

Human Creativity: Science and Art

NCLC 103

6 Credits

Tuesday and Thursday, 1:00 to 3:30

Faculty Team

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Course Description

This course will consider the nature of human creativity by exploring the essential role creativity plays in both the sciences and the arts. We will pay particular attention to the ways in which the creative work of scientists and artists helps us better understand the impact humans have had on Earth's natural systems and the life forms—human and nonhuman—that depend on those systems. The course will cover the time period between the Industrial Revolution and the present day. We will use a combination of scientific sources and works in various artistic media to introduce the two most pressing ecological crises facing the world today, climate change and the mass extinction of species. We will then ask the following questions: 1) How have humans, especially those in industrialized societies, brought about these two ecological crises? 2) How might humans successfully avert the most dire impacts associated with these crises? To answer the first question, we will turn our attention to the scientific and technological breakthroughs of the Industrial Revolution that enabled humans to tap the world's vast fossil energy resources and bring about a radical enlargement of the human footprint on Earth. Moving chronologically from the Industrial Revolution to the present day, we will consider the impact of industrial culture on global biodiversity and Earth's climate, and on humans themselves. We will examine how art in various media, genres, and time periods has not only critiqued and challenged the changes wrought by industrial culture, but also foreseen, facilitated, and validated these changes. The course will ultimately return to the

present moment and will introduce students to cutting-edge work in the arts and sciences that aims to harness human creativity in shaping a culture that lives in balance with Planet Earth.

This course emphasizes the following New Century College competencies: Aesthetic Awareness, Communication, Critical Thinking, Global Understanding, and Valuing.

Learning Objectives

Through this course, students will:

- gain an understanding of the nature of human creativity, especially the role creativity plays in the sciences and the arts;
- consider the sciences and the arts as interconnected aspects of human culture;
- gain an understanding of how creative work in the sciences informs and shapes the arts, and how creative work in the arts informs and shapes the sciences;
- examine their roles as members of the natural world;
- and examine their roles as producers and consumers of a human culture that has profound impacts on the natural world.

Required Materials

Course Reader: All readings for the class will be accessible from our course BlackBoard page. **You are required to print out all of the readings for the class at the beginning of the semester and keep them in a binder.** To access BlackBoard, type courses.gmu.edu into the URL address bar of the web browser of your choice. Enter the username and password from your GMU email account.

Creativity Journal: For journaling, you will need the following supplies: a three-ring binder with an ample supply of lined paper for note-taking and in class writing; a spiral-bound sketch pad that fits inside the front or back pocket of your binder; and a set of colored pencils for drawing.

PebblePad: You will be using PebblePad for this course (only for the Foundations of Learning assignment, a webfolio), so be sure your PebblePad account is in good standing.

Required Work

Visual Essay (250 points)

For this assignment, you will use images to document and comment upon some aspect of your personal ecological footprint. You will receive detailed guidelines for this assignment and will develop it in stages.

Group Design Project (200 points)

For this project, students will work in design teams to develop interdisciplinary projects (artistic and scientific) that creatively address the themes of the course. You will receive detailed guidelines for this assignment and will develop it in stages. Design projects will be displayed at an exhibition on the last day of class.

Creativity Journal (200 points)

You will use your journal to do weekly exercises, both in and outside class, that explore and develop your creativity. A number of these exercises will spark ideas and build visual communication skills that will support your work on the Visual Essay assignment. You will also use your journal to respond to readings, films, lectures, and other course-related experiences. (See above for journal materials you are required to buy.)

Field Trip Assignments (2 trips, 75 points each)

We will spend two full days visiting museums on the National Mall. For each of these days, you will complete assignments designed to facilitate and deepen your learning. You will receive detailed guidelines for these assignments.

Foundations of Learning Assignment (100 points)

This assignment, presented on PebblePad at the midway point of the semester, will give you an opportunity to reflect on what and how you have learned to date in the Cornerstones program. It will also ask you to project forward to determine your future learning priorities. You will receive detailed guidelines for this assignment

Participation (100 points)

Our class is a community. As members of this community, we all depend on each other not just to show up, but to be fully engaged in each and every class activity. This means coming to class on time and prepared, speaking and listening well during discussions, raising questions, and calling attention to current events that relate to this course. Participation also involves doing everything you can to make our field trips run smoothly.

