, 11.27 (chlorine sequestration), 11.35 (PSC surface reaction, and 11.39 (Cl ₂ photolysis)
12	The Enhanced Greenhouse	Exclude section 12.3.2

	Greenhouse Effect	
4	Urban Air Pollution	Exclude sections 4.3.2 through 4.3.7 inclusive and include Lewis dot structures of radicals
7	Effects of Pollution	Section 7.1 through section 7.1.1.1, Section 7.1.2.0, section 7.1.2.2, Section 7.3 to chapter end
8	International Urban Air Regulation	All sections
5	Aerosol Particles	Sections 5.1, 5.32 through chapter end
6	Meteorology and Air Pollution	Section 6.6
9	Indoor Air Pollution	All sections
10	Acidic Atmospheric Deposition	Section 10.1 through 10.5, Section 7 through chapter end

There will be three 80 minute long tests, and a two hour final:

- The first test date is Thursday, February 7, 2013.
- The second test date is Thursday, April 4, 2013.
- The final exam is scheduled for Thursday, May 9, 2013 @ 11 am to 1 pm. This is a two hour final.

(The scheduled test dates are not negotiable but may be changed by the instructor.)

The grades in this class will be assigned in the following way:

- greater than 89.5% = final grade of A
- 79.5 to 89.5 B
- 69.5 to 79.5 C
- 59.5 to 69.5 D
- less than 59.5 F

Two 80 minute tests = 50%

The final = 20%

Lab reports = 15% (if two or more labs are not submitted the whole lab grade will be zero)

Homework postings = 15%



Attendance Policy

Attendance is required. Since this is a Tuesday/Thursday class, two unexcused absences are allowed. Any tests missed because of unexcused absences will result in a grade of zero for that test. An unexcused missed final will result in a course grade of F. Excused absences include medical problems (with documentation from a doctor), death in the family, excused absences while conducting official Sam Houston State University

business, or absences approved by the instructor before the time of the absence. After the third unexcused absence the instructor can lower the student's final grade. Tardiness, or leaving early will adversely affect your grade in the course.



Required Calculator

To limit the use of memory-intensive calculators that can store text, formulae, and chemical nomenclature, you are required to use a Texas Instruments TI30 model calculator in this course **during in class tests**. There are multiple different TI30 models and all of them will work but I **suggest the TI30Xa**. Other calculators like TI Models TI34 and TI36 don't meet this requirement.



Purpose of This Course

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The purpose of this 4 semester hour course is to provide a broad introduction to the chemistry of pristine and polluted atmospheric environments.



Course Description

CHM 4442 AIR QUALITY An in-depth study of the sources of air pollution is made. Sampling procedures and the chemical analyses required for identification of pollutants are studied. Control methods for the restriction of air pollution are outlined. Four-hour laboratory. Prerequisites: A minimum grade of C in CHM 2410, 2323 and 2325. **Spring odd years. Credit 4.**



Student Absences on Religious Holidays

An institution of higher education shall excuse a student from attending classes or other required activities, including examinations, for the observance of a religious holy day, including travel for that purpose. A student whose absence is excused under this subsection may not be penalized for that absence and shall be allowed to take an examination or complete an assignment from which the student is excused within a reasonable time after the absence. A student who plans to miss a class or required activity to observe a religious holy day should inform the professor in writing prior to planned absence.



Students with Disabilities

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Services to Students with Disabilities

It is the policy of Sam Houston State University that no otherwise qualified disabled individual shall, solely by reason of his/her disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any academic,

Student Life program or activity. Students with disabilities may request academic assistance when needed from a Committee for Continuing Academic Assistance for Disabled Students by visiting the director of the Counseling Center, located in the annex of the Lee Drain Building across the sidewalk from Farrington Building, or call (936) 294-1720 (For additional information see the University Catalog). For assistance other than academic, the student with disabilities should contact the department from which assistance is needed, such as University Police for parking, the Registrar's Office for registration, etc. If problems are not resolved on the departmental level, contact the Interim Coordinator, Americans with Disabilities Act, or call (936) 294-1015. Students with disabilities may benefit by using CCTVs and voice-activated reading machines available in the Counseling Center. Hours of operation are Monday – Friday, 8:00 a.m. to 5:00 p.m. For further information, contact the Counseling Center staff at (936) 294-1720. CCTV and a voice-activated reading machine are also available in the library.

Americans with Disabilities Act

SHSU adheres to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations for students with disabilities. If you have a disability that may affect adversely your work in this class, then I encourage you to register with the SHSU Counseling Center and to talk with me about how I can best help you.

All disclosures of disabilities will be kept strictly confidential. NOTE: no accommodation can be made until you register with the Counseling Center.



E-mail Forwarding



Academic Honesty

The Faculty Handbook states that the University expects all students to engage in all academic pursuits in a manner that is above reproach. Students are expected to maintain complete honesty and integrity in the academic experiences both in and out of the classroom. Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action. Furthermore, the University and its official representatives may initiate disciplinary proceedings against a student accused of any form of academic dishonesty including, but not limited to, cheating on an examination or other academic work which is to be submitted, plagiarism, collusion and the abuse of resource materials.



Graduate Student Requirements

Availability: Item is not available.

Student who take this course for graduate credit have additional requirements beyond those of undergraduate students.

The student's final course grade must be an A or B for graduate credit.

Graduate students have additional/different questions on the in-class tests and final exam than those on undergraduate tests, although the number of tests will be the same. The additional material is designed to test graduate students at a more advanced level over the material covered in the class.

Additional laboratory requirements: **Literature Summaries**

Two (2) brief literature summaries/abstracts from recent (< 5 years old) peer-reviewed journals are required as an appendix for each lab including the group labs (see NGL reference librarian for a reference book that will detail which journals are peer-reviewed and which not). This is written in the form of an abstract based on literature papers read along with the lab. The paper must describe the application of the technique employed in the lab experiment for that week.

Do not restate the paper's abstract for your summary; you must write your own. You must read at least the paper's introduction, the results, and the discussion. This must involve a journal citation which is made up of the names of the authors, the journal title, year, vol. number and page numbers (see format below). Put this at the top of your abstract (on the same page).

Also, you MUST include in your appendix a copy of the first page of each journal article referenced. this can be a photocopy for hard copy journals or printed for on-line sources.

Examples of analytical/forensic chemistry journals that are your primary sources include but are not limited to:

- Analytica Chimica Acta
- Analytical Chemistry
- Environmental Science and Technology
- Forensic Science International
- Journal of Chromatography
- Journal of Forensic Sciences
- Journal of Spectroscopy

Here is the format for the abstract citation:

Zhang, L. and T.G. Chasteen, Amending Cultures of Selenium Resistant Bacteria with Dimethyl Selenone, *Applied Organometallic Chemistry*, 1994, **8**, 501-508.

For papers in press:

Schaller, D., Hilder, E. F. and P. R. Haddad, Separation of antidepressants by capillary electrophoresis with in-line solid-phase extraction using a novel monolithic adsorbent, *Analytica Chimica Acta*, **in press**.