Texas A&M University

Departmental Request for a New Course

Undergraduate • Graduate • Professional

Submit original form and 2 copies. Attach a course syllabus to each.

1. This request is submitted by the Department of [Atmospheric Sciences]

2. Course prefix, number and complete title [ATMO 606 Atmospheric Chemistry I]

3. Course description (not more than 50 words)
   Fundamentals of atmospheric chemistry; tropospheric ozone, NOx and HOx cycling, sulfur chemistry, stratospheric chemistry, and aerosol composition; analytical measurement methods; review of chemical basics as needed.

4. Prerequisite(s) [Cross-listed with [ ] Cross-listed courses require the signatures of both department heads.]

5. Is this a variable credit course? ☐ Yes ☐ No If yes, from _____ to _____.

6. Is this a repeatable course? ☐ Yes ☐ No If yes, this course may be taken _____ times. Will the course be repeated within the same semester/term? ☐ Yes ☐ No

7. Has this course been taught as a 489/689? ☐ Yes ☐ No If yes, how many times? _____ Indicate the number of students enrolled for each academic period it was taught. 06C (8); 07C (10)

8. This course will be:
   a. required for students enrolled in the following degree program(s) (e.g., B.A. in history)
   M.S. or Ph.D. in Atmospheric Sciences
   b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)

9. If other departments are teaching or are responsible for related subject matter, the course must be coordinated with these departments. Attach approval letters.

10. Prefix | Course # | Title (exclude punctuation) | Lect. | Lab | SCH | Subject Matter | Content Code | Admin. Unit | Acad. Year

| ATMO | 606 | ATMOS CHEMISTRY I | 030 | 000 | 034 | 0040100002 | ATMO09 | 10003632 |

Do not complete shaded area

Approval recommended by:

[Signature] 5/7/08
Head of Department

[Signature] 6/19/08
Chair, College Review Committee

[Signature] 9/1/08
Dean of College

Head of Department (if cross-listed course) Date

Dean of College Date

Submitted to Coordinating Board by:

[Signature] Date
Director of Academic Support Services

[Signature] Date
Dean of College Effective Date

To have this form reviewed, please send to Linda F. Lacey, Mail Stop 1265 or fax to 847-8737.

OARAS-504
ATMO 606: Atmospheric Chemistry I

Fall 2009

Instructor: Dr. Gunnar Schade
Office: 1104 Eller O&M Building
E-mail: gws@tamu.edu
Phone: (979) 845-0633
Office hours: Mon., Wed. 9:00 – 10:00 a.m. or by appointment

Short Class Description:
This course covers the basics as well as selected advanced topics of chemical reactions and transformations in our atmosphere. Chemical and physico-chemical principles relevant to the chemistry in the atmosphere, including spectroscopy, kinetics, and organic chemistry, will be reviewed. Next, atmospheric constituents relevant for its chemistry will be discussed to different detail, including their reactive transformations in the troposphere and stratosphere. Relevant analytical measurement techniques will be presented alongside the constituents discussed, with a focus on gas phase chemistry.

Course Outline (subject to change based on student interests):
Week  Topic
1 Definitions; Review of periodic table and electron configurations
2 Radiation and spectroscopy review; O₂ and O₃ photolysis
3 Kinetics; Basic atmo-chemistry reactions: CO, CH₄, O₃, NOₓ, HOₓ, lifetimes
4 Atmospheric CO, CH₄, and NOₓ budgets
5 NOₓ and HOₓ cycling in the troposphere
6 Analytical instrumentation for basic air quality measurements; mid term exam
7 Review of Organic Chemistry
8 Tropospheric hydrocarbon chemistry
9 Photochemical ozone pollution; NOₓ-chemistry
10 Tropospheric sulfur chemistry, atmospheric sulfur cycle
11 Atmospheric aerosols I
12 Atmospheric Aerosols II; Stratospheric Chemistry I
13 Stratospheric Chemistry II
14 Special Topic and Review
15 Review and final exam
Suggested textbooks:
*Chemistry of the Natural Atmosphere* by Peter Warneck, Academic Press, 2nd Ed., 1999
*Introduction to Atmospheric Chemistry* by Peter Hobbs†, Cambridge University Press, 2000

I will not be using a specific textbook to follow. Most introductory atmospheric chemistry textbooks on the market will be useful. For those of you with weak chemistry backgrounds, I suggest buying "Organic Chemistry for Dummies", which has many relevant and easy to understand chapters for this class.

Besides a textbook, I will provide hand-outs on many topics, including overview/review articles on atmospheric chemistry, atmospheric aerosols, and analytical methods. This material will be partially mandatory partially free reading.

**Grading:**
*Homework*: 40% (8 assignments)
*Exams*: 60% (one mid-term, one final exam)
**Typical Grading Scale**: 100-90: A; 89-75: B; 74-60: C; 60-50: D; less than 50: F

**Aggie Code of Honor:**
The Aggie Code of Honor states that lying, cheating, or stealing is not tolerated. Anyone who violates the rules of academic honesty will receive an "F" for the course and additional sanctions as described in the University Regulations. *Plagiarism*, usually defined as passing off as one’s own the ideas, words, writings, etc. that belong to another, is a common form of Aggie Honor Code violation. In accordance with its definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. If you have any questions regarding plagiarism or other forms of academic misconduct, please consult the Aggie Honor System Office ([http://www.tamu.edu/aggiehonor](http://www.tamu.edu/aggiehonor)).

**ADA Statement:**
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, the legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with Disabilities, in Cain Hall or call 845-1657.

**Attendance:**
The university views class attendance as an individual student responsibility. Students are expected to attend class and to complete all assignments. Absences will be handled in accordance with the Texas A&M University Student Rules ([http://student-rules.tamu.edu/rule7.htm](http://student-rules.tamu.edu/rule7.htm)).
Please put this approval with the ATMO 606 new course request paperwork...

Original Message

> ----------------------------------------
> Subject: Fwd: ATMO606
> From: "Michael Rosynek" <rosynek@mail.chem.tamu.edu>
> Date: Mon, May 5, 2008 4:08 pm
> To: zhang@ariel.met.tamu.edu
> ----------------------------------------

> Dr. Zhang:
> 
> The syllabus for your proposed ATMO 606 course does not overlap significantly with that of any Department of Chemistry graduate course, and we have no objection to the establishment of a permanent course number for this course.

> Michael P. Rosynek
> Professor and Associate Head
> Department of Chemistry
> Texas A&M University
> College Station, TX 77843-3255
> 979-845-2233

---

Christie Dunn
Academic Advisor II
Dept. of Atmospheric Sciences
Texas A&M University
cdunn@ariel.met.tamu.edu

Eller O&M 1204, TAMU 3150 | College Station, TX 77843
Tel. 979.845.7688 | Fax. 979.862.4466

http://atmo.tamu.edu

Welcome to Aggieland