Eastern Illinois University  
New Course Proposal  
ESC/GEG 3415, The Restless Atmosphere

Please check one:  
☑ New course  
☐ Revised course

PART I: CATALOG DESCRIPTION

1. Course prefix and number, such as ART 1000:  ESC/GEG 3415
2. Title (may not exceed 30 characters, including spaces):  RESTLESS ATMOSPHERE
3. Long title, if any (may not exceed 100 characters, including spaces):  THE RESTLESS ATMOSPHERE
4. Class hours per week, lab hours per week, and credit [e.g., (3-0-3)]:  3-0-3
5. Term(s) to be offered:  
☐ Fall  ☐ Spring  ☐ Summer  ☑ On demand
6. Initial term of offering:  
☐ Fall  ☐ Spring  ☐ Summer  ☑ Year: 2010
7. Course description (not to exceed four lines):  This course is designed to provide students with an understanding of the essential processes responsible for determining patterns in our atmospheric system. It will emphasize principal components of the atmosphere from a human perspective. Topics covered will include discussions of climate variability, severe weather, anthropogenic climate change, and atmospheric forecasting. It also stresses the dynamic nature of the atmosphere as it affects humans and their activities.
8. Registration restrictions:
   a. Identify any equivalent courses (e.g., cross-listed course, non-honors version of an honors course).
   b. Prerequisite(s), including required test scores, courses, grades in courses, and technical skills. Indicate whether any prerequisite course(s) MAY be taken concurrently with the proposed/revised course. No prerequisite.
   c. Who can waive the prerequisite(s)?
      ☐ No one  ☐ Chair  ☐ Instructor  ☐ Advisor  ☐ Other (Please specify)
   d. Co-requisites (course(s) which MUST be taken concurrently with this one):
   e. Repeat status:  
      ☑ Course may not be repeated.
      ☐ Course may be repeated to a maximum of ______ hours or ______ times.
   f. Degree, college, major(s), level, or class to which registration in the course is restricted, if any:  NONE
   g. Degree, college, major(s), level, or class to be excluded from the course, if any:  NONE
9. Special course attributes [cultural diversity, general education (indicate component), honors, remedial, writing centered or writing intensive]
   NONE
10. Grading methods (check all that apply):  
    ☑ Standard letter  ☐ C/NC  ☐ Audit  ☐ ABC/NC (“Standard letter”—i.e., ABCDF--is assumed to be the default grading method unless the course description indicates otherwise.)
11. Instructional delivery method:  
    ☑ lecture  ☐ lab  ☐ lecture/lab combined  ☐ independent study/research
    ☐ internship  ☐ performance  ☐ practicum or clinical  ☐ study abroad  ☐ other
PART II: ASSURANCE OF STUDENT LEARNING

1. List the student learning objectives of this course:

   1. Discuss the basic principles and nature of atmospheric processes from a human interaction perspective. Class discussions and the content of the course are conducive to Integrative Learners since students will be empowered through new knowledge, will have a better understanding of the physical atmosphere around them, and will be responsible for their actions involving the atmosphere.
   2. Analyze current knowledge of atmospheric research through review of professional journal articles. Students will write a 4-5 page summary and critical review of an assigned article.
   3. Utilize methods, techniques, and theories of atmospheric science to interpret and analyze atmospheric data and complete a 10-12 page paper.
   4. Review and analyze daily weather data, charts, tables, maps, and figures to write short weather reports.
   5. Write effectively as a result of completion of the project, journal review, and short weather reports.
   6. Communicate and speak effectively.

a. If this is a general education course, indicate which objectives are designed to help students achieve one or more of the following goals of general education and university-wide assessment:
   - EIU graduates will write and speak effectively.
   - EIU graduates will think critically.
   - EIU graduates will function as responsible citizens.

