



# NORTHERN ARIZONA UNIVERSITY

**UCC/UGC/ECCC**

Proposal for New Course

**Please attach proposed Syllabus in approved university format.**

1. Course subject and  
number:

**FS 211**

2. Units: **3**

**See upper and lower division undergraduate course definitions.**

3. College: **University College**

4. Academic Unit: **First Year Seminar  
Program**

5. Student Learning Outcomes of the new course. (*Resources & Examples for Developing Course Learning Outcomes*)

**Successful students in this Seminar will be able to**

- **describe, explain, and discuss the scientific basis of sustainable human and natural systems.**
- **describe, explain, and discuss the vocabulary and concepts around the sustainability of human and natural systems (e.g., finite and renewable resources, environmental footprint, global commons, peak oil, environmental justice, global climate change).**
- **analyze and assess the role of human interactions with the environment and its relation to the root causes of many global problems.**

6. Justification for new course, including how the course contributes to degree program outcomes, or other university requirements / student learning outcomes. (*Resources, Examples & Tools for Developing Effective Program Student Learning Outcomes*).

**In May 2006 the Faculty Senate approved the creation of an optional 3-credit hour course that applies disciplinary or interdisciplinary perspectives to examine current and/or ongoing issues associated with global problems that require global learning, social responsibility, and/or the self-examined life. The First Year Seminar Program supports the Liberal Studies Program mission to prepare student to live responsible, productive, and creative lives as local, national, and global citizens of a changing world.**

**This new FS 211 Liberal Studies topics course in the Science (non-lab) distribution block is aligned with the revised Global Learning Initiative university-level definition and student learning outcomes for the Sustainability of Human and Natural Systems.**

Sections of this course with an Action research Team (ART) component can also fulfill a requirement for the Civic Engagement Minor by fulfilling the following Civic Engagement Minor program outcomes:

- Civic Engagement Minor graduates will demonstrate peer mentoring and group leadership skills among diverse constituents and stakeholders through their coursework assessments and summative projects in the program. (Skills)
- Civic Engagement Minor graduates will persuasively communicate synthesized knowledge, research, and action/public research through written products targeted to appropriate audiences. (Skills)
- Civic Engagement Minor graduates will demonstrate the skills of interdisciplinary research and analysis of real-world issues in order to generate productive outcomes through their coursework assessments and summative projects in the program. (Skills)
- Civic Engagement Minor graduates will demonstrate the mastery of the theories and strategies of community-based organizing and community leadership through their coursework assessments and summative projects in the program. (Knowledges)
- Civic Engagement Minor graduates will be motivated by creating more democratic, just, and sustainable communities and demonstrated these values through their coursework assessments and summative projects in the program. (Values)
- Civic Engagement Minor graduates will respectfully acknowledge diverse perspectives and traditions, attentively listen, thoughtfully comment, and always enable and demonstrate these attitudes and dispositions through their coursework assessments and summative projects in the program. (Attitudes/Dispositions)

7. Effective **BEGINNING** of what term and year? Fall 2014  
See effective dates calendar.

8. Long course title: Science & Sustainable Systems  
(max 100 characters including spaces)

9. Short course title: Science & Sustainable Systems  
(max. 30 characters including spaces)

10. Catalog course description (max. 60 words, excluding requisites):

**Through the methods of scientific inquiry, this Second Year Seminar will explore topics in sustainable human and natural systems. Topics vary. 3 units.**

11. Will this course be part of any plan (major, minor or certificate) or sub plan (emphasis)?  
Yes  No

If yes, include the appropriate plan proposal.

Please see the Civic Engagement Minor new plan proposal with this submission.

12. Does this course duplicate content of existing courses? Yes  No   
If yes, list the courses with duplicate material. If the duplication is greater than 20%, explain why NAU should establish this course.

13. Will this course impact any other academic unit's enrollment or plan(s)? Yes  No   
If yes, include a letter of response from each impacted academic unit.

14. Grading option: Letter grade  Pass/Fail  Both

15. Co-convened with: None 14a. UGC approval date\*: \_\_\_\_\_  
(For example: ESE 450 and ESE 550) See co-convening policy.  
\*Must be approved by UGC before UCC submission, and both course syllabi must be presented.

16. Cross-listed with: None  
(For example: ES 450 and DIS 450) See cross listing policy.  
Please submit a single cross-listed syllabus that will be used for all cross-listed courses.

17. May course be repeated for additional units? Yes  No

16a. If yes, maximum units allowed? 6 units with different topics

16b. If yes, may course be repeated for additional units in the same term? Yes  No

18. Prerequisites: Not open to students with more than 75 units.  
If prerequisites, include the rationale for the prerequisites.

Course intended for first and second year students for Liberal Studies credit and, with an Action research team (ART) component, credit toward the fulfillment of the Civic Engagement Minor. The prerequisite of 75 units allows for the 60 units of sophomore credit plus 15 units of Advanced Placement units with which many NAU students enter.