Extra Credit (25 points maximum)

Throughout the semester, there will be a variety of events and activities, both on and off campus, that relate to our course topics. You will have a chance to earn extra credit by attending one or more of these events and writing a reflection paper afterward. We will post a list of approved Extra Credit activities on BlackBoard and will let you know how many points each of these is worth.

Policies

Grading Scale

A	1000-930	C+	799-770
A-	929-900	C	769-730
B+	899-870	C-	729-700
B	869-830	D	699-600
B-	829-800	F	599-0

Late Work

Papers and other assignments are to be submitted before the beginning of class on the day due. Late work will be reduced one grade per day. No work will be accepted over one week late without a valid written medical excuse or notice of death in the family.

Honor Code

When you enrolled in this course you agreed to abide by the university's Honor Code. The Honor Code does not preclude collaborative work, such as informal discussions and studying in communities. Nor does it preclude assigned group work. The Honor Code does require that work you, as an individual, turn in ultimately be the product of your own individual synthesis or integration of ideas, and that the work a group turns in ultimately be the product of the group's collective ideas. If you are uncertain of the line between collaboration and cheating, see an instructor. As always, cite your sources. If you do not, it is plagiarism. Plagiarism means lifting someone else's ideas or words and presenting them as your own without proper attribution of the source. This includes all sources, including those found on the Internet. Use an approved citation method, such as MLA, APA, etc.

Diversity Statement

New Century College, an intentionally inclusive community, promotes and maintains an equitable and just work and learning environment. We welcome and value individuals and their differences including race, economic status, gender expression and identity, sex, sexual orientation, ethnicity, national origin, first language, religion or irreligion, age and disability.

- We value our diverse student body and desire to increase the diversity of our faculty and staff.
- We commit to supporting students, faculty and staff who have been the victims of bias and discrimination.
- We promote continuous learning and improvement to create an environment that values diverse points of view and life experiences.
- We believe that faculty, staff and students play a role in creating an environment that engages diverse points of view.
- We believe that by fostering their willingness to hear and learn from a variety of sources and viewpoints, our students will gain competence in communication, critical thinking and global understanding, aware of their biases and how they affect their interactions with others and the world.

Accommodations for Students with Disabilities

If you are a student with a disability and you need academic accommodations, please contact the Disability Resource Center (DRC) at 703.993.2474 and, once you have secured proper documentation, communicate directly with your seminar instructor about the accommodations you need. All academic accommodations must be arranged through DRC before your seminar instructor can assist you.

Laptops

Please keep laptops shut and out of sight during class. Take lecture and discussion notes in your Creativity Journal. There may be a few class sessions when we relax this rule. Your instructor will make an announcement prior to these sessions.

Phones

Please keep your phone shut down and out of sight during class.

Email

GMU faculty and staff may only correspond with students through the students' GMU assigned email accounts. Emails sent from other accounts will not be answered. Be sure to check your GMU email address regularly and delete unnecessary messages and attachments to keep your account from going over its data limit (or else emails sent to you will get kicked back).

Class Schedule

PART ONE: WHAT IS CREATIVITY?

Week #1:

1/19: Intro and Course Overview

In cohort (JC Cinema):

- Faculty introductions
- Brief course preview
- Seminar assignments
- Watch video: Robinson, "Do Schools Kill Creativity?"

In seminar:

- Debrief Robinson video
- In class writing in Creativity Journal
- Syllabus review

1/21: What is Creativity? (continued)

Read:

- Sawyer, "Conceptions of Creativity"
- Florida, "The Transformation of Everyday Life"

In seminar:

- Discuss readings
- Group activity on ideas in readings

Week #2:

1/26: Creativity in Science and Art

Read:

- Bronowski, "The Creative Mind"
- Lehrer, "The Future of Science is...Art"
- Ho, "In Search of the Sublime"

In class:

- Share homework exercises from Creativity Journal
- Discuss readings
- Exercise on sketching for science and sketching for art

