Proposed Curriculum Revisions for the M.S. PROGRAM in ATMOSPHERIC SCIENCES
Department of Atmospheric and Environmental Sciences

December 5, 2008 (Submitted by Robert Keesee and Christopher Thornicroft)
Revised by Department April 7, 2009 (Proposal #08-166)

NARRATIVE on REVISIONS

Rationale: This is a proposed revision to the selection of required coursework for the M.S. degree in Atmospheric Sciences. The motivation for these changes derive from recent changes in the graduate curriculum including an increase in the breadth of the program as the result of incorporating closely related graduate courses formerly associated with the suspended geology graduate program. The current master’s program requires a sampling of courses from two topic areas “Synoptic and Climate Dynamics” and “Atmospheric Physics and Chemistry”. The atmospheric science graduate program has long recognized three basic areas of research activity but due to limitations on the ability to offer a full suite of courses in each area the curriculum was divided into two topic areas several years ago when the program shifted away from requiring specific courses. The proposed change with the expanded curriculum allows for a more cogent rearrangement of our curriculum into three topics areas: “Dynamic Meteorology”, “Atmospheric Physics and Chemistry”, and “Climate and Environmental Systems”. To allow flexibility in the particular interests of each master’s student but to assure sufficient breadth, course work is required in two of the three topic areas. Since several changes were made in course offerings last year, the requested effective date is Fall 2008.

Summary of course changes within topic areas:

“Dynamic Meteorology” is largely the old topic area of “Synoptic and Climate Dynamics”

Courses to be added:
ATM510 (Synoptic Dynamic Meteorology I) added to the curriculum Fall 2007
ATM523 (Large-scale Dynamics of the Tropics) added to the curriculum Fall 2008

Courses to be removed:
ATM500 (Introduction to Fluid Mechanics) was deactivated in Fall 2008
ATM501 (Synoptic Laboratory II) is being removed from the list since it’s a laboratory course.
ATM522 (Climate Variability and Predictability) is being moved into the new third topic area.
ATM542 (Waves Motions in the Atmosphere) was deactivated in Fall 2008

“Atmospheric Physics and Chemistry”

Course to be renumbered:
ATM504 was changed from ATM504A, MS course requirements to reflect that change

Courses to be removed:
ATM508 (Hydrometeorology) being moved into the new third topic area
ATM518, 519, 520, and 530 are rarely offered and not considered fundamental to the topic area

“Climate and Environmental Systems” is the new third topic area

Courses to be included:
ATM508 (Hydrometeorology) formerly with “Atmospheric Physics and Chemistry”
ATM506 (Environmental Geochemistry), formerly GEO515
ATM517 (Tectonics), formerly GEO717
ATM522 (Climate Variability and Predictability) formerly with “Synoptic and Climate Dynamics”
ATM535 (Surficial Applied Geohydrology), formerly GEO535
ATM550 (Paleoclimatology), formerly GEO550
ATM552 (Climate Change) is a new proposed course
ATM566 (Marine and Estuary Systems), formerly GEO566
General Sequence

1. A minimum of 30 credits in graduate courses (500 level or above) is required for the master's degree;
2. Atmospheric science (18 credits, minimum):
   a. Courses as advised including at least two courses from the area of Synoptic and Climate Dynamics (Atm 500, 501, 509, 511, 521, 522, 542 or 562) and at least two courses from the area of Atmospheric Physics and Chemistry (Atm 504A, 507 508, 514, 515, 518, 519, 520, 524, 528, 530, 534 or 546);
   b. Six credits of Atm 699 leading to an acceptable master's thesis;
3. Supporting courses (0-12 credits): Courses in other fields, as advised;
4. Satisfactory completion of a major field examination in atmospheric science.
5. Ancillary Duties: In addition to the completion of course requirements, satisfactory performance in some ancillary teaching, research, or practicum duties contributing to academic development is required, whether or not the student receives financial support from this institution. These duties will be assigned with educational objectives in mind.

Proposed entry (changes to 2.a.)