   NA

b. If this is a graduate-level course, indicate which objectives are designed to help students achieve established goals for learning at the graduate level:
   - Depth of content knowledge
   - Effective critical thinking and problem solving
   - Effective oral and written communication
   - Advanced scholarship through research or creative activity

   NA

2. Identify the assignments/activities the instructor will use to determine how well students attained the learning objectives:

   A. Two one-hour exams and a comprehensive final exam will be scheduled for the semester. Both analytical and descriptive type exams will be administered for evaluation purpose.

   B. A class project, assignments involving atmospheric data collection, and critical review of a journal article will be integral part of the course. Each student will select a geographical location for which atmospheric data is available for his/her project and daily weather data for the location will be gathered for fourteen consecutive days. Such data is available through the Internet. Students will analyze the collected data applying Microsoft Excel or other similar tools to produce plots, maps, and charts and will submit a 10-12 page report. The project will give the students insights to how the atmospheric parameters are interrelated.
as they vary in geographical space over time. They will be expected to present the final outcome of the project to the class using PowerPoint or other forms of visual aid.

C. Students will be required to summarize and write a 4-5 page critical review of an atmosphere related journal article for evaluation. This will acquaint students with the nature of materials that are often studied by atmospheric scientists.

D. Furthermore, weather related assignments will be given periodically to assess their understanding of the atmospheric processes. Students will submit short weather reports for evaluation.

E. A final comprehensive exam will be given at the end of the semester to assess overall learning objective of the proposed course.

3. **Explain how the instructor will determine students’ grades for the course:**

   The final grade for the course will be determined on the following basis:

   - First Hourly Exam: 20%
   - Second Hourly Exam: 20%
   - Project/paper/Assignments: 20%
   - Class Presentation: 10%
   - Final Exam: 30%

<table>
<thead>
<tr>
<th>Learning Objectives (Part II. 1. 1-6) and Evaluation Means</th>
<th>20% Test 1</th>
<th>20% Test 2</th>
<th>20% Project/Paper/Assignments</th>
<th>10% Class Presentation</th>
<th>30% Final Exam</th>
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<tbody>
<tr>
<td>1. Discuss the basic principles and nature of atmospheric processes from a human interaction perspective.</td>
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<td>2. Analyze current knowledge of atmospheric research through review of professional journal articles. Students will write a 4-5 page summary and critical review of an assigned article.</td>
<td>x</td>
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<td>3. Utilize methods, techniques, and theories of atmospheric science to interpret and analyze atmospheric data and complete a 10-12 page paper.</td>
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<td>4. Review and analyze daily weather data, charts, tables, maps, and figures to write short weather reports.</td>
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<td>5. Write effectively as a result of completion of the project, journal review, and short weather reports.</td>
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6. Communicate and speak effectively.  

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4. For technology-delivered and other nontraditional-delivered courses/sections, address the following:
   a. Describe how the format/technology will be used to support and assess students’ achievement of the specified learning objectives:  NA
   
   b. Describe how the integrity of student work will be assured:  NA
   
   c. Describe provisions for and requirements of instructor-student and student-student interaction, including the kinds of technologies that will be used to support the interaction (e.g., e-mail, web-based discussions, computer conferences, etc.):  NA

5. For courses numbered 4750-4999, specify additional or more stringent requirements for students enrolling for graduate credit. These include:
   a. course objectives;
   b. projects that require application and analysis of the course content; and
   c. separate methods of evaluation for undergraduate and graduate students.
   
   NA

6. If applicable, indicate whether this course is writing-active, writing-intensive, or writing-centered, and describe how the course satisfies the criteria for the type of writing course identified. (See Appendix *.)
   
   NA

**PART III: OUTLINE OF THE COURSE**

Provide a week-by-week outline of the course’s content. Specify units of time (e.g., for a 3-0-3 course, 45 fifty-minute class periods over 15 weeks) for each major topic in the outline. Provide clear and sufficient details about content and procedures so that possible questions of overlap with other courses can be addressed. For technology-delivered or other nontraditional-delivered courses/sections, explain how the course content “units” are sufficiently equivalent to the traditional on-campus semester hour units of time described above.

