CAS/GRS Course Revision Proposal Form

This form is to be used when proposing a revision of an existing CAS or GRS course.

Once completed, this form should be submitted to Senior Academic Administrator Peter Law (617-353-7243) as a PDF file to pgl@bu.edu.

For further information or assistance, contact Associate Dean Susan Jackson (617-353-2410; sjackson@bu.edu) about CAS courses or Associate Dean Jeffrey Hughes (617-353-2690; hughes@bu.edu) about GRS courses.

DEPARTMENT OR PROGRAM: Earth & Environment
DATE SUBMITTED: June 30th, 2016

CURRENT COURSE NUMBER: CAS ES 105
CURRENT COURSE NAME: Environmental Earth Sciences
CURRENT 40 WORD COURSE DESCRIPTION:
Geological processes in environmental science; groundwater quantity and quality; geological resource supply and recovery; earthquakes, volcanic eruptions, and other natural hazards; landforms, climate, desertification, glaciation, and ocean circulation patterns. Three hours lecture, two hours lab, including field trips. Carries natural science divisional credit (with lab) in CAS.

CURRENT CROSS-LISTING DEPARTMENT/PROGRAM, if any:

TO BE OFFERED NEXT: Sem./Year: Spring / 2017
INSTRUCTOR(S): Lawford Anderson, Sergio Fagherazzi

DEPARTMENT CONTACT NAME AND POSITION: Dave Marchant
DEPARTMENT CONTACT EMAIL AND PHONE: marchant@bu.edu, 617-353-2525

ITEMS PROPOSED FOR REVISION (check all that apply):

- [ ] Course Number
- [X] Title
- [X] Short Title
- [ ] Credits
- [ ] Cross-listing
- [X] 40 Word Description
- [ ] Prerequisites
- [ ] Divisional Studies Credit
- [ ] Other (Explain)

Notes: The “short title” appears in the course inventory and on student transcripts and must be 15 characters maximum including spaces. The “40 word description” appears in the CAS/GRS Bulletin.

PROPOSED REVISIONS: For each item checked above, provide the current information, then the proposed information, then a brief explanation for the proposed change, including the intended impact of the change.
1. Title
   a. Current information: Environmental Earth Sciences
   b. **Proposed information**: Crises of the Planet
   c. Explanation & impact: We have recently revised our core introductory coursework for all our undergraduate majors. This name change will help students distinguish between this highly-enrolled divisional studies course and our new required 100-level coursework.

2. Short Title
   a. Current information: Envir Earth Sci
   b. **Proposed information**: Crises Planet
   c. Explanation & impact: See explanation above.

3. 40 word description
   a. Current information: Geological processes in environmental science; groundwater quantity and quality; geological resource supply and recovery; earthquakes, volcanic eruptions, and other natural hazards; landforms, climate, desertification, glaciation, and ocean circulation patterns. Three hours lecture, two hours lab, including field trips. Carries natural science divisional credit (with lab) in CAS.

   b. **Proposed information**: The origin of the universe, earth, and life; natural hazards, including earthquakes, volcanoes, landslides, and floods, and how humans are affecting the planet, including climate change, ozone depletion, coastal issues, soils, groundwater, mineral and energy resources, and waste. Three hours lecture, two hours lab, including field trips. Carries natural science divisional credit (with lab) in CAS.

   c. Explanation & impact: Short Title
   d. Current information: Envir Earth Sci
   e. **Proposed information**: Crises Planet
   f. Explanation & impact: see above
IMPACT ON OTHER DEPARTMENTS/PROGRAMS: Will any of these changes have an impact on students pursuing the degree requirements or expectations of other departments, programs, or schools? Check one: □ Yes □ No

If YES, please identify impacts and attach cognate comment from the appropriate department/program/school.

RESOURCE NEEDS: STAFFING, FACILITIES, AND EQUIPMENT: As a result of the proposed changes, will there be any changes in the staffing, special facilities or equipment needs of the course (e.g. laboratory, library, instructional technology, technical resources, etc)? Check one: □ Yes □ No

If YES, explain further and indicate whether currently available staffing, facilities, and equipment are adequate for the proposed course. (NOTE: Approval of proposed revisions does not imply a change in resource commitments on the part of CAS.)