General Sequence

1. A minimum of 30 credits in graduate courses (500 level or above) is required for the master's degree;
2. Atmospheric science (18 credits, minimum):
   a. A minimum of four courses chosen from those listed here. Courses must be chosen from at least two of the following three areas: Dynamic Meteorology (Atm 509, 510, 511, 521, 523, and 562), Atmospheric Chemistry and Physics (Atm 504, 507, 514, 515, 524, 528, 534, and 546), and Climate and Environmental Systems (Atm 506, 508, 517, 522, 535, 550, 552, and 566);
   b. Six credits of Atm 699 leading to an acceptable master's thesis;
3. Supporting courses (0-12 credits): Courses in other fields, as advised;
4. Satisfactory completion of a major field examination in atmospheric science.
5. Ancillary Duties: In addition to the completion of course requirements, satisfactory performance in some ancillary teaching, research, or practicum duties contributing to academic development is required, whether or not the student receives financial support from this institution. These duties will be assigned with educational objectives in mind.
Course Action Forms associated with changes to the Atmospheric Science Master's Degree Program requirements and to the ATM curriculum.

The syllabus for the new course ATM552 follows the CAFs.

Course Action Forms:
1. Changes to MS course requirements
2. Change GEO515 to ATM506 and reduce to 3 credits
3. Change GEO517 to ATM517
4. Change GEO535 to ATM535
5. Change GEO550 to ATM550 and title to Paleoclimatology and reduce to 3 credits
6. Create ATM552 Climate Change
7. Change title and description for ATM562
8. Change GEO566 to ATM566
9. Change title and description for ATM652
10. Change GEO673 to ATM773
11. Change GEO674 to ATM774
12. Change GEO677 to ATM777
13. Change GEO678 to ATM778

Other documents
14. Syllabus for ATM552
University at Albany -- State University of New York

College of Arts and Sciences

Course Action Form

Proposition No. 08-166

Please mark all that apply:
- New Course
- Cross-Listing
- Shared-Resources Course
- Deactivate / Activate Course

Revision of:

Number

Title

Credits

Prerequisites

Other: ATM MS course requirements

Department: Earth & Atmospheric Sciences
To be effective (semester): Fall 2009

Course Description to appear in Bulletin:

2. Atmospheric science (18 credits, minimum):
   a. A minimum of four courses chosen from those listed here. Courses must be chosen from at least two of
      the following three areas: Dynamic Meteorology (Atm 509, 510, 511, 521, 523, and 562), Atmospheric
      Chemistry and Physics (Atm 504, 507, 514, 515, 524, 528, 534, and 546), and Climate and Environmental
      Systems (Atm 506, 508, 517, 522, 535, 550, 552, and 566);
   b. Six credits of Atm 699 leading to an acceptable master's thesis;

Prerequisites statement to be appended to description in Bulletin:

If SAU is to be designated as the only grading system in the course, check here:

This course is (is to be) cross listed with:

This course is (is to be) a shared-resources course with:

Explanation of proposal:

This is a revision to the M.S. graduate curriculum in Atmospheric Sciences that have occurred recently by
creating ATM510 and 552, reviving ATM562, and deactivating ATM500, and also by incorporating specific
related aspects of the former geology graduate curriculum (ATM506, 517, 535, 550, and 566) into the
Atmospheric Science graduate program.

Other departments or schools which offer similar or related courses and which have certified that this proposal does not overlap their offering:

None

Approved by Chair(s) of Departments having cross-listed course(s)

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<td>Maria Isabel Ayala</td>
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University at Albany – State University of New York

Course Action Form

Proposal No. 08-166A

Department: Earth & Atmospheric Sciences  To be effective (semester): Fall 2009

Course Number  Current: GEO515  New: ATM506  Credits: 3
Course Title: Environmental Geochemistry

Course Description to appear in Bulletin:
Industrial pollution, agricultural pesticides and fertilizers, and fossil fuel waste-products are major sources of biotoxic and phytotoxic heavy metals (e.g., As, Cd, Cu, Hg, Mo, Ni, Pb, Sb, Sc, Ti) in the environment. The mobilities and pathways of these elements into-and-through soil and groundwater are examined. Analytic methods and sampling strategies for tracing the historical trends of heavy metal fluxes in specific geographic regions are explored.

