1. Department: Geosciences  College: NSM
2. Person Submitting Form: James Lawrence  Telephone: 713-343-3410
3. Course information on New/Revised course:
   - Instructional Area / Course Number / Long Course Title: GEOI 1302 / Introduction to Global Climate Change
   - Instructional Area / Course Number / Short Course Title (30 characters max.): GEOI 1302 / INTRO TO CLIMATE CHANGE
   - SCH: 3.00  Level: FR  CIP Code: 4904401092  Lect Hrs: 3  Lab Hrs: 0
4. Justification for adding/changing course: To meet core curriculum requirements.
5. Was the proposed/revised course previously offered as a special topics course?  ☐ Yes  ☑ No
   If Yes, please complete:
      - Instructional Area / Course Number / Long Course Title:  
      - Content ID:  Start Date (yyyy): 
6. Is this course offered for undergraduate credit only?  ☐ Yes  ☑ No
7. Authorized Degree Program(s): BS Environmental Science
   - Does this course affect major/minor requirements in the College/Department?  ☑ Yes  ☐ No
   - Does this course affect major/minor requirements in other Colleges/Departments?  ☐ Yes  ☑ No
   - Are special fees attached to this course?  ☑ Yes  ☐ No
   - Can the course be repeated for credit?  ☑ Yes  ☐ No
8. Grade Option: Letter (A, B, C,...)  Instruction Type: Lecture
9. If this form involves a change to an existing course, please obtain the following information from the course inventory: Instructional Area / Course Number / Long Course Title
   - GEOI 1302 / Introduction to Global Climate Change
   - Start Date (yyyy): 2033  Content I.D.: 290716
10. Proposed Catalog Description:
    - Prerequisites: MATH 1310 or 1311
    - Description (30 words max.): Examines how past climate records and models provide a better understanding of possible future climate changes. Greenhouse gases, solar output, Earth's orbit, and anthropogenic effects.
11. Dean's Signature:  
    Date: 12 Oct 25

Print/Type Name: Ian Evans
UNIVERSITY of HOUSTON
CORE CURRICULUM COURSE REQUEST

Originating Department/College: Geosciences/NSM
Person making request: James Lawrence
Dean's signature: 
Date: 12/13/65

I. General Information:
   Course number and title: E 1302 Introduction to Global Climate Change
   Complete catalog description (NOT required if attached to CBM 003 form):

   Category of Core for which course is being proposed (mark only one):
   - Communication
   - Communication: Writing Intensive Experiences in the Disciplines
   - Mathematics
   - Mathematics/Reasoning (100)
   - Natural Sciences
   - Humanities
   - Visual/Performing Arts Critical
   - Visual/Performing Arts Experiential
   - Social/Behavioral Sciences
   - U.S. History
   - American Government

II. Objectives and Evaluation (respond on one or more separate sheets):
   Call 3-0919 for a copy of "Guidelines for Requesting and Evaluating Core Courses" or visit the website of www.uh.edu/academic/corecurriculum

   A. How does the proposed course meet the appropriate Exemplary Educational Objectives (see Guidelines)? Attach syllabi and supporting materials for the objectives the syllabus does not make clear.

   B. Specify the processes and procedures for evaluating course effectiveness in regard to its goals.

   C. Delimitate how these evaluation results will be used to improve the course?

SVP Effective 9/20/05. Replaces all previous forms, which may no longer be used.
A. How does the proposed course meet the appropriate Exemplary Educations Objectives. Attach a syllabus and any supporting materials.

GEOL 1302: Syllabus

GEOL 1302
Introduction to Global Climate Change
3 CREDITS

Instructor
Dr. Barry I. Lefer

Course Description
This course examines the various forces which govern changes over time in the Earth’s climate system (atmosphere, oceans, vegetation, land surface and ice sheets). Course will emphasize the inter-disciplinary nature of climate system and discuss and evaluate competing theories used to explain the climate record on various time scales. This includes natural changes in greenhouse gas concentrations, the strength of the sun, the Earth’s orbit around the sun, effects of volcanic eruptions, as well as changes in internal phenomena such as El Nino and the circulation of the world oceans, and finally, human or “anthropogenic” effects associated with industrial greenhouse gas emissions. An understanding of past changes is used as a framework for predicting future climate change. Course will be taught for non-science majors with a focus on understanding processes and evaluating hypotheses.

