Environmental Planning and Policy
GEOG 466/666
Syllabus

Instructor: Dr. Scott D. Bassett
Office: Mackay Science 223
Phone: 784-1434
E-mail: sbassett@unr.edu
Office Hours: T and H 10:30-11:30

Course Description
Environmental planning is the practice of urban planning framed within the context of environmental concerns. Emphasis throughout the course is placed on a diverse array of environmental impact assessments as the consequence of land use change. Hydrology, ecology, air quality, geology, and soils will be described within a planning context and framed within the concept of sustainable development. Technologies used to measure or assess the scientific disciplines described are described. A comparison among the various technologies as to their relative effectiveness in different settings is provided. Heavy emphasis is placed on the juxtaposition of land uses and the potential effects of future land use change.

Catalog Description
Planning framed within the context of environmental concerns. Emphasis on diverse environmental impacts of land use change.

Prerequisites
• Completion of Core Curriculum Objectives: #1 Effective Composition & Communication, #2 Quantitative Reasoning, and #3 Critical Analysis & Use of Information
• Junior or Senior standing

Course Objective and Goals
In this course students will meet Silver Core Curriculum Objective #9 Science, Technology & Society.
Core Objective 9 (Science, Technology & Society): Students will be able to connect science and technology to real-world problems by explaining how science relates to problems of societal concern; be able to distinguish between sound and unsound interpretations of scientific information; employ cogent reasoning methods in their own examinations of problems and issues; and understand the applications of science and technology in societal context.
Goal 1. Provide a description of the history of environmental planning and its origins.
Goal 2. Provide a knowledge base for how environmental impact assessments may be made at a regional scale, larger than site planning scale.
Goal 3. Familiarize students with current up to date environmental planning and policy practices within an urban context.

Student Learning Outcomes
Students will be able to:
SLO 1: Describe an environmental system along with an understanding of how an environmental impact assessment may be conducted.

SLO 2: Convey through written work an argument on how to assess environmental resources using scientific information and technology with an element of human interaction important to society at large. (CO 9)

SLO 3: Demonstrate, through test essay response, an understanding of the linkage among policy practices and environmental consequences using methods accepted by the scientific community.

Assessment of Student Learning Outcomes

- SLO 2 is evaluated based on the completed Systems Design Paper. The paper must demonstrate how environmental planning techniques, specifically technology, are used in conjunction with a scientific field to address a potential societal concern through quantitative measures. Assessment of the responses will be done using the guideline described on the UNR Core Objective 9: Science, Technology & Society webpage which states: “writing in response to case studies that requires students to explain and/or analyze the impact or influence of science and/or technology in 1 or more social contexts (e.g., local, regional, national, international)”.

SLO 2 Evaluation Rubric:

<table>
<thead>
<tr>
<th>Exceeds Expectations</th>
<th>Meets Expectations</th>
<th>Does Not Meet Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 (Exemplary)</td>
<td>3 (Good)</td>
<td>2 (Developing)</td>
</tr>
</tbody>
</table>

Understanding of use of case study to analyze the impact or influence of science on decision making

- Demonstrates a detailed evidence-based understanding of how science and technology is used to address an environmental issue important to human populations and society at large; analyzes and compares measures.
- Demonstrates an understanding of how science and technology is used to address an environmental issue important to human populations; describes the specific case study using descriptive measures.
- Demonstrates a partial understanding of how science and technology is used to address an environmental issue important to human populations; describes a specific case study.
- Demonstrates a minimal understanding of how science and technology is used to address an environmental issue important to human populations; cannot describe a case study.

Required Text

Additional Readings (not required)

Assignments/Exams
Two exams will be prepared to test individual student knowledge on the material presented in class and present within the required book. A single paper in the form of a systems design and background material to support your systems design is required for the class. Each systems design paper must include scientific information to describe the system, technology that may be used to assess the system and the societal value of the system. The paper topic should be approved by the instructor. Papers should be 6 to 8 pages in length with 1.5 line spacing and 1 inch margins. Citation methods for the paper should follow commonly used practices within a student’s discipline and all references should be cited consistently using the same guidelines.

Policy Regarding Late Work and Make-up Exams
Make-up exams will not be given unless prior-to-the-exam approval has been given. Accommodations will be made for medical, athletics and disabilities. The paper topic, outline, and final paper must be handed in on the due date. No late assignments will be accepted.