19. Co requisites: None  
If co requisites, include the rationale for the co requisites.

20. Does this course include combined lecture and lab components? Yes  No   
If yes, include the units specific to each component in the course description above.

Dr. Stefan Sommer (Biological Sciences) and any current FS 111 faculty teaching a science and sustainability topic

21. Names of the current faculty qualified to teach this course:

**Answer 22-23 for UCC/ECCC only:**

22. Is this course being proposed for Liberal Studies designation? Yes  No   
If yes, include a Liberal Studies proposal and syllabus with this proposal.

23. Is this course being proposed for Diversity designation? Yes  No   
If yes, include a Diversity proposal and syllabus with this proposal.

**FLAGSTAFF MOUNTAIN CAMPUS**

Reviewed by Curriculum Process Associate

Date

**Approvals:**

Sept 13, 2013

Department Chair/Unit Head (if appropriate)

Date

10/3/13

Chair of college curriculum committee

Date

10/4/13

10/3/13

Dean of college

Date

**For Committee use only:**

UCC/UGC Approval

Date

Approved as submitted:

Yes  No

Approved as modified:

Yes  No

**EXTENDED CAMPUSES**

Reviewed by Curriculum Process Associate

Date

**Approvals:**

Academic Unit Head

Date

Division Curriculum Committee (Yuma, Yavapai, or Personalized Learning)

Date

Division Administrator in Extended Campuses (Yuma, Yavapai, or Personalized Learning)

Date

Faculty Chair of Extended Campuses Curriculum Committee (Yuma, Yavapai, or Personalized Learning)

Date

Chief Academic Officer; Extended Campuses (or Designee)

Date

Approved as submitted:

Yes  No

Approved as modified:

Yes  No





Northern Arizona University  
University College  
FS 211 Science & Sustainable Systems

**Second Year Seminar Topic Course Master Syllabus**

*This FS 211 Second Year Seminar Topic Course Master Syllabus is based on the current Liberal Studies Program Master Course Syllabus Template and the NAU syllabus template.*

*The format of this FS 211 Second Year Seminar Topic Course Master Syllabus is required for all FS 211 courses.*

General Information

- Name of college and department
  - **University College and the First Year Seminar Program**
- Course prefix, number, and title
  - **FS 211 Science & Sustainable Systems: [Your topic's secondary title]**
- Semester in which course will be offered
- Clock hours, credit hours
  - **3 credit hours**
- Instructor's name
- Office address
- Office hours

Course Prerequisites

**Not open to students with more than 75 units.**

Course Description

*Include this Course Description for all FS 211 topic courses (which is aligned with the revised Global Learning Initiative university-level definition for the Sustainability of Human and Natural Systems):*

**Through the methods of scientific inquiry, this Second Year Seminar will explore topics in sustainable human and natural systems. Topics vary. 3 units.**

*Include your Course Topic Description:*

*Additional statement to include:*

**This is a Liberal Studies course in the Science (non-lab) distribution block and will demonstrate Critical Thinking through the essential skill of Scientific Inquiry.**

*Include the following statement if this course section includes an Action Research Team (ART) component:*

**This course can also be used to fulfill the requirements of the Civic Engagement Minor.**

Student Learning Expectations/Outcomes for this Course

*Include the Student Learning Outcomes for all FS 211 sections (which are aligned with the revised Global Learning Initiative university-level definition and student learning outcomes for the Sustainability of Human and Natural Systems):*

**Successful students in this Seminar will be able to**

- **describe, explain, and discuss the scientific basis of sustainable human and natural systems.**
- **describe, explain, and discuss the vocabulary and concepts around the sustainability of human and natural systems (e.g., finite and renewable resources, environmental footprint, global commons, peak oil, environmental justice, global climate change).**
- **analyze and assess the role of human interactions with the environment and its relation to the root causes of many global problems.**

### Liberal Studies Information

*As a Liberal Studies course, address how your Seminar functions in the Liberal Studies program at each of three levels:*

#### **1. Mission of Liberal Studies:**

*Explain how your FS 211 Student Learning Outcomes contributes to the fulfillment of the Mission of the Liberal Studies Program:*

*The mission of the Liberal Studies Program at Northern Arizona University is to prepare students to live responsible, productive, and creative lives as citizens of a dramatically changing world. To accomplish the mission of Liberal Studies, Northern Arizona University provides a program that challenges students to gain a deeper understanding of the natural environment and the world's peoples, to explore the traditions and legacies that have created the dynamics and tensions that shape the world, to examine their potential contributions to society, and thus to better determine their own places in that world. Through the program students acquire a broad range of knowledge and develop essential skills for professional success and life beyond graduation.*



