**Ogden College of Science and Engineering**

**Office of the Dean**

**745-4449**

**REPORT TO THE UNIVERSITY CURRICULUM COMMITTEE**

Date: September 13, 2012

The Ogden College of Science and Engineering submits the following information items for consideration at the September, 2012, UCC meeting:

1. New Business

|  |  |
| --- | --- |
| **Type of item** | **Description of Item & Contact Information** |
| Information | **Create a Temporary Course**  BIOL 301, Honors: Small, Hot and Crowded: Climate Change and Society  Contact: Jennifer Cole, [jennifer.cole@wku.edu](mailto:jennifer.cole@wku.edu), 5-4555 |
| Information | **Create a Temporary Course**  BIOL 304, Honors: How to Build a Habitable Planet  Contact: Jennifer Cole, [jennifer.cole@wku.edu](mailto:jennifer.cole@wku.edu), 5-4555 |
| Information | **Create a Temporary Course**  GEOG 301, Honors: Small, Hot and Crowded: Climate Change and Society  Contact: Jennifer Cole, [jennifer.cole@wku.edu](mailto:jennifer.cole@wku.edu), 5-4555 |
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| Information | **Create a Temporary Course**  GEOL 301, Honors: Small, Hot and Crowded: Climate Change and Society  Contact: Jennifer Cole, [jennifer.cole@wku.edu](mailto:jennifer.cole@wku.edu), 5-4555 |
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Proposal Date: 5 September 2012

**Ogden College of Science and Engineering**

**Department of Geography and Geology**

**Proposal to Create a Temporary Course**

**(Information Item)**

Contact Person: Jennifer Cole, [jennifer.cole1@wku.edu](mailto:jennifer.cole1@wku.edu), 745-4555

1. **Identification of proposed course**
   1. Course prefix (subject area) and number: BIOL 301
   2. Course title: Honors: Small, hot, and crowded: Climate change and society
   3. Abbreviated course title: HON: SMALL, HOT & CROWDED
   4. Credit hours: 3
   5. Schedule type: Seminar
   6. Prerequisites: None
   7. Course description:

Climate change is a timely, politically charged, and intensely studied topic. Students in this course will learn how the climate system operates today. Students will explore records of Earth’s ancient climate, evaluate evidence for modern warming, and explore impacts based on current predictions. A key goal of this course is that students obtain the scientific background and critical thinking skills required to evaluate and critique media statements and public policy concerning current and future climate change.

1. **Rationale**
   1. Reason for offering this course on a temporary basis:

This is course is being offered in partnership with the Honors College on a trial basis, with the goal of developing a permanent course for the new Colonnade General Education program.

Relationship of the proposed course to courses offered in other academic units: This course is unique in that it is an interdisciplinary perspective on issues related to past, current, and future climate change and its potential impacts on life and human societies. There is no current course that covers these topics together from this perspective. This course will be cross-listed with GEOG 301 and GEOL 301.

1. **Description of proposed course**
   1. Course content outline
2. The climate system
   1. Atmospheric composition and circulation
   2. Structure and circulation of the ocean
   3. Biosphere and feedbacks
3. Evidence from Earth’s past
   1. What are proxies? What are the archives of the past?
   2. Long term cycles (ice-house, hot-house), abrupt changes (Younger Dryas)
   3. Connections with the past – what can we learn for the present and future?
4. State of the planet – evidence for change in the present
   1. Ice sheets and sea level rise
   2. Ocean warming, acidification, coral bleaching
   3. Ecosystem changes, range shifts, season creep
5. Predictions and impacts (flexibility in specific examples based on student interests)
   1. Climate modeling
   2. Sea level rise – flooding, displacement
   3. Increased extreme weather events – typhoons, droughts
   4. Biodiversity loss, ecosystem services – decrease in pollinators
   5. Policies, mitigation – cap & trade, sequestration
   6. Tentative text(s):
   * Archer, D. (2012) *Global Warming: Understanding the Forecast*, 2nd ed. Wiley. ISBN 978-0470943410.
   * A “popular” book, such as Flannery, T. (2001) *The Weather Makers.* Grove Press. ISBN 978-0802142924., OR Kolbert, E. (2006) *Field Notes from a Catastrophe.* Bloomsbury. ISBN 978-1596911307.

* **Term of Implementation: Spring 2013**
* **Dates of review/approvals:**

Biology Department \_\_\_\_\_9/5/2012\_\_\_\_\_\_

Ogden College Curriculum Committee \_\_\_\_ 9/6/2012\_\_\_\_\_\_

Ogden College Dean \_\_\_\_9/6/2012\_\_\_\_\_\_\_

UCC Chair \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Provost: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Attachment: Course Inventory Form**

Proposal Date: 5 September 2012

**Ogden College of Science and Engineering**

**Department of Geography and Geology**

**Proposal to Create a Temporary Course**

**(Information Item)**

Contact Person: Jennifer Cole, [jennifer.cole1@wku.edu](mailto:jennifer.cole1@wku.edu), 745-4555

1. **Identification of proposed course**
   1. Course prefix (subject area) and number: BIOL 304
   2. Course title: How to Build a Habitable Planet
   3. Abbreviated course title: HON: BUILD A HABITABLE PLANET
   4. Credit hours: 3
   5. Schedule type: Seminar
   6. Prerequisites: None
   7. Course description:

The only evidence for past or present life in the Universe is found on Earth. We will begin with the Big Bang and finish with 7+ billion people on the planet. Students will learn how to create a terrestrial planet like Earth, and the elemental building blocks required for life. The many forms of life on Earth are possible because of certain physical properties of our planet and a tightly regulated system that connects physical, chemical, and biological components. Importantly, students will come to appreciate the role that humans occupy within this complex Earth system, rather than separate from it.