Prerequisites statement to be appended to description in Bulletin:

If S/U is to be designated as the only grading system in the course, check here: ___

This course is (is to be) cross listed with: ____________________

This course is (is to be) a shared-resources course with: ____________________

Explanation of proposal:
This is a revision to an existing class to accommodate changes to the graduate curriculum in the Department of Earth and Atmospheric Sciences that are occurring as we incorporate specific related aspects of the geology graduate program into the Atmospheric Science graduate program. This follows the suspension of admissions to the geology graduate program that took effect last year.

Other departments or schools which offer similar or related courses and which have certified that this proposal does not overlap their offering:
None

Approved by Chair(s) of Departments having cross-listed course(s)

Chair of Prospective Department  Date  Dean of College  Date
Chris Thornicroft  12/5/08  Gregory Stevens  3/18/09, 4/7/09

Chair of Academic Programs Committee  Date  Dean of Graduate (Undergraduate) Studies  Date
Marla Isabel Ayala  3/18/09  ____________________  ____________________
University at Albany – State University of New York

College of Arts and Sciences

Course Action Form

Proposal No. 08-166B

Please mark all that apply:

- New Course
- Cross-Listing
- Shared-Resources Course
- Deactivate / Activate Course

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Department: Earth & Atmospheric Sciences  To be effective (semester): Fall 2009

Course Number Current: GEO517  New: ATM517  Credits: 3

Course Title: Tectonics

Course Description to appear in Bulletin:

Seismological basis for plate tectonics, kinematics of plate motion, geometry, and evolution of plate mosaics. Analysis of the structure and history of shields, platforms, rift valleys, plateaux, continental margins, island arcs, transcurrent fault zones, and orogenic belts. Independent study of an appropriate topic and an oral presentation will be required.

Prerequisites statement to be appended to description in Bulletin:

Prerequisite: Consent of instructor.

If S/U is to be designated as the only grading system in the course, check here: ______

This course is (is to be) cross listed with: ______

This course is (is to be) a shared-resources course with: ______

Explanation of proposal:

This is a revision to an existing class to accommodate changes to the graduate curriculum in the Department of Earth and Atmospheric Sciences that are occurring as we incorporate specific related aspects of the geology graduate program into the Atmospheric Science graduate program. This follows the suspension of admissions to the geology graduate program that took effect last year.

Other departments or schools which offer similar or related courses and which have certified that this proposal does not overlap their offering:

None

Approved by Chair(s) of Departments having cross-listed course(s)

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University at Albany – State University of New York

College of Arts and Sciences  Course Action Form  Proposal No.  08-166C

Please mark all that apply:

- New Course
- Cross-Listing
- Shared-Resources Course
- Deactivate / Activate Course

Department: Earth & Atmospheric Sciences  To be effective (semester): Fall 2009

Course Number  Current: GEO535  New: ATM535  Credits: 3
Course Title: Surficial Applied Geohydrology

Classification, origin, and properties of surficial materials; sampling and exploration methods; determination of groundwater and hydrologic properties; groundwater flow systems and introduction to modeling, hydrochemistry, geological factors in environmental studies with respect to remediation and regulatory policy, exercises in surficial well logging, pump test analysis, and brief research papers. Three lectures each week. One or two optional half-day field trips. Spring Semester.

Prerequisites statement to be appended to description in Bulletin:

Graduate Student Status

If S/U is to be designated as the only grading system in the course, check here: ___

This course is (is to be) cross listed with: ________________________________

This course is (is to be) a shared-resources course with: ______________________

Explanation of proposal:

This is a revision to an existing class to accommodate changes to the graduate curriculum in the Department of Earth and Atmospheric Sciences that are occurring as we incorporate specific related aspects of the geology graduate program into the Atmospheric Science graduate program. This follows the suspension of admissions to the geology graduate program that took effect last year.

Other departments or schools which offer similar or related courses and which have certified that this proposal does not overlap their offering:

None

Approved by Chair(s) of Departments having cross-listed course(s)  Date

Chair of Proactive Department  Date
Chris Thornicroft
12/5/08

Dean of College  Date
Gregory Stevens
3/18/09; 4/7/09

Chair of Academic Programs Committee  Date
Maria Isabel Ayala
3/18/09

Dean of Graduate (Undergraduate) Studies  Date
University at Albany – State University of New York

College of Arts and Sciences

Course Action Form

Proposal No. 08-166D

Please mark all that apply:
- New Course
- Cross-Listing
- Shared-Resources Course
- Deactivate / Activate Course