PART TWO: THE 19TH CENTURY—HUMAN CREATIVITY AND THE INDUSTRIAL REVOLUTION

1/28: The Industrial Revolution

Read:

- Stearns, "Defining the Industrial Revolution"

In cohort (JC Cinema):

- Guest Speaker: Dr. Peter Stearns: "The Industrial Revolution in World History"
- View *The 11th Hour*

Week #3:

2/2: Guest Speaker and Major Assignment Previews

In cohort (Research I room 163):

- Guest Speaker: Prof. Mark Cooley, Art and Visual Technology

In seminar:

- Debrief Cooley lecture and introduce Group Design Project assignment
- Debrief Ecological Footprint exercise and introduce Visual Essay assignment
- Preview 2/4 field trip to DC

2/4: First full day field trip to DC

Corcoran Gallery of Art—19th Century American Landscape Painting

National Museum of American History—Power Machinery & America on the Move

Read (before field trip!):

- Schobert, "The Steam Engine"
- Gordon, "What has Watt Wrought?"

Week #4:

2/9: NCLC 203 all day

2/10:

Due: First field trip assignment by 5 p.m.

2/11: Visual Literacy I

Read:

- Sayre, "A World of Art" and "Developing Visual Literacy"

In cohort (JC Cinema):

- Lecture: Kristin Scott and Fan Yang, "Reading Visual Texts"

In seminar:

- Discuss readings and lecture
- Visual literacy exercise

Due: Visual Essay assignment proposal due tomorrow at 5 p.m.

Week #5:

2/16: Artistic Responses to the Industrial Revolution

Read:

- Lewis, "What is Transcendentalism?"
- Nash, "Henry David Thoreau: Philosopher" (p 84-87).
- Thoreau, *Walden* (selection from ch. 2--read paragraphs 15-18)
- Emerson, *Nature* (short excerpt)

In class:

- Discuss readings

2/18: Artistic Responses to the Industrial Revolution, Continued: The Hudson River School

Read:

- Dunbier, "The Hudson River School" (sections 2 & 3)
- Marx, *The Machine in the Garden* (Pt. IV ch. 5 on "technological sublime")

In cohort (SUB I rooms ABC):

- Lecture: Megan Draheim and Andrew Wingfield, "The Hudson River School: Painting Wild Landscapes in Industrial America"

In seminar:

- Discuss lecture and readings

Week 6

2/23: Darwin as Creative Thinker

Read:

- Sulloway, "The Evolution of Charles Darwin"
- Keegan, "Charles Robert Darwin"

In cohort (SUB II rooms 5, 6, & 7):

- Film: *Dogs, Dogs, and More Dogs*

In class:

- Discuss readings and film

Due: Group Design Project proposal tomorrow at 5 p.m.

2/25: Darwin: Evolution & Natural Selection

Read:

- Stix, “Darwin's Living Legacy--Evolutionary Theory 150 Years Later”
- Hayden, “What Darwin Didn't Know”
- Radley, “Natural Selection & Variation”

In cohort (SUB II Ballroom—Front):

- Lecture: Elizabeth Freeman and Tom Wood, "What is Natural Selection?"

In seminar:

- Discuss readings and lecture
- NOVA Dogs evolution exercise
- “Evolution 101”

Week 7

3/2: The Industrial Revolution: Impacts on Natural Selection

Due: Foundations of Learning assignment draft due before your mid-term check in

Read:

- Grant, “Industrial Melanism”
- Yoon, “Parallel Plots in Classic of Evolution”

In cohort (Research I room 163):

- Guest Lecture: Dr. Bruce Grant, "The Pepered Moth and Industrial Pollution”

In seminar:

- No seminar today: midterm check-ins begin after lecture.

3/4: Midterm Check-ins (no faculty meeting this day)

In class:

- Students meet individually with seminar instructors.

Due: Foundations of Learning final draft due by 11 p.m. tomorrow.

SPRING BREAK WEEK (March 8-14)

Week 8

3/16: Second full day field trip to DC

U.S. Botanic Garden

National Museum of the American Indian—"Strange Comfort," Brian Jungen Exhibition

3/18: NCLC 203 all day

Due: Draft of Visual Essay due tomorrow by 5 p.m.