## 2. **Distribution Block:**

***Explain how your FS 211 Student Learning Outcomes contributes to the fulfillment of the Liberal Studies Science distribution block Student Learning Outcomes:***

### *Liberal Studies Science distribution block*

*Courses in this block will increase students' knowledge about the natural world and involve students in application of knowledge derived from scientific inquiry to address human needs through technological advancements. Courses in this block also address the impact of technology on the human condition and the natural world.*

*Students will learn to employ the logic and techniques of scientific inquiry and thereby develop:*

- *an understanding of a variety of physical and biological phenomena through the application of the scientific method*
- *an understanding of the basis and limits of contemporary scientific knowledge*
- *greater familiarity with important theories, concepts, and taxonomies that are central to the various science disciplines*
- *the major dimensions of variation in contemporary human experience.*

[<http://nau.edu/Liberal-Studies/Submit-a-Course/>]

## 3. **Essential Skills:**

***At the request of the Liberal Studies Committee on March 27, 2009, the First Year Seminar Program began a pilot in which all FS courses demonstrate Critical Thinking through one of the following skills: Effective Writing, Effective Oral Communication, Scientific Inquiry, or Quantitative Reasoning.***

***This course will demonstrate Critical Thinking through the essential skill of Scientific Inquiry***

***Explain how your FS 211 course demonstrates Critical Thinking through the essential skill of Scientific Inquiry:***

***For the Liberal Studies Program, Critical Thinking is currently defined as:***

*Critical thinking includes the skills - particularly as applied to one's own work - of 1) articulating the meaning of a statement, 2) judging the truth of a statement, keeping in mind possible biases, 3) determining whether a conclusion is warranted by the evidence provided.*

[<http://nau.edu/liberal-studies/>]

***For the Liberal Studies Program, Scientific Inquiry is currently defined as:***

*Scientific inquiry includes the skills of: 1) formulating hypotheses on the basis of observations, 2) obtaining and analyzing data to test (i.e., refute or confirm) hypotheses, and 3) explaining phenomena by means of accepted principles, theories or laws.*

[<http://nau.edu/liberal-studies/>]

### **Civic Engagement Minor—optional Action Research Team (ART) association**

***Sections of this course with an Action Research Team (ART) component can also fulfill a requirement for the Civic Engagement Minor. Explain how your course fulfills the following Civic Engagement Minor program outcomes for this course:***

- *Civic Engagement Minor graduates will demonstrate peer mentoring and group leadership skills among diverse constituents and stakeholders through their coursework assessments and summative projects in the program. (Skills)*
- *Civic Engagement Minor graduates will persuasively communicate synthesized knowledge, research, and action/public research through written products targeted to appropriate audiences. (Skills)*
- *Civic Engagement Minor graduates will demonstrate the skills of interdisciplinary research and analysis of real-world issues in order to generate productive outcomes through their coursework assessments and summative projects in the program. (Skills)*
- *Civic Engagement Minor graduates will demonstrate the mastery of the theories and strategies of community-based organizing and community leadership through their coursework assessments and summative projects in the program. (Knowledges)*
- *Civic Engagement Minor graduates will be motivated by creating more democratic, just, and sustainable communities and demonstrated these values through their coursework assessments and summative projects in the program. (Values)*
- *Civic Engagement Minor graduates will respectfully acknowledge diverse perspectives and traditions, attentively listen, thoughtfully comment, and always enable and demonstrate these attitudes and dispositions through their coursework assessments and summative projects in the program. (Attitudes/Dispositions)*

Course structure/approach

Textbook and required materials

Recommended optional materials/references (attach reading list)

Course Outline of Student Learning Experiences

## Assessment of Student Learning Outcomes

Methods of Assessment:

1. ***Outline methods of assessment used in your Seminar.***
2. ***Explain how these assessments provide evidence that you are fulfilling this course's Student Learning Outcomes.***

Timeline for Assessment

## Grading System

### Course policies

- Retests/makeup tests
- Attendance
- Statement on plagiarism and cheating

## Northern Arizona University Policy Statements

### ***SAFE ENVIRONMENT POLICY***

*NAU's Safe Working and Learning Environment Policy seeks to prohibit discrimination and promote the safety of all individuals within the university. The goal of this policy is to prevent the occurrence of discrimination on the basis of sex, race, color, age, national origin, religion, sexual orientation, disability, or veteran status and to prevent sexual harassment, sexual assault or retaliation by anyone at this university.*

*You may obtain a copy of this policy from the college dean's office or from the NAU's Affirmative Action website <http://home.nau.edu/diversity/>. If you have concerns about this policy, it is important that you contact the departmental chair, dean's office, the Office of Student Life (928-523-5181), or NAU's Office of Affirmative Action (928-523-3312).*

### ***STUDENTS WITH DISABILITIES***

If you have a documented disability, you can arrange for accommodations by contacting Disability Resources (DR) at 523-8773 (voice) or 523-6906 (TTY), [dr@nau.edu](mailto:dr@nau.edu) (e-mail) or 928-523-8747 (fax). Students needing academic accommodations are required to register with DR and provide required disability related documentation. Although you may request an accommodation at any time, in order for DR to best meet your individual needs, you are urged to register and submit necessary documentation ([www.nau.edu/dr](http://www.nau.edu/dr)) 8 weeks prior to the time you wish to receive accommodations. DR is strongly committed to the needs of student with disabilities and the promotion of Universal Design. Concerns or questions related to the accessibility of programs and facilities at NAU may be brought to the attention of DR or the Office of Affirmative Action and Equal Opportunity (523-3312).