Revision of:
- Number
- Title
- Credits
- Description
- Prerequisites
- Other:

Department: Earth & Atmospheric Sciences
To be effective (semester): Fall 2009

Course Number Current: GEO550
New: ATM550
Credits: 3

Course Title: Paleoclimatology

Course Description to appear in Bulletin:
This class is designed to introduce the field of Paleoclimatology and will specifically focus on the use of sediments and other biological (corals, tree rings) and geological archives (ice cores and speleothems) to recon environmental, climatic, and oceanographic change over a range of time scales with focus on the latest Pleistocene and Holocene. In the process we will cover a range of topics in lecture that will provide an introduction to climatology, age dating techniques, climatic proxies (isotopes and trace metals), micropaleontology, and time-series analysis. In addition to lectures, the class will involve review of current and past scientific studies. Students will lead in-class discussions of scientific papers and a written review paper on a relevant topic of choice is required.

Prerequisites statement to be appended to description in Bulletin:

If S/U is to be designated as the only grading system in the course, check here: ___

This course is (is to be) cross listed with: __________________________

This course is (is to be) a shared-resources course with: __________________________

Explanation of proposal:
This is a revision to an existing class to accommodate changes to the graduate curriculum in the Department of Earth and Atmospheric Sciences that are occurring as we incorporate specific aspects of the geology graduate program into the Atmospheric Science graduate program. This follows the suspension of admissions to the geology graduate program that took effect last year.

Other departments or schools which offer similar or related courses and which have certified that this proposal does not overlap their offering:
None

Approved by Chair(s) of Departments having cross-listed course(s)

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University at Albany – State University of New York

College of Arts and Sciences

Course Action Form

Proposal No. 08-166

Please mark all that apply:

X New Course

Cross-Listing

Shared-Resources Course

Deactivate / Activate Course

Number

Title

Credits

Other:

Description

Prerequisites

Department: Earth & Atmospheric Sciences

To be effective (semester): Fall 2009

Course Number Current: New: ATM552E Credits: 3

Course Title: Climate Change

Course Description to appear in Bulletin:

This course discusses the current scientific understanding regarding anthropogenic climate change, including uncertainties and inherent limitations. Topics covered will include, among others, modeling aspects of climate change, greenhouse gas forcing and future emission scenarios, carbon cycle feedbacks, detection and attribution studies (fingerprinting), regional climate change, impacts of climate change on cryosphere, sea-level rise, extreme events, etc. and mitigation and adaptation strategies. The most recent Intergovernmental Panel on Climate Change (IPCC) report will serve as the basis for discussions but will be supplemented with results emerging from more recent studies.

Prerequisites statement to be appended to description in Bulletin:

If S/U is to be designated as the only grading system in the course, check here: 

This course is (is to be) cross listed with: 

This course is (is to be) a shared-resources course with: 

Explanation of proposal:

This course is being created to provide graduate students an in-depth study of the science concerning the issues around anthropogenic climate change over the recent past and projections for the near future. The course complements current departmental graduate course offerings in palaeoclimate, climate variability, and climate modeling.

Other departments or schools which offer similar or related courses and which have certified that this proposal does not overlap their offering:

None

Approved by Chair(s) of Departments having cross-listed course(s):

Date

Chair of Procosina Department

12/09/08

Chris Thornicroft

Dean of College

Gregory Stevens

Date

3/18/09; 4/7/09

Chair of Academic Programs Committee

Date

Maria Isabel Ayala

Dean of Graduate (Undergraduate) Studies

Date
University at Albany – State University of New York

College of Arts and Sciences

Course Action Form

Proposal No. 08-166F

Please mark all that apply:
- New Course
- Cross-Listing
- Shared-Resources Course
- Deactivate / Activate Course

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Department: Earth & Atmospheric Sciences  To be effective (semester): Fall 2009

Course Number: Current: ATM562  New:  Credits: 3

Course Title: **Numerical Weather Prediction**

**Course Description to appear in Bulletin:**

Numerical methods for diagnostic and prognostic meteorological models; model initialization, incorporation of clouds and precipitation; review of current numerical weather prediction models.

**Prerequisites statement to be appended to description in Bulletin:**

Prerequisite: ATM 510, familiarity with partial differential equations and computer programming.