1. **Rationale**
   1. Reason for offering this course on a temporary basis:

This is course is being offered in partnership with the Honors College on a trial basis, with the goal of developing a permanent course for the new Colonnade General Education program.

* 1. Relationship of the proposed course to courses offered in other academic units:

This course presents material of a highly interdisciplinary range. Though aspects from many traditional disciplines (e.g., astronomy, geology, biology, geography) are presented in some forms, there is no current course that covers all of the material proposed here from this perspective. This course will be cross-listed with GEOG 304 and GEOL 304.

1. **Description of proposed course**
   1. Course content outline
2. Earliest history of the Universe
   1. Big bang
   2. Formation of chemical elements
   3. Formation of molecules, interstellar clouds
3. Formation of our Solar System
   1. Our Sun
   2. Formation of rocks & the planets
   3. Timescale of the universe & solar system
4. The physical Earth
   1. Planetary differentiation – Earth as layers
   2. Plate tectonics – Earth in motion
   3. Connections between the layers
   4. Making it comfortable – atmosphere
5. The organic Earth
   1. Populating the surface
   2. Competition, evolution, and extinction
   3. Human impacts on environment & climate
   4. Tentative text(s)

Langmuir & Broecker (2012) *How to Build a Habitable Planet*. Princeton. ISBN 978-0691140063.

1. **Term of Implementation: Spring 2013**
2. **Dates of review/approvals:**

BiologyDepartment \_\_\_\_\_9/5/2012\_\_\_\_\_\_

Ogden College Curriculum Committee \_\_\_\_\_9/6/2012\_\_\_\_\_\_

Ogden Dean \_\_\_\_\_9/6/2012\_\_\_\_\_\_

UCC Chair \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Provost: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Attachment: Course Inventory Form**

Proposal Date: 5 September 2012

**Ogden College of Science and Engineering**

**Department of Geography and Geology**

**Proposal to Create a Temporary Course**

**(Information Item)**

Contact Person: Jennifer Cole, [jennifer.cole1@wku.edu](mailto:jennifer.cole1@wku.edu), 745-4555

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   1. Course prefix (subject area) and number: GEOG 301
   2. Course title: Honors: Small, hot, and crowded: Climate change and society
   3. Abbreviated course title: HON: SMALL, HOT & CROWDED
   4. Credit hours: 3
   5. Schedule type: Seminar
   6. Prerequisites: None
   7. Course description:

Climate change is a timely, politically charged, and intensely studied topic. Students in this course will learn how the climate system operates today. Students will explore records of Earth’s ancient climate, evaluate evidence for modern warming, and explore impacts based on current predictions. A key goal of this course is that students obtain the scientific background and critical thinking skills required to evaluate and critique media statements and public policy concerning current and future climate change.

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   1. Course content outline
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   2. Structure and circulation of the ocean
   3. Biosphere and feedbacks
3. Evidence from Earth’s past
   1. What are proxies? What are the archives of the past?
   2. Long term cycles (ice-house, hot-house), abrupt changes (Younger Dryas)
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**4. Term of Implementation: Spring 2013**

**5. Dates of review/approvals:**

Geography and Geology Department \_\_\_\_\_9/5/2012\_\_\_\_\_\_

Ogden College Curriculum Committee \_\_\_\_\_9/6/2012\_\_\_\_\_\_

Ogden College Dean \_\_\_\_\_9/6/2012\_\_\_\_\_\_

UCC Chair \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Provost: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Attachment: Course Inventory Form**

Proposal Date: 5 September 2012

**Ogden College of Science and Engineering**

**Department of Geography and Geology**

**Proposal to Create a Temporary Course**

**(Information Item)**

Contact Person: Jennifer Cole, [jennifer.cole1@wku.edu](mailto:jennifer.cole1@wku.edu), 745-4555

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   4. Credit hours: 3
   5. Schedule type: Seminar
   6. Prerequisites: None
   7. Course description:

The only evidence for past or present life in the Universe is found on Earth. We will begin with the Big Bang and finish with 7+ billion people on the planet. Students will learn how to create a terrestrial planet like Earth, and the elemental building blocks required for life. The many forms of life on Earth are possible because of certain physical properties of our planet and a tightly regulated system that connects physical, chemical, and biological components. Importantly, students will come to appreciate the role that humans occupy within this complex Earth system, rather than separate from it.

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**Department of Geography and Geology**

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**4. Term of Implementation: Spring 2013**

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Geography and Geology Department \_\_\_\_\_9/5/2012\_\_\_\_\_\_

Ogden College Curriculum Committee \_\_\_\_\_9/6/2012\_\_\_\_\_\_

Ogden College Dean \_\_\_\_\_9/6/2012\_\_\_\_\_\_

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Provost: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Department of Geography and Geology**

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Provost: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Attachment: Course Inventory Form**