### ***INSTITUTIONAL REVIEW BOARD***

*Any study involving observation of or interaction with human subjects that originates at NAU—including a course project, report, or research paper—must be reviewed and approved by the Institutional Review Board (IRB) for the protection of human subjects in research and research-related activities.*

*The IRB meets monthly. Proposals must be submitted for review at least fifteen working days before the monthly meeting. You should consult with your course instructor early in the course to ascertain if your project needs to be*

reviewed by the IRB and/or to secure information or appropriate forms and procedures for the IRB review. Your instructor and department chair or college dean must sign the application for approval by the IRB. The IRB categorizes projects into three levels depending on the nature of the project: exempt from further review, expedited review, or full board review. If the IRB certifies that a project is exempt from further review, you need not resubmit the project for continuing IRB review as long as there are no modifications in the exempted procedures.

A copy of the IRB Policy and Procedures Manual is available in each department's administrative office and each college dean's office or on their website: <http://www.research.nau.edu/compliance/irb/index.aspx>. If you have questions, contact the IRB Coordinator in the Office of the Vice President for Research at 928-523-8288 or 523-4340.

#### **ACADEMIC INTEGRITY**

The university takes an extremely serious view of violations of academic integrity. As members of the academic community, NAU's administration, faculty, staff and students are dedicated to promoting an atmosphere of honesty and are committed to maintaining the academic integrity essential to the education process. Inherent in this commitment is the belief that academic dishonesty in all forms violates the basic principles of integrity and impedes learning. Students are therefore responsible for conducting themselves in an academically honest manner.

Individual students and faculty members are responsible for identifying instances of academic dishonesty. Faculty members then recommend penalties to the department chair or college dean in keeping with the severity of the violation. The complete policy on academic integrity is in Appendix G of NAU's Student Handbook <http://www4.nau.edu/stulife/handbookdishonesty.htm>.

#### **ACADEMIC CONTACT HOUR POLICY**

The Arizona Board of Regents Academic Contact Hour Policy (ABOR Handbook, 2-206, Academic Credit) states: "an hour of work is the equivalent of 50 minutes of class time...at least 15 contact hours of recitation, lecture, discussion, testing or evaluation, seminar, or colloquium as well as a minimum of 30 hours of student homework is required for each unit of credit."

The reasonable interpretation of this policy is that for every credit hour, a student should expect, on average, to do a minimum of two additional hours of work per week; e.g., preparation, homework, studying.

#### **SENSITIVE COURSE MATERIALS**

If an instructor believes it is appropriate, the syllabus should communicate to students that some course content may be considered sensitive by some students.

"University education aims to expand student understanding and awareness. Thus, it necessarily involves engagement with a wide range of information, ideas, and creative representations. In the course of college studies, students can expect to encounter—and critically appraise—materials that may differ from and perhaps challenge familiar understandings, ideas, and beliefs. Students are encouraged to discuss these matters with faculty."



Northern Arizona University  
University College

FS 211 Topic Course Syllabus EXAMPLE  
FS 211 The Science of Sustainability

**General Information**

- **University College and the First Year Seminar Program**
- **FS 211 Science & Sustainable Systems: The Science of Sustainability**
- Semester in which course will be offered:
- Clock hours, credit hours: **3 credit hours**
- Instructor's name: **Dr. Stefan Sommer**
- Office address **Department of Biological Sciences**
- Office hours

**Course Prerequisites**

Not open to students with more than 75 units.

**Course Description**

For all FS 211 courses:

Through the methods of scientific inquiry, this Second Year Seminar will explore topics in sustainable human and natural systems. Topics vary. 3 units.

For our The Science of Sustainability course:

This Seminar is for students who are interested in environmental sustainability and will examine *science-as-a-way-of-knowing*. We will explore the methods and reasoning used by scientists who study different components of sustainability to answer questions such as:

- What can science tell us about climate change, the global extinction crisis, pollution, over consumption of resources, energy production, population growth, and our ever increasing ecological footprint?
- What methods do scientists use to understand these issues?
- How can we respond to this new understanding?