PART THREE: THE 20TH CENTURY--HUMAN CREATIVITY IN THE MODERN PERIOD

Week 9

3/23: Wild Nature vs. Wise Use: Hetch Hetchy Case Study

Due: Second field trip assignment due by 5 p.m. tomorrow.

Read:

- Nash, "Hetch Hetchy"
- Muir, "The Hetch Hetchy Valley"
- Pinchot, "The Birth of Conservation"

In cohort (SUB II rooms 5, 6, & 7):

- Film: *The Wilderness Idea*

In seminar:

- Debrief field trip
- Discuss film and readings

3/25: Visual Literacy II

Read:

- Sayre, "The Camera Arts"
- Berger, *Ways of Seeing* (selections)
- Goldberg and Silberman, "Photography and the Environment"

In cohort (JC Cinema):

- Cohort lecture: Fan Yang and Megan Draheim--"Visual Literacy in the 20th Century"

In seminar:

- Discuss lecture and readings

Week 10:

3/30: Fossil Fuels in the 20th Century

Read:

- PBS, "Extreme Oil: Global Oil and Environmentalism"
- American Chemical Society, *National Historic Chemical Landmarks* "The Houdry Process" (Read the first 3 sections - from Transforming Crude Oil... to The Impact of the Houdry Invention)
- Pollan, "There Goes the Sun"

In cohort (SUB II rooms 5, 6, & 7):

- *Extreme Oil Episode 3: The Wilderness*

In seminar:

- No seminar. Whole class in cohort today.

4/1: Fossil Fuels and the Arts

Due: Design Project Outline & Progress Report due tomorrow by 5 p.m.

Read:

- Atkinson, "Good Friday, 1989: Bligh Reef off Valdez, Alaska"
- Visit <http://www.edwardburtynsky.com/> and view images under the "Oil" link; then read Bakacs, "Edward Burtynsky: Oil"
- Deitz, "Plastics as Pop Art"
- Moore, "Across the Pacific Ocean, Plastics, Plastics Everywhere."

In seminar:

- Discuss readings
- View and discuss images from Burtynsky's photography exhibition, "Oil"
- Design Project Workshop

Week #11:

4/6: What is Biodiversity? Why is it Threatened?

Read:

- Wilson & Peter, "The Current State of Biological Diversity"
- Fraser, "Could Re-Wilding Avert the Sixth Great Extinction?"

In cohort (Research I room 163):

- Film, *Rachel Carson's Silent Spring*

In seminar:

- Discuss readings and film

4/8: Biodiversity and Climate Change

Read:

- McKibben, "A New Atmosphere"

- Naeem, “Lessons from the Reverse Engineering of Nature”

In cohort (SUB I rooms ABC):

- Lecture: Thomas Lovejoy, “Climate Change: Impacts on Biodiversity”

In seminar:

- Discuss reading and lecture

PART FOUR: THE 21ST CENTURY—HUMAN CREATIVITY AND THE STRUGGLE FOR SUSTAINABILITY

Week #12:

4/13: What is Sustainability?

Read:

- Edwards, “Portrait of the Sustainability Revolution” & “The Birth of Sustainability”

In class:

- Discuss readings

4/15: Design Project work session (in class)

Due: Final Draft of Visual Essay due tomorrow by noon.

In seminar:

- Group work on design projects

Week #13:

4/20: NCLC 203 all day

4/22 (morning): Designing Creative Solutions

Read:

- MacDonough & Baumgart, “The Cradle to Cradle Alternative”
- Tidwell, “Snap into Action for the Climate”
- McKibben, “When Words Fail”
- Spend five minutes on this site at home: <http://www.ilcp.com/>

In class:

- Lecture (video): Janine Benyus: "12 Sustainable Design Ideas from Nature"
- Lecture (video): Paul Stametz, “Six Ways Mushrooms Can Save the World”
- Discuss readings and lectures

4/22 (afternoon): Design Project Preparations

In seminar:

- Group work on design projects

Week 14

4/27: NCLC 103 all day: Design Project exhibition (morning set up, afternoon display)—Place TBA

Due: Group Design Project and written rationale

4/29: NCLC 203 all day