FURTHER INFORMATION THAT MUST BE SUBMITTED IN ORDER FOR THIS PROPOSAL TO BE CONSIDERED:

1. A complete week-by-week SYLLABUS with student learning objectives, readings, and assignments that reflects the proposed changes (see guidelines on “Writing a Syllabus” on the Center for Excellence and Innovation in Teaching website. Be sure that syllabus includes your expectations for academic honesty, with URL for pertinent undergraduate or GRS academic conduct code(s).

2. Cognate comment from chairs or directors of relevant departments and/or programs. Use the form available here. You can consult with Susan Jackson (CAS) or Jeffrey Hughes (GRS) to determine which departments or programs inside and outside of CAS would be appropriate.

DEPARTMENT APPROVAL:

________________________________________________________________________
Department Chair

________________________________________
Date

________________________________________________________________________
Other Department Chair(s) (for cross-listed courses)

________________________________________
Date
CAS/GRS CURRICULUM COMMITTEE APPROVAL:

☐ Approved Date:_____________________
☐ Tabled Date:______________________
☐ Not Approved Date:_________________

Divisional Studies Credit:
☐ Endorsed
☐ HU
☐ MCS
☐ NS
☐ SS
☐ Not endorsed

______________________________________________________________
Curriculum Committee Chair Signature and Date
Comments:

PROVISIONAL APPROVAL REQUESTED for Semester/Year ________________________

______________________________________________________________
Dean of Arts & Sciences Signature and Date
Comments:

CAS FACULTY: Faculty Meeting Date: ________________________ ☐ Approved ☐ Not Approved

______________________________________________________________
Curriculum Administrator Signature and Date
Comments:
Crises of the Planet – CAS ES 105  
(Fall 2015)

Professor..............................   J. Lawford Anderson  
Office: STO 141j, 617-358-6668  
E-mail: lawford@bu.edu  
Office hours*: 10-12:00M, 12:30-2:00 TTh (also open door)  
*Please call or e-mail in advance

Teaching Fellows.............

Undergraduate Learning Assistants  

Lecture..................................  11:00 - 12:20 TTh, CAS 522  
Labs.....................................  11:00 - 12:50 M, CAS B08a  
12:30 - 2:20 Tu, CAS B08a  
11:00 - 12:50 W, CAS B08a  
12:30 - 2:30 Th, CAS B08a  
9:00 - 10:50 F, CAS B08a  
3:00 – 4:50, F, CAS B08a

All are required readings.  Available through Barnes and Noble but also Amazon.  Older versions at a lower price are okay.  We also will use short readings from the free online resource, Encyclopedia of Earth (see below).

Student polling .............. This class uses the application Learning Catalytics as a means for student polling to review real exam questions at the beginning of every class based on content from the last one. You can use your smart phone, IPhone, IPad, or laptop that can connect to the internet. Please bring one of these to every class.

Lecture Exams.......................  
Midterm 1: October 4  
Midterm 2: November 8  
Final Exam: Thursday, December 17, 12:30-2:30 pm

Basis of Grade......................  
Lecture 76%  
18% each for each midterm exam  
29% for final exam  
5% for PowerPoint – due November 17  
5% for field trip or term paper*  
5% for participation (student polling)  
Lab 20%

*You may elect to do **one** of the following: (1) attend a **one-day field trip**, October 15 or (2) complete a **term paper** on pre-arranged topic, due October 12.  Please choose by Oct. 8, at or before class time.