In addition to the scientific understanding of global sustainability, this course will also cover a multidisciplinary approach to possible solutions. We will explore the implications of this new scientific understanding for society:

- What do experts from different disciplines recommend we do to build a more sustainable society?
- How do we evaluate which recommendations are truly sustainable?

This is a Liberal Studies course in the Science (non-lab) distribution block and will demonstrate Critical Thinking through the essential skill of Scientific Inquiry.

### **Student Learning Expectations/Outcomes for this Course**

Successful students in this Seminar will be able to

- describe, explain, and discuss the scientific basis of sustainable human and natural systems.
- describe, explain, and discuss the vocabulary and concepts around the sustainability of human and natural systems (e.g., finite and renewable resources, environmental footprint, global commons, peak oil, environmental justice, global climate change).
- analyze and assess the role of human interactions with the environment and its relation to the root causes of many global problems.

### Liberal Studies Information

#### Mission of Liberal Studies

The mission of the Liberal Studies Program at Northern Arizona University is to prepare students to live responsible, productive, and creative lives as citizens of a dramatically changing world. To accomplish the mission of Liberal Studies, Northern Arizona University provides a program that challenges students to gain a deeper understanding of the natural environment and the world's peoples, to explore the traditions and legacies that have created the dynamics and tensions that shape the world, to examine their potential contributions to society, and thus to better determine their own places in that world. Through the program students acquire a broad range of knowledge and develop essential skills for professional success and life beyond graduation.

This Seminar will address the Mission of the Liberal Studies Program by exploring issues in the science of sustainability, one of the key challenges that our society will face in the coming years. We will focus on preparing students to live responsible, productive, and creative lives as citizens of a dramatically changing world. This Seminar will also challenge students to gain a deeper understanding of the natural environment, to explore the traditions and legacies that have created the dynamics and tensions that shape the world, to examine student's potential contributions to society, and to help students better determine their own places in that world.

## Distribution Block

The Science of Sustainability Seminar will increase students' knowledge about the natural world and involve students in application of knowledge derived from scientific inquiry. The course will also address the impact of technology on the human condition and the natural world.

<b>FS 211 Student Learning Outcomes addresses →</b>	<b>LS Science Distribution Student Learning Outcome:</b> an understanding of a variety of physical and biological phenomena through the application of the scientific method	<b>LS Science Distribution Student Learning Outcome:</b> an understanding of the basis and limits of contemporary scientific knowledge	<b>LS Science Distribution Student Learning Outcome:</b> greater familiarity with important theories, concepts, and taxonomies that are central to the various science disciplines
describe, explain, and discuss the scientific basis of sustainable human and natural systems	<b>X</b>	<b>X</b>	<b>X</b>
describe, explain, and discuss the vocabulary and concepts around the sustainability of human and natural systems (e.g., finite and renewable resources, environmental footprint, global commons, peak oil, environmental justice, global climate change)	<b>X</b>	<b>X</b>	<b>X</b>
analyze and assess the role of human interactions with the environment and its relation to the root causes of many global problems	<b>X</b>	<b>X</b>	<b>X</b>

### Essential Skill

At the request of the Liberal Studies Committee on March 27, 2009, the First Year Seminar Program began a pilot in which all FS courses demonstrate Critical Thinking through one of the following skills: Effective Writing, Effective Oral Communication, Scientific Inquiry, or Quantitative Reasoning.

This course will demonstrate Critical Thinking through the essential skill of Scientific Inquiry.

The Science of Sustainability course will focus on Critical Thinking through

- 1) clearly articulating a position, 2) critically evaluating the truth of a statement, keeping in mind possible biases, 3) determining whether a conclusion is warranted based on the evidence provided.

and will demonstrate Critical Thinking through the essential skill of Scientific Inquiry by

- 1) formulating testable hypotheses on the basis of observations, 2) obtaining and analyzing data to test (i.e., refute or support) hypotheses, and 3) explaining phenomena by means of accepted principles, theories, or laws.







### Course structure/approach

Through class discussions, assigned readings, guest presentations, and both single draft Reaction Writing Assignments and multiple-draft Papers, we will explore issues in Life Support Systems, Climate Change, Energy, Economics, Conservation, and Building a Culture of Sustainability.

### Textbook and required materials

Assigned readings from guest presenters will be placed in the course BB Learn shell. Please complete the readings in advance of the class meeting so that you can participate in the course discussion.