(3-0-3)  45 class periods, 50 minutes each, three classes per week, total 15 weeks

1. **Introduction to the Atmospheric System**  
   Week 1
   A. Interrelationships among the sciences
   B. Development of atmospheric science
   C. Hydrosphere, lithosphere, and biosphere
   D. Origin, composition, and structure of the atmosphere

2. **Energy, Radiation, and Our Atmosphere**  
   Week 2
   A. Global radiation allocation and seasons
   B. Heating and cooling of the planet earth
   C. Spatial and temporal energy distribution
D. Energy exchange and climate change
E. Solar energy as a renewable resource

3. Temperature as a Major Atmospheric Component
   A. Heat and temperature concepts
   B. Laws of thermodynamics
   C. Vertical and horizontal variation of temperature
   D. The Gaia Hypothesis
   E. Anthropogenic climate change and global warming

4. Moisture, Stability, and Precipitation
   A. Hydrologic cycle and water balance
   B. Precipitation and water deficit
   C. Adiabatic processes and stability
   D. Floods and droughts as atmospheric hazards
   E. Global precipitation variability
   F. Cloud, fog, and acid precipitation
   G. Satellite technology and atmospheric data
   H. Human induced weather modifications

First Exam

5. Motion in the Atmosphere
   A. Atmospheric pressure system
   B. Global wind circulation pattern
   C. American Dust Bowl
   D. Monsoon climate and people of Asia
   E. Winds in local scales
   F. El Nino and weather patterns
   G. Wind energy as renewable resource

6. Severe Weather and Human Miseries
   A. Air masses and our weather
   B. Wave cyclone in the United States
   C. Hurricane destructions and Katrina
   D. Thunderstorms, hailstorms, and lightning
   E. Tornado destructions and loss of lives
   F. Mitigating and forecasting severe weather
   G. Human adaptations to atmospheric hazards

Second Exam

7. Global Climate and Human Response
   A. Climatic classification schemes
   B. Global pattern of climate and human activities
   C. Koppen's classification
   D. Other classifications of climate
   E. Regional climates
F. Climate of the United States

8. Climate Change, Global Warming, and Human Adaptations  Week 12-13
   A. Earth’s changing climate
   B. Reconstruction of past climates and proxy data
   C. Theories of climate change
   D. Climate change and feedback mechanisms
   E. Climate change, plate tectonics, and mountain building
   F. Warming of the atmosphere and greenhouse gases
   G. Climate modeling and future climate
   H. Global warming scepticism
   I. Anthropogenic climate change
   J. Human adaptation to climate change
   K. Urban heat island and air pollution
   L. Politics of climate change and Kyoto Protocol

9. Atmospheric Forecasting  Week 14
   A. Forecasting methodology
   B. Forecasting tools and models
   C. Collecting the atmospheric data
   D. Weather stations and weather equipment
   E. Analyzing weather maps and charts
   F. Short and long term forecasts
   G. Forecast reliability

10. Class Presentation, Overview, and Conclusion  Week 15

Final Exam

PART IV: PURPOSE AND NEED

1. Explain the department’s rationale for developing and proposing the course.

   This course is primarily being proposed to meet the need and demand of our off-campus continuing education adult students to partially fulfill the scientific awareness requirement of their General Studies Degree. However, our students on campus can benefit from taking the proposed course as well. The course will be especially beneficial for broadcast meteorology and earth science minors. Taking the course will be advantageous to those who might pursue graduate studies or careers in atmosphere related fields.

   a. If this is a general education course, you also must indicate the segment of the general education program into which it will be placed, and describe how the course meets the requirements of that segment. NA

   b. If the course or some sections of the course may be technology delivered, explain why. NA
2. Justify the level of the course and any course prerequisites, co-requisites, or registration restrictions.

The content, extent, and intensity of the course materials deem appropriate for junior level classes on campus. Offering the proposed course at 3000 level is also consistent with other elective courses in our department. This course will involve substantial reading, collecting atmospheric data, use of computer skills, and writing papers/reports. Students who have reached at least junior level status at the university will be most suitable for the course.