Academic Conduct....................  
Students are expected to uphold Boston University's **Academic Conduct Code**, http://www.bu.edu/academics/policies/academic-conduct-code/.
<table>
<thead>
<tr>
<th>Lecture</th>
<th>Date</th>
<th>Lecture Topic</th>
<th>Readings</th>
<th>Lab Topic for the Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sept. 6</td>
<td>Origin of Universe, Earth, and life</td>
<td>Ch. 1</td>
<td>No lab first week</td>
</tr>
<tr>
<td>2</td>
<td>Sept. 8</td>
<td>Origin of Universe, Earth, and life</td>
<td>Ch. 11, 12</td>
<td>No lab first week</td>
</tr>
<tr>
<td>3</td>
<td>Sept. 13</td>
<td>Plate tectonics &amp; earthquakes</td>
<td>Ch. 7, 8</td>
<td>1. Earthquakes</td>
</tr>
<tr>
<td>4</td>
<td>Sept. 15</td>
<td>Plate tectonics &amp; earthquakes</td>
<td>Ch. 10</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Sept. 20</td>
<td>Volcanic hazards</td>
<td>Ch. 9</td>
<td>2. Topographic maps</td>
</tr>
<tr>
<td>6</td>
<td>Sept. 22</td>
<td>Volcanic hazards</td>
<td>Ch. 9</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Sept. 27</td>
<td>No class, in lieu of field trip</td>
<td>Ch. 4, p.114-123</td>
<td>3. Rivers and floods</td>
</tr>
<tr>
<td></td>
<td>Sept. 29</td>
<td>Landslides &amp; Review</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Oct. 4</td>
<td>Midterm 1</td>
<td></td>
<td>4. Air pollution</td>
</tr>
<tr>
<td>9</td>
<td>Oct. 6</td>
<td>Rivers and floods</td>
<td>Ch. 5</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Oct. 11</td>
<td>No class, Monday schedule</td>
<td>No lab this week</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Oct. 13</td>
<td>Air pollution and Global Warming</td>
<td>Ch. 16</td>
<td></td>
</tr>
</tbody>
</table>

Choose one of these:

*** Term Papers Due – Thursday, October 13, at beginning of class ***

*** Field Trip – Saturday, October 15, 9-5:00 ***

(you are to do only one of these 😃)

<table>
<thead>
<tr>
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<th>Lab Topic for the Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Oct. 18</td>
<td>Global Climate Change – Ice Ages</td>
<td>Ch. 6</td>
<td>5. Climate change</td>
</tr>
<tr>
<td>12</td>
<td>Oct. 20</td>
<td>Global Climate Change – Deserts</td>
<td>see below</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Oct. 25</td>
<td>Upper Atmosphere Ozone Depletion</td>
<td>Ch. 16</td>
<td>6. Coastlines</td>
</tr>
<tr>
<td>14</td>
<td>Oct. 27</td>
<td>Shorelines and beaches</td>
<td>Ch. 15</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Nov. 1</td>
<td>Soils and soil conservation</td>
<td>Ch. 4</td>
<td>7. Water resources</td>
</tr>
<tr>
<td>16</td>
<td>Nov. 3</td>
<td>Groundwater Resources</td>
<td>Ch. 5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nov. 8</td>
<td>Midterm 2</td>
<td></td>
<td>8. Rocks and minerals</td>
</tr>
<tr>
<td>17</td>
<td>Nov. 10</td>
<td>Mineral resources</td>
<td>Ch. 2</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Nov. 15</td>
<td>Energy resources: fossil fuels</td>
<td>Ch. 3</td>
<td>9. Toxic waste</td>
</tr>
<tr>
<td>19</td>
<td>Nov. 17</td>
<td>Energy resources: fossil fuels</td>
<td>Ch. 3</td>
<td></td>
</tr>
</tbody>
</table>

*** PowerPoints due Thursday, November 17, on Blackboard ***

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Date</th>
<th>Lecture Topic</th>
<th>Readings</th>
<th>Lab Topic for the Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>Nov. 22</td>
<td>Nuclear and renewable energy</td>
<td>See below</td>
<td>No lab this week</td>
</tr>
<tr>
<td></td>
<td>Nov. 24</td>
<td>No Class (Thanksgiving recess)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Nov. 29</td>
<td>Waste disposal and toxic waste</td>
<td>See below</td>
<td>Last lab quiz</td>
</tr>
<tr>
<td>22</td>
<td>Dec. 1</td>
<td>Volunteer Student Presentations*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
23 Dec. 6 Volunteer Student Presentations*
23 Dec. 8 Volunteer Student Presentations* No lab this week
24 Dec. 13 Volunteer Student Presentations*

*** Final Exam – Thursday, December 17, 12:30-2:30pm ***

*Note: The last four class sessions are for volunteer student presentations of submitted PowerPoint or other media work on environmental topics. Of course, all submissions are graded. However the volunteer presentations will not be graded but will the material will be covered on the final exam. I find these presentations very engaging so do plan to volunteer to present to our class!