### Course outline

-  Life Support Systems
-  Climate Change
-  Energy
-  Economics
-  Conservation
-  Building a Culture of Sustainability



<u>DATE</u>	<u>TOPIC</u>	<u>PRESENTER</u>
Jan. 18	Introduction to Sustainability & Science as a Way of Knowing <b>Reaction Writing Assignment 1</b>	Dr. Sommer
Jan. 20	Population Growth, Consumption, and Net Primary Productivity	Dr. Sommer
Jan. 25	Biodiversity and the Global Extinction Crisis	Dr. Sommer
Feb. 27	Global Climate Change: the ecosystem perspective	Dr. Matt Hurteau
Feb. 1	TONH: Understanding the Work of Nature <b>Paper 1: draft 1</b>	Dr. Sommer
Feb. 3	Global Climate Change: natural & human causes of climate change	Dr. Darrel Kaufman
Feb. 8	Global Climate Change: past informs present	Dr. Scott Anderson
Feb. 10	Primary Scientific Literature & the 3 Papers assigned in this course	Dr. Sommer
Feb. 15	Energy: Biofuels	Dr. Egbert Schwarz
Feb. 17	Energy: Wind <b>Reaction Writing Assignment 2</b>	Tom Acker
Feb. 22	Energy and the Global Carbon Cycle	Dr. George Koch
Mar. 24	Energy: Solar	Ron Flood
Mar. 1	TONH: Appreciating Nature's Services <b>Paper 1: draft 2</b>	Dr. Sommer
Mar. 3	Sustainable Business Practices	Dr. Susan Williams
Mar. 8	Globalization	Dr. Zach Smith
Mar. 10	Fair Trade in the Global Economy <b>Paper 1: final version</b>	Dr. Jane Ginn
Mar. 15+17	SPRING BREAK	
Mar. 22	Sustainable Forest Management	Dr. Alex Finkral
Mar. 24	Designing Wildlife Corridors for an Urbanizing, Warming World	Dr. Paul Beier
Mar. 29	TONH: Wildlife Conservation and Emerging Infectious Diseases <b>Paper 2: draft 1</b>	Dr. Carol Chambers
Apr. 31	Wind Power in Practice	David Calley
Apr. 5	Paper Conservation in Practice	Steve Morrison
Apr. 7	Water Supply and Growing Demand	Tom Whitmer
Apr. 12	Community-based/sustainable Ag in Africa <b>Reaction Writing Assignment 3</b>	Dr. Carol Thompson
Apr. 14	Community-based/sustainable Ag in northern Arizona	Dr. Patrick Pynes
Apr. 19	Sustainability from a Hopi Perspective <b>Paper 2: draft 2</b>	Leigh Kuwanwisiwma
Apr. 21	The Politics of Cleaner Air	Dr. Bill Auberle
Apr. 26	Designed Communities <b>Reaction Writing Assignment 4</b>	Dr. James Sell
May 28	Community Building through Art	Dr. Shawn Skabelund
May 3	<i>A River Reborn</i> : cooperation in the face of environmental conflict <b>Paper 2: final version</b>	Dr. Sommer
May 5	A Balance of Interests	Dr. Sommer
May 10	FINAL class meeting: What have we discovered? (Tuesday, 12:30 p.m. - 2:30 p.m. in the regular classroom)	Dr. Sommer

**EXAMPLES of types of Guest Presenters:**

Dr. Tom Acker, Assoc. Professor of Mechanical Engineering, NAU  
 Dr. Scott Anderson, Professor of Environmental Sciences, NAU  
 Dr. Bill Auberle, Professor of Civil and Environmental Engineering, NAU  
 Dr. Paul Beier, Professor of Forestry, NAU  
 Dr. Doug Brown, Professor of Business Emeritus, NAU  
 David Calley, Founding CEO, Southwest Windpower  
 Dr. Carol Chambers, Professor of Forestry, NAU  
 Dr. Alex Finkral, Asst. Professor of Forestry, NAU  
 Ron Flood, Engineer, Arizona Public Service  
 Dr. Jane Ginn, Adjunct Professor of Business, NAU  
 Dr. Matt Hurteau, Asst. Research Professor of Biological Sciences, NAU  
 Dr. Darrel Kaufman, Professor of Geology, NAU  
 Dr. George Koch, Professor of Biological Sciences, NAU  
 Leigh Kuwanwisiwma, Cultural Preservation Officer, Hopi Tribe  
 Steve Morrison, Chief Engineer, SCA Tissue, 100% recycled paper products  
 Dr. Patrick Pynes, First Year Seminar Program, NAU  
 Dr. Egbert Schwartz, Assoc. Professor of Biological Sciences, NAU  
 Dr. James Sell, Adjunct Professor of Geography, Planning, & Recreation, NAU  
 Dr. Shawn Skabelund, Professor of Installation Art, NAU  
 Dr. Zach Smith, Professor of Politics and International Affairs, NAU  
 Dr. Stefan Sommer, Director of Education, Merriam-Powell Center for Environmental Research, NAU  
 Dr. Carol Thompson, Professor of Politics and International Affairs, NAU  
 Tom Whitmer, Manager of Statewide Water Planning, Arizona Dept. of Water Resources  
 Dr. Susan Williams, Assoc. Professor of Business, NAU

**Assessment of Student Learning Outcomes**

Evaluation of your progress in achieving the course learning outcomes will be based upon:

- 1) your participation in class discussions
- 2) your performance in 4 single-draft Written Reaction Assignments
- 3) your performance in 2 multiple-draft Papers

This Seminar will address the Mission of the Liberal Studies Program by exploring issues in the science of sustainability, one of the key challenges that our society will face in the coming years. We will focus on preparing students to live responsible, productive, and creative lives as citizens of a dramatically changing world. This Seminar will also challenge students to gain a deeper understanding of the natural environment, to explore the traditions and legacies that have created the dynamics and tensions that shape the world, to examine student's potential contributions to society, and to help students better determine their own places in that world.