Lectures
The course meets MW 11:30 AM - 1:00 PM in Room 128 of the Science & Research Bldg #1. Attendance of all lectures is expected. You are strongly encouraged to ask questions and participate constructively in class.

Textbook

COURSE SCHEDULE

<table>
<thead>
<tr>
<th>Class#</th>
<th>Date</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section I: Introduction &amp; Overview</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>8/22 M</td>
<td>Framework of climate science</td>
</tr>
<tr>
<td>2</td>
<td>8/24 W</td>
<td>Cycles of forcing and response; climate interactions and feedbacks</td>
</tr>
<tr>
<td>3</td>
<td>8/29 M</td>
<td>Heat transfer in the atmosphere and oceans</td>
</tr>
<tr>
<td>4</td>
<td>8/31 W</td>
<td>Earth’s weather and climate</td>
</tr>
<tr>
<td>5</td>
<td>9/05 M</td>
<td>Labor Day: No Class</td>
</tr>
<tr>
<td>6</td>
<td>9/07 W</td>
<td>Techniques to extract, reconstruct, and interpret Earth’s climate</td>
</tr>
<tr>
<td>7</td>
<td>9/12 M</td>
<td>How do climate models work?</td>
</tr>
<tr>
<td>8</td>
<td>9/14 W</td>
<td>Exam #1</td>
</tr>
</tbody>
</table>

| Section II: Tectonic-Scale Climate Changes                                  |
| 8      | 9/19 M | The faint young sun paradox                  |
| 9      | 9/21 W | The H-2O hypothesis: CO2 input               |

(08/31, 1302: Introduction to Global Climate Change)
10 9/26 M  The uplift weathering hypothesis
11 9/28 W  Tectonic-scale changes in sea level: competing theories
12 10/03 M  The Cretaceous greenhouse and into the ice house
13 10/05 W  Exam #2

Section III: Orbital Effects and Ice Ages
14 10/10 M  Variations in Earth's orbit
15 10/12 W  The Kortybach theory: Orbital changes drive monsoon cycles
16 10/17 M  Modeling the behavior of ice-sheet formation
17 10/19 W  The Milankovitch theory: Orbital changes drive ice-sheet cycles
18 10/24 M  Ice core records of past climate: 1/ CO₂, CH₄, dust
19 10/27 W  Exam #3

Section IV: Historical Climate Changes
20 10/31 W  Climate record during the last deglaciation
21 11/02 W  Climate changes in past centuries
22 11/07 M  The "Little Ice Age" and "Medieval warm period"
23 11/09 W  El Niño, ocean circulation, volcanic eruptions & solar changes
24 11/14 M  Millennial oscillations and interactions within the climate system
25 11/16 W  Exam #4

Section V: Present/Future Climate Changes
26 11/21 M  Humans, climate, evolution and agriculture
27 11/23 W  Thanksgiving Break
28 11/30 W  "The day after tomorrow": Public policy and the Kyoto Protocol
29 12/05 M  The greenhouse debate and M. Czuchman's "A State of Fear"
30 12/07 W  Future climate, energy, and societal pathways
31 12/12 M  Final Exam (11 AM - 2 PM)

B. Specify the processes and procedures for evaluating course effectiveness in regard to its goals.

Students are regularly evaluated (4 exams + a Final) on what they are learning. In addition the students are given a detailed questionnaire at the end of the semester to inquire about student response to various teaching methods employed during semester and to solicit suggestions on which sections need improvement and which could be expanded upon.

C. Delineate how these evaluation results will be used to improve the course.

In addition to looking at exam and questionnaire results to direct improvements in the how and what material is presented in the course. The instructor will continue to incorporate new scientific discoveries that will likely occur in all of the sections of the course and public policy updates (impacting Section V) into the curriculum. It is tempting to expand Section V, but difficult to determine which "background" section to shorten. If pressed, I would suggest shortening section II to make room for additions to Section V.

GEOT 1502: Introduction to Global Climate Change