If S/U is to be designated as the only grading system in the course, check here: ___

This course is (is to be) cross listed with: ___

This course is (is to be) a shared-resources course with: ___

**Explanation of proposal:**

Title and description are being modified to reflect the shift in focus to numerical techniques specifically for weather prediction.

**Other departments or schools which offer similar or related courses and which have certified that this proposal does not overlap their offering:** None

**Approved by Chair(s) of Departments having cross-listed course(s)**

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University at Albany – State University of New York

College of Arts and Sciences

Course Action Form

Proposal No. 08-166

Please mark all that apply:

- New Course
- Cross-Listing
- Shared-Resources Course
- Deactivate / Activate Course

Department: Earth & Atmospheric Sciences  To be effective (semester): Fall 2009

Course Number: GEO566 New: ATM566G Credits: 3

Course Title: Marine and Estuary Systems

Course Description to appear in Bulletin:

This class is designed as an in-depth study of modern processes in marine and estuary systems, with a focus on marine/estuary sedimentology and biogeochemistry. Topics to be covered include: water column parameters, dissolved gases in sea water, trace elements and nutrients, marine and estuarine sediment processes; and aerosol deposition. In addition to lectures, the class will involve review of current scientific studies, a class presentations by each student on papers being discussed, and a review paper on a relevant topic of choice. 2 lectures each week.

Prerequisites statement to be appended to description in Bulletin:

Graduate Student Status

If S/U is to be designated as the only grading system in the course, check here: _____

This course is (is to be) cross listed with: ____________________________

This course is (is to be) a shared-resources course with: ____________________________

Explanation of proposal:

This is a revision to an existing class to accommodate changes to the graduate curriculum in the Department of Earth and Atmospheric Sciences that are occurring as we incorporate specific related aspects of the geology graduate program into the Atmospheric Science graduate program. This follows the suspension of admissions to the geology graduate program that took effect last year.

Other departments or schools which offer similar or related courses and which have certified that this proposal does not overlap their offering:

None

Approved by Chair(s) of Departments having cross-listed course(s)

Chair of Program(s) Date Dean of College Date

Chris Thornicroft 12/5/08 Gregory Stevens 3/18/06; 4/7/09

Chair of Academic Programs Committee Date

Marla Isabel Ayala 3/18/09

Dean of Graduate (Undergraduate) Studies Date
University at Albany – State University of New York

College of Arts and Sciences  
Course Action Form  
Proposal No. 08-166H

Department: Earth & Atmospheric Sciences  
To be effective (semester): Fall 2009

Course Number  Current: ATM652  
Course Title: Atmospheric Predictability  
Credits: 3

Course Description to appear in Bulletin:
Overview of chaotic dynamical systems, stability and error growth, deterministic and ensemble forecasting, data assimilation, sensitivity analysis, optimal observation locations.

Prerequisites statement to be appended to description in Bulletin:
Prerequisites: Atm 562.

If S/U is to be designated as the only grading system in the course, check here: 

This course is (is to be) cross listed with: 
This course is (is to be) a shared-resources course with: 

Explanation of proposal:
Title and description are being modified to reflect the emphasis on predictability in numerical weather prediction. This is the advanced graduate course follow-on to the 500-level course in numerical weather prediction techniques (ATM562).

Other departments or schools which offer similar or related courses and which have certified that this proposal does not overlap their offering:
None

Approved by Chair(s) of Departments having cross-listed course(s)  
Date

Chair of Proosina Department  
Chris Thorncroft  
12/5/08

Dean of College  
Gregory Stevens  
3/18/09; 4/7/09

Chair of Academic Programs Committee  
Maria Isabel Ayala  
3/18/09

Dean of Graduate (Undergraduate) Studies  
Date
University at Albany – State University of New York

College of Arts and Sciences

Course Action Form

Proposal No. 08-1661

Department: Earth & Atmospheric Sciences

To be effective (semester): Fall 2009

Course Number Current: GEO673
New: ATM773

Credits: 1 - 4

Course Title: Topics in Geochemistry

Course Description to appear in Bulletin:

Consider advanced topics in geochemistry research.

Prerequisites statement to be appended to description in Bulletin:

Prerequisite: Consent of instructor.