We will assess the Student Learning Outcomes for FS 211

- describe, explain, and discuss the scientific basis of sustainable human and natural systems

- describe, explain, and discuss the vocabulary and concepts around the sustainability of human and natural systems (e.g., finite and renewable resources, environmental footprint, global commons, peak oil, environmental justice, global climate change)
- analyze and assess the role of human interactions with the environment and its relation to the root causes of many global problems

in the areas of Life Support Systems, Climate Change, Energy, Economics, Conservation, and Building a Culture of Sustainability through class discussion, in 4 single-draft Reaction Writing Assignments, and in 2 multiple-draft Papers.

As a Science distribution block course, we focus on addressing the Science Student Learning Outcomes of

- an understanding of a variety of physical and biological phenomena through the application of the scientific method
- an understanding of the basis and limits of contemporary scientific knowledge
- greater familiarity with important theories, concepts, and taxonomies that are central to the various science disciplines

through the scientific method. Outcomes will be assessed through class discussion, in 4 single-draft Reaction Writing Assignments, and in 2 multiple-draft Papers.

This course will demonstrate Critical Thinking

- 1) clearly articulating a position, 2) critically evaluating the truth of a statement, keeping in mind possible biases, 3) determining whether a conclusion is warranted based on the evidence provided

and will demonstrate Critical Thinking through the essential skill of Scientific Inquiry by

- 1) formulating testable hypotheses on the basis of observations, 2) obtaining and analyzing data to test (i.e., refute or support) hypotheses, and 3) explaining phenomena by means of accepted principles, theories, or laws

This will be accomplished through regular writing assignments and writing assignments that will involve multiple drafts. Specifically, outcomes will be assessed in 4 single-draft Reaction Writing Assignments and in 2 multiple-draft Papers.

## **Grading System**

Criteria for assessment are described below:

**Class Participation and Discussion (25%):** There will be two interactive lecture-discussion sessions each week. Questions and discussion are strongly encouraged during or after the lecture period. You will be given points for thoughtful contributions to the discussions. Some lectures will have assigned reading or other supplementary materials posted in BB Learn. You will be expected to read/view these materials in advance of that lecture and come prepared to answer questions and join in active discussion of the material. You are expected to actively join in every

discussion by formulating clear questions and making well thought out and clearly articulated contributions. If you do not attend class, you cannot receive credit for Class Participation and Discussion. During the week of February 1<sup>st</sup> to 4<sup>th</sup> and again during the last week of the semester, you will meet with the instructor to evaluate your own progress in both the quantity and quality of your oral contributions to the class.

2. **Written Reaction Assignments (25%):** Written Reaction assignments will be required that will be focused upon issues discussed in class. These written Reaction assignments will be assessed on the basis of knowledge, comprehension, analysis, synthesis, and evaluation of the material discussed in class. These will be brief writing assignments of 1-2 pages and details will be discussed further in class and supporting materials will be available in BB Learn.

3. **Multiple-Draft Papers (50%):** Two multiple-draft Papers will be assigned, each on a different science and sustainability topic of your choice. You will meet with the instructor to discuss and develop your topic. Drafts of the paper, returned with suggestions for improvement, should form the basis for changes in the subsequent draft of the assignment and the final version. The purpose of this assignment is to both demonstrate critical thinking and effective scientific writing through multiple-draft writing and learning the format of scientific writing.

### Grading System

Your course grade will be based on your total number of accumulated points.

- Points will come from class participation and writing assignments..
- See Table 1 for a summary of point sources.
- In general, the following percentages will correspond to letter grades:  
90-100% = A, 80-89% = B, 70-79% = C, 60-69% = D, <60% = F.

Table 1. Percentage breakdown of the source of points toward your classroom grade.

<u>Source:</u>	<u>Percentage of Final Grade</u>
Class Participation and Discussion	25 %
Written Reaction Assignments	25%
Multiple-Draft Papers	50%
<hr/>	
	100 %

*Details will be discussed further in class and posted in BB Learn.*

### Course policies

Attendance: Students are required to attend this course and attendance will be factored into your Class Participation and Discussion final grade as outlined above.

Late assignments: Reaction Writing assignments and Paper drafts/final versions submitted after the due date announced in class for each will be penalized 10% per day past the due date.