3. If the course is similar to an existing course or courses, justify its development and offering.

   a. If the contents substantially duplicate those of an existing course, the new proposal should be discussed with the appropriate chairpersons, deans, or curriculum committees and their responses noted in the proposal.

      The course contents do not considerably duplicate any course in the department. However, there are minor overlaps of materials with ESC 1400 (Weather and Climate). Amount of work involved for this proposed course is substantially more than the ESC 1400 course. The proposed course covers a wide range of materials in depth with application of atmospheric data from a holistic viewpoint emphasizing human dimensions while ESC 1400 essentially introduces students to fundamentals of weather and climate. The proposed course also requires students to write a major paper and review of journal article. The course additionally requires writing short papers and an oral presentation of their projects. As indicated, the proposed course is primarily aimed for off-campus continuing education students and has been offered previously as a 3000 level “special topic” Earth Science class.

   b. Cite course(s) to be deleted if the new course is approved. If no deletions are planned, note the exceptional need to be met or the curricular gap to be filled.

      NONE

4. Impact on Program(s):

   a. For undergraduate programs, specify whether this course will be required for a major or minor or used as an approved elective.

      This course may be used as an approved elective for undergraduate programs especially for the off-campus continuing education Bachelor of Arts in General Studies programs.

   b. For graduate programs, specify whether this course will be a core requirement for all candidates in a degree or certificate program or an approved elective.

      NA

If the proposed course changes a major, minor, or certificate program in or outside of the department, you must submit a separate proposal requesting that change along with the course proposal. Provide a copy of the existing program in the current catalog with the requested changes noted.

Proposed course will not make changes to any program.
PART V: IMPLEMENTATION

1. Faculty member(s) to whom the course may be assigned: Belayet Khan and faculty members of the geography program.

   If this is a graduate course and the department does not currently offer a graduate program, it must document that it employs faculty qualified to teach graduate courses.

2. Additional costs to students: NONE

   Include those for supplemental packets, hardware/software, or any other additional instructional, technical, or technological requirements. (Course fees must be approved by the President’s Council.)

3. Text and supplementary materials to be used (Include publication dates):


   Suggested Additional Readings: (Books)


   Suggested Additional Readings: (Journals)

   Climate Change

   Journal of Climate

   Progress in Physical Geography

   Intergovernmental Panel on Climate Change (IPCC)
PART VI: COMMUNITY COLLEGE TRANSFER

If the proposed course is a 1000- or 2000-level course, state either, "A community college course may be judged equivalent to this course" OR "A community college course will not be judged equivalent to this course." A community college course will not be judged equivalent to a 3000- or 4000-level course but may be accepted as a substitute; however, upper-division credit will not be awarded.

PART VII: APPROVALS

Date approved by the department or school: November 4, 2009

Date approved by the college curriculum committee: December 11, 2009

Date approved by the Honors Council (if this is an honors course): 

Date approved by CAA: January 21, 2010

*In writing-active courses, frequent, brief writing activities and assignments are required. Such activities -- some of which are to be graded -- might include five-minute in-class writing assignments, journal keeping, lab reports, essay examinations, short papers, longer papers, or a variety of other writing-to-learn activities of the instructor's invention. Writing assignments and activities in writing-active courses are designed primarily to assist students in mastering course content, secondarily to strengthen students' writing skills. In writing-intensive courses, several writing assignments and writing activities are required. These assignments and activities, which are to be spread over the course of the semester, serve the dual purpose of strengthening writing skills and deepening understanding of course content. At least one writing assignment is to be revised by the student after it has been read and commented on by the instructor. In writing-intensive courses, students’ writing should constitute no less than 35% of the final course grade. In writing-centered courses (English 1001G, English 1002G, and their honors equivalents), students learn the principles and the process of writing in all of its stages, from inception to completion. The quality of students' writing is the principal determinant of the course grade. The minimum writing requirement is 20 pages (5,000 words).