If S/U is to be designated as the only grading system in the course, check here: X

This course is (is to be) cross listed with:

This course is (is to be) a shared-resources course with:

Explanation of proposal:

This is a revision to an existing class to accommodate changes to the graduate curriculum in the Department of Earth and Atmospheric Sciences that are occurring as we incorporate specific related aspects of the geology graduate program into the Atmospheric Science graduate program. This follows the suspension of admissions to the geology graduate program that took effect last year.

Other departments or schools which offer similar or related courses and which have certified that this proposal does not overlap their offering:

None

Approved by Chair(s) of Department having cross-listed course(s)

Chair of Proposal Department Date Dean of College Date
Chris Thome 12/5/08 Gregory Stevens 3/18/09

Chair of Academic Programs Committee Date Dean of Graduate (Undergraduate) Studies Date
Maria Isabel Ayala 3/18/09
University at Albany – State University of New York

College of Arts and Sciences

Course Action Form

Proposal No. 08-166J

Please mark all that apply:

- New Course
- Cross-Listing
- Shared-Resources Course
- Deactivate / Activate Course

Revision of: X

Number
Title
Credits
Other:

Department: Earth & Atmospheric Sciences
To be effective (semester): Fall 2009

Course Number: Current: GEO674
New: ATM774
Credits: 1 - 4

Course Title: Topics in Stratigraphy-Sedimentation

Course Description to appear in Bulletin:

Considers advanced topics in stratigraphy-sedimentation research.

Prerequisites statement to be appended to description in Bulletin:

Prerequisite: Consent of instructor.

If S/U is to be designated as the only grading system in the course, check here: X

This course is (is to be) cross listed with:

This course is (is to be) a shared-resources course with:

Explanation of proposal:

This is a revision to an existing class to accommodate changes to the graduate curriculum in the Department of Earth and Atmospheric Sciences that are occurring as we incorporate specific related aspects of the geology graduate program into the Atmospheric Science graduate program. This follows the suspension of admissions to the geology graduate program that took effect last year.

Other departments or schools which offer similar or related courses and which have certified that this proposal does not overlap their offering:

None

Approved by Chair(s) of Departments having cross-listed course(s)

Chair of Procosina Department

Chris Thorncroft

Date: 12/5/08

Dean of College

Gregory Stevens

Date: 3/18/09; 4/7/09

Chair of Academic Programs Committee

Maria Isabel Ayala

Date: 3/18/09

Dean of Graduate (Undergraduate) Studies
University at Albany – State University of New York

College of Arts and Sciences

Course Action Form

Proposal No. 08-166K

Please mark all that apply:

- [ ] New Course
- [ ] Cross-Listing
- [ ] Shared-Resources Course
- [ ] Deactivate / Activate Course

Revision of: X Number

- [ ] Description
- [ ] Prerequisites

Title

Credits

Other:

Department: Earth & Atmospheric Sciences  To be effective (semester): Fall 2000

Course Number Current: GEO677  New: ATM777  Credits: 1 - 4

Course Title: Topics in Applied Geology and Hydrogeology

Course Description to appear in Bulletin:

Considers advanced topics in applied geology and hydrogeology research.

Prerequisites statement to be appended to description in Bulletin:

Prerequisite: Consent of instructor.

If S/U is to be designated as the only grading system in the course, check here: X

This course is (is to be) cross listed with:

This course is (is to be) a shared-resources course with:

Explanation of proposal:

This is a revision to an existing class to accommodate changes to the graduate curriculum in the Department of Earth and Atmospheric Sciences that are occurring as we incorporate specific related aspects of the geology graduate program into the Atmospheric Science graduate program. This follows the suspension of admissions to the geology graduate program that took effect last year.

Other departments or schools which offer similar or related courses and which have certified that this proposal does not overlap their offering:

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<th>Chair of Program or Department</th>
<th>Date</th>
<th>Dean of College/Dean of Graduate (Undergraduate) Studies</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chair of Environmental Studies</td>
<td>12/5/08</td>
<td>Gregory Stevens</td>
<td>3/18/09; 4/7/09</td>
</tr>
<tr>
<td>Chair of Academic Programs Committee</td>
<td>3/18/09</td>
<td>Dean of Graduate (Undergraduate) Studies</td>
<td>Date</td>
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</tbody>
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College of Arts and Sciences

Course Action Form

Proposal No. 08-1661

Please mark all that apply:

- New Course
- Cross-Listing
- Shared-Resources Course
- Deactivate / Activate Course

Revision of: X Number

Title

Credits

Other:

Department: Earth & Atmospheric Sciences
To be effective (semester): Fall 2009

Course Number: Current: GEO878 New: ATM778 Credits: 1 - 4

Course Title: Topics in Geophysics

Course Description to appear in Bulletin:

Considers advanced topics in geophysics research.