**Plagiarism & Cheating:** Plagiarism is any act of claiming the work of others as one's own. Both plagiarism and cheating are serious offenses in violation of NAU's "Academic Integrity" policy (see below) and can result in failing the course and even expulsion.

If you have **questions** about course material, assignments, or other course related subjects please contact me - the sooner the better - so that we can work things out.

## Northern Arizona University Policy Statements

### **SAFE ENVIRONMENT POLICY**

*NAU's Safe Working and Learning Environment Policy seeks to prohibit discrimination and promote the safety of all individuals within the university. The goal of this policy is to prevent the occurrence of discrimination on the basis of sex, race, color, age, national origin, religion, sexual orientation, disability, or veteran status and to prevent sexual harassment, sexual assault or retaliation by anyone at this university.*

*You may obtain a copy of this policy from the college dean's office or from the NAU's Affirmative Action website <http://home.nau.edu/diversity/>. If you have concerns about this policy, it is important that you contact the departmental chair, dean's office, the Office of Student Life (928-523-5181), or NAU's Office of Affirmative Action (928-523-3312).*

### **STUDENTS WITH DISABILITIES**

If you have a documented disability, you can arrange for accommodations by contacting Disability Resources (DR) at 523-8773 (voice) or 523-6906 (TTY), [dr@nau.edu](mailto:dr@nau.edu) (e-mail) or 928-523-8747 (fax). Students needing academic accommodations are required to register with DR and provide required disability related documentation. Although you may request an accommodation at any time, in order for DR to best meet your individual needs, you are urged to register and submit necessary documentation ([www.nau.edu/dr](http://www.nau.edu/dr)) 8 weeks prior to the time you wish to receive accommodations. DR is strongly committed to the needs of student with disabilities and the promotion of Universal Design. Concerns or questions related to the accessibility of programs and facilities at NAU may be brought to the attention of DR or the Office of Affirmative Action and Equal Opportunity (523-3312).

### **INSTITUTIONAL REVIEW BOARD**

*Any study involving observation of or interaction with human subjects that originates at NAU—including a course project, report, or research paper—must be reviewed and approved by the Institutional Review Board (IRB) for the protection of human subjects in research and research-related activities.*

*The IRB meets monthly. Proposals must be submitted for review at least fifteen working days before the monthly meeting. You should consult with your course instructor early in the course to ascertain if your project needs to be reviewed by the IRB and/or to secure information or appropriate forms and procedures for the IRB review. Your instructor and department chair or college dean must sign the application for approval by the IRB. The IRB categorizes projects into three levels depending on the nature of the project: exempt from further review, expedited review, or full board review. If the IRB certifies that a project is exempt from further review, you need not resubmit the project for continuing IRB review as long as there are no modifications in the exempted procedures.*

*A copy of the IRB Policy and Procedures Manual is available in each department's administrative office and each college dean's office or on their website: <http://www.research.nau.edu/compliance/irb/index.aspx>. If you have questions, contact the IRB Coordinator in the Office of the Vice President for Research at 928-523-8288 or 523-4340.*

### **ACADEMIC INTEGRITY**

*The university takes an extremely serious view of violations of academic integrity. As members of the academic community, NAU's administration, faculty, staff and students are dedicated to promoting an atmosphere of honesty and are committed to maintaining the academic integrity essential to the education process. Inherent in this commitment is the belief that academic dishonesty in all forms violates the basic principles of integrity and impedes learning. Students are therefore responsible for conducting themselves in an academically honest manner.*

*Individual students and faculty members are responsible for identifying instances of academic dishonesty. Faculty members then recommend penalties to the department chair or college dean in keeping with the severity of the violation. The complete policy on academic integrity is in Appendix G of NAU's Student Handbook <http://www4.nau.edu/stulife/handbookdishonesty.htm>.*

#### **ACADEMIC CONTACT HOUR POLICY**

*The Arizona Board of Regents Academic Contact Hour Policy (ABOR Handbook, 2-206, Academic Credit) states: "an hour of work is the equivalent of 50 minutes of class time...at least 15 contact hours of recitation, lecture, discussion, testing or evaluation, seminar, or colloquium as well as a minimum of 30 hours of student homework is required for each unit of credit."*

The reasonable interpretation of this policy is that for every credit hour, a student should expect, on average, to do a minimum of two additional hours of work per week; e.g., preparation, homework, studying.

#### **SENSITIVE COURSE MATERIALS**

If an instructor believes it is appropriate, the syllabus should communicate to students that some course content may be considered sensitive by some students.

"University education aims to expand student understanding and awareness. Thus, it necessarily involves engagement with a wide range of information, ideas, and creative representations. In the course of college studies, students can expect to encounter—and critically appraise—materials that may differ from and perhaps challenge familiar understandings, ideas, and beliefs. Students are encouraged to discuss these matters with faculty."