Additional Readings, all optional except where noted but helpful and short
From Encyclopedia of Earth (EE); all links at http://www.eoearth.org/

Earth
Hubble: http://www.eoearth.org/view/article/153581/

Plate tectonics and Earthquakes
Plate Tectonics: http://www.eoearth.org/view/article/155264/
Wegener: http://www.eoearth.org/view/article/157036/
Earthquake: http://www.eoearth.org/view/article/151858/

Volcanoes
Volcano: http://www.eoearth.org/view/article/156864/

Landslides
Landslide: http://www.eoearth.org/view/article/154157/

Rivers and Floods

Ice Ages
Ice Age: http://www.eoearth.org/view/article/51eb83e337896bb431f696153/

Deserts
Polar Deserts: http://www.eoearth.org/view/article/171735/
Mojave Desert: http://www.eoearth.org/view/article/154660/
Atacama Desert: http://www.eoearth.org/view/article/150268/

Mineral Resources
Strip Mining: http://www.eoearth.org/view/article/156280/

Fossil Fuels:
http://www.eoearth.org/view/article/51cbec7f896bb431f694153/?topic=51cbf878f702fc2ba8129e5f
Renewable Energy – REQUIRED
Hydroelectric: http://www.eoearth.org/view/article/51cbee0c7896bb431f695c01/?topic=51cbfc78f702fc2ba8129e65
Wind: http://www.eoearth.org/view/article/51cbef487896bb431f69d58e/?topic=51cbfc78f702fc2ba8129e65
Solar: http://www.eoearth.org/view/article/51cbeea17896bb431f69931b/?topic=51cbfc78f702fc2ba8129e5f
Hydrogen: http://www.eoearth.org/view/article/51cbee0c7896bb431f695c0d/?topic=51cbfc78f702fc2ba8129e5f

Waste Disposal and Recycling - REQUIRED
Solid Waste: http://www.eoearth.org/view/article/149757/
Recycling: http://www.eoearth.org/view/article/155672/
Guidelines for PowerPoint or Other Media Work
Crises of the Planet – ES 105

**PowerPoint or other media work**

**Topic:** approved by instructor

**Goal:** Creative and new PowerPoint or other media format, such as a movie, on some aspect of the earth’s environment of the quality and length to appropriate for a 10 minute presentation. A job interview!

**File name:** yourlastname_topic.ppt (i.e., anderson_global warming.ppt)

**References:** the sources of text, figures, tables, and pictures should be acknowledged, including the full address of any website. This could be done on the last page or on each frame, as convenient

**Due date:** November 17

**Submission:** on Blackboard using Student Powerpoints section on our Blackboard site home page, upper left corner. Please also read instructions before submitting.

**Grading:** The Powerpoint or other format will be judged on the originality of the topic, quality of the presentation and argument, and appropriateness of its length

Guidelines for Term Paper (in lieu of field trip)
Crises of the Planet – ES 105

**Topic:** same as Powerpoint

**Goal:** Creative and new article regarding some aspect of the earth’s environment that is of the quality to be publishable in a major newspaper. A job interview!!

**Length:** 5 pages of text, typed, double-spaced, plus figures, tables, and references

**Format:** Abstract + Body with headings and subheadings + Conclusion

**Footnotes:** any form of internal referencing is acceptable

**Figures:** number in succession with legend and include reference

**Tables:** number in succession with legend and include reference

**References:** minimum of 4, including at least one from the internet

**File name:** yourlastname_topic.doc (i.e., anderson_global warming.doc)

**Due date:** October 13 at the beginning of class; please bring hardcopy to class
2017 FALL FIELD TRIP
Crises of the Planet - ES 105

Geologic Wonders of the Boston Area

**Dates:** Saturday, October 15

**Departure:** 9:00 am, parking lot behind Stone/CAS  
**Return:** about 5:00 pm

**If it’s raining?** We go!

**Destinations:** Arnold Arboretum and Peters Hill, Deer Island, and Winthrop Beach and the Five Sisters

**Weather and clothes:** daytime temperatures may be pleasant with beautiful sunshine, but there could also be rain, thunderstorms, and strong winds....bring clothes for the unexpected.

**Food:** Bring a lunch and a liter of water

**What else to bring:**
- comfortable shoes or boots for walking
- note-taking materials
- daypack