Prerequisites statement to be appended to description in Bulletin:

Prerequisite: Consent of instructor.

If S/U is to be designated as the only grading system in the course, check here: X

This course is (is to be) cross listed with:

This course is (is to be) a shared-resources course with:

Explanation of proposal:

This is a revision to an existing class to accommodate changes to the graduate curriculum in the Department of Earth and Atmospheric Sciences that are occurring as we incorporate specific related aspects of the geology graduate program into the Atmospheric Science graduate program. This follows the suspension of admissions to the geology graduate program that took effect last year.

Other departments or schools which offer similar or related courses and which have certified that this proposal does not overlap their offering:

None

Approved by Chair(s) of Departments having cross-listed course(s)

Chair of Proconsino Department
Chris Thornton
Date 12/08

Dean of College
Gregory Stevens
Date 3/18/09: 4/7/09

Chair of Academic Programs Committee
Maria Isabel Ayala
Date 3/18/09

Dean of Graduate (Undergraduate) Studies
Date
SYLLABUS ATM-552 CLIMATE CHANGE

Catalog number and title of the course:
ATM-522 Climate Change

Term and call number of the section:
TBD

Location(s) and meeting times of the section:
TBD

Instructor's name and title:
Mathias Vuille, Assistant Professor

If applicable, name(s) of teaching assistants in the class:
N/A

Instructor's contact information (e-mail, phone number, office location, fax)
e-mail: mathias@atmos.albany.edu
phone: (518 442-4472)
office: ES 311
fax: (518 442-5825)

Instructor's office hours:
by appointment

Course description, overview and objective(s)
This course discusses the current scientific understanding regarding anthropogenic climate change, including uncertainties and inherent limitations. Topics covered will include, among others, modeling aspects of climate change, greenhouse gas forcing and future emission scenarios, carbon cycle feedbacks, detection and attribution studies (fingerprinting), regional climate change, impacts of climate change on cryosphere, sea-level rise, extreme events, etc. and mitigation and adaptation strategies. The most recent Intergovernmental Panel on Climate Change (IPCC) report will serve as the basis for discussions but will be supplemented with results emerging from more recent studies.

Prerequisites of the course
none

The instructor should specifically indicate prerequisites that are critical to success in the class and that are enforceable.
none

Grading scheme
Grade will be based on one written exam (mid-term), a 20 min. in-class presentation on a topic chosen by student and a review or research paper (topic also chosen by student) due at the end of the semester

Whether the course is A-E or S/U graded
A-E graded

Overall method by which grades will be determined ("weights" of exams, class participation, etc.)
  Mid-term exam (30%)
  In-class presentation (20%)
  Review or research paper due at the end of the semester (50%)

Course requirements, including but not limited to:
Required textbooks:
  none

Other required materials, purchases; fees (when applicable):
  We will rely on the latest IPCC reports and read relevant papers, all of which will be supplied at no cost to students

Projected date/time of exams, papers, projects, midterm, and final:
  TBD

Attendance policies for the class:
  I do not take attendance; students will be made aware at the beginning of the semester that historically in my classes there is a strong correlation between frequent absence and poor grades.

General paper, project, and test requirements
  The research or review paper represents the core of this course. It allows students to express their advanced knowledge and research on a pre-approved topic related to climate change. These projects have to include an in-depth literature review, if possible some original data analysis and a discussion. Each student will have to:
  - Be the discussion facilitator of a paper chosen for a seminar-style discussion
  - Give an oral presentation (20 min.) to the class on his/her research topic
  - Write a research paper of not less than 20 and not more than 30 pages, written journal-style.
  Evaluation will be based on effort, content, scientific accuracy, and creativity. Every effort should be made for a concise presentation that demonstrates advanced knowledge of the selected topic.