Summary Grading Chart

<table>
<thead>
<tr>
<th>Exam/Assignments</th>
<th>Undergrad (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam (midterm and final each 100 points)</td>
<td>200 (64.5%)</td>
</tr>
<tr>
<td>Assignment 1: Paper-Systems Design Topic</td>
<td>10 (3.2%)</td>
</tr>
<tr>
<td>Assignment 2: System Design Paper</td>
<td>100 (32.3%)</td>
</tr>
<tr>
<td>Total</td>
<td>310 (100%)</td>
</tr>
</tbody>
</table>

Grades

| 93-100% (4.0) | = A | 90-92.9% (3.7) | = A- |
| 87-89.9 (3.3) | = B+| 83-86.9 (3.0) | = B |
| 80-82.9 (2.7) | = B-| 77-79.9 (2.3) | = C+|
| 73-76.9 (2.0) | = C | 70-73.9 (1.7) | = C-|
| 67-69.9 (1.3) | = D+| 63-66.9 (1.0) | = D |
| 60-63.9 (0.7) | = D-| Below 60 (0.0)| = F |

Lecture Attendance Policy: All students must attend class. The instructor and teaching assistant are not responsible for describing unfamiliar classroom material to students who selectively do not attend class.

Tardiness: Please be on time. Coming late or leaving early is a sign of disrespect, and it disturbs everybody in the classroom. If you intend on leaving class early please let me know at the start of class so I expect it.

Digital Devices: No digital devices are permitted in class except those used for note taking. Therefore, during lecture time you cannot (1) use a cell phone-if you must have your phone on to wait for a call and it comes in, please quietly pick up your stuff and leave the room to answer, (2)
tap on your laptop to such a degree that it disturbs other students, and (3) listen to music-remove those earpieces before entering the class.

**Academic Dishonesty:** Cheating, plagiarism or otherwise obtaining grades under false pretenses constitute academic dishonesty according to the code of this university. Academic dishonesty will not be tolerated and penalties can include canceling a student's enrollment without a grade, giving an F for the course or for the assignment. For more details, see the [University of Nevada, Reno General Catalog](https://www.unr.edu).

**Disability Services:** Any student with a disability needing academic adjustments or accommodations is requested to speak with me or the Disability Resource Center (Thompson Building, Suite 101) as soon as possible to arrange for appropriate accommodations.

**Academic Success Services:** Your student fees cover usage of the Math Center (784-4433 or [www.unr.edu/mathcenter/](http://www.unr.edu/mathcenter/)), Tutoring Center (784-6801 or [www.unr.edu/tutoring/](http://www.unr.edu/tutoring/)), and University Writing Center (784-6030 or [http://www.unr.edu/writing_center/](http://www.unr.edu/writing_center/)). These centers support your classroom learning; it is your responsibility to take advantage of their services. Keep in mind that seeking help outside of class is the sign of a responsible and successful student.

**Audio and Video Recording:** Surreptitious or covert video-taping of class or unauthorized audio recording of class is prohibited by law and by Board of Regents policy. This class may be videotaped or audio recorded only with the written permission of the instructor. In order to accommodate students with disabilities, some students may be given permission to record class lectures and discussions. Therefore, students should understand that their comments during class may be recorded.
| Week 1 | Aug 26 | **Lecture:** Humans and the Environment  
**Goals:** Develop an understanding of the human-environment relationship  
**Readings:** Randolph Chapter 1 |
| Week 2 | Sept 2 | **Lecture:** Environmental Planning  
**Goals:** Understand what environmental Planning is  
**Readings:** Randolph Chapters 2 & 3 |
| Week 3 | Sept 9 | **Lecture:** Environmental Collaboration and Data  
**Goals:** Familiarization with public participation and land conservation techniques  
**Readings:** Randolph Chapters 4 & 5 |
| Week 4 | Sept 16 | **Lecture:** Soils, Ag, and Land Use  
**Goals:** How Soils, Ag and Land Use interact and may be assessed  
**Readings:** Randolph Chapters 6 |
| Week 5 | Sept 23 | **Lecture:** Surface Water and Storm Water  
**Goals:** Understand Surface water and storm water assessment methods  
**Readings:** Randolph Chapter 7 & 8 |
| Week 6 | Sept 30 | **Lecture:** Groundwater  
**Goals:** Role of Groundwater in regions and why concerned  
**Readings:** Randolph Chapter 9 |
| Week 7 | Oct 7 | **Lecture:** Review and Exam  
**Goals:** Test knowledge base  
**Readings:** None |
| Week 8 | Oct 14 | **Lecture:** Ecology, Forestry, Wetlands and Wildlife  
**Goals:** Learn about the role of the Biotic environment  
**Readings:** Randolph Chapter 10 & 11 |
| Week 9 | Oct 21 | **Lecture:** Energy, Air quality and Climate Change  
**Goals:** Understand influence of humans on Climate or Not  
**Readings:** Randolph Chapter 12 |
| Week 10 | Oct 28 | **Lecture:** Natural Hazards  
**Goals:** Know what we mean by “Natural” hazard  
**Readings:** Randolph Chapter 13 |
| Week 10 | Nov 4 | **Lecture:** Integration Methods & Land Conservation  
**Goals:** Develop an understanding of how to integrate knowledge  
**Readings:** Randolph Chapter 14, 15 |
| Week 11 | Nov 11 | **Lecture:** Design with Nature/Veterans Day  
**Goals:** Learn how to design with Nature  
**Readings:** Randolph chapter 16, Assignment 1 due |
| Week 12 | Nov 18 | **Lecture:** Smart Growth & Governmental Role  
**Goals:** Understand smart growth and the government’s role  
**Readings:** Randolph chapter 17 & 18 |
| Week 13 | Nov 25 | **Lecture:** Integrative Management./Thanksgiving  
**Goals:** Integrate humans and natural systems  
**Readings:** Randolph chapter 19 |
| Week 14 | Dec 2 | **Lecture:** Integrative Management Continued  
**Goals:** Integrate humans and natural systems  
**Readings:** Randolph chapter 19, Assignment 2 due |
| Week 15 | Dec 9 | **Lecture:** Class Summary  
**Goals:** Class synthesis  
**Readings:** None, |
| Finals Week | | **Final will be held from 8:00-10:00am on December 11th** |
Assignment 1:

Assignment 1
Systems Design Paper Topic
GEOG (466/666)
Due: Nov 13th

Objective: To identify environmental policy issues addressed for your project or paper topic.
Task: You have been assigned to scour the internet, newspapers and other documents to discover what are the potential environmental planning policy issues that are of interest to your systems design paper topic. Potential topics around which environmental planning issues may be constructed include, but are not limited to biodiversity, sustainability, water quality, water quantity, hazard assessment, etc…

Homework to hand in: To illustrate you have completed the assigned task you must hand in a hard copy of your topic and a background description of the issue(s) addressed. (send in a digital copy within one day of the assignment due date). References must be clearly cited.

Grading: The overall grade for this assignment will be based on the background research into your systems design paper topic and the overall value of references used to identify the issues surrounding your topic. In general, if you clearly articulate a topic and the issue(s) you will receive at least 8 points on this assignment. The last 2 points will be assigned according to how you compare with your peers.
Assignment 2:

**ASSIGNMENT 2**

**Design a System or Component thereof**

**GEOG (466/666)**

**Due: December 4th**

**Objective:** Use scientific information to design an environmental system based on sound scientific practices via the use of technology which can be used to assess a potential planning design important to society.

**Task:** You are tasked for designing a system that could be used for informing or evaluating a plan. The system may be focused (i.e. deer breeding habitat preference) or general (i.e. water supply). The design should clearly state all assumptions and contain specific quantitative (i.e. buffer distances) or qualitative (how do people feel?) parameters. Students should consider doing this assignment based on the issue(s) presented in assignment 1 thereby allowing the potential inclusion of the system design into your final project/paper. The system’s design must highlight the technology within a scientific field to address a societal interest.

**Homework to hand in:** A two to five page document describing your system design. You may and should use issues derived from assignment 1. Be as specific as possible. As with prior assignments, please hand in a digital copy.

**Grading:** In general, if your document contains a well thought out line of reasoning supported by literature (i.e. specific references) in six to eight pages you will receive a minimum grade of 85. A system design with assumptions is fine; however, assumptions must be clearly stated. The last 15 points will be based on how well you convey your issues to the reader.

**Brief Example:** (Jaguar Potential Habitat)—Missing from the example is why is the Jaguar important from an environmental planning perspective and through implementation of this assessment what it could mean for the future of the species.

The jaguar, *Panthera onca*, is the largest cat native to the Western Hemisphere, ranging in weight from 68 to 100kg). Jaguar habitat is diverse and varies with location. At the southern and northern edges of their range, they inhabit more arid areas that include oak-pine woodlands and riparian corridors. In arid locales they appear to prefer lower mountain areas. Highly adaptable to a variety of vegetation communities, the jaguar’s potential habitat appears to be related to their prey base (Oliviera 1994). The jaguar has gone extinct through much of its habitat and as such many NGOs and other non-profits view protection of the remaining habitat as an important societal concern given the extinction of many species around the world.

A large carnivore, the jaguar feeds on a variety of prey, which consists of peccaries and other large mammals, turtles, and fish. Livestock may be taken, creating a problem for ranchers. Along the U.S./Mexico border, javelina and deer are mainstays of their diet. As an ambush predator, the jaguar requires adequate cover. When hunting, it’s uniquely patterned fur provides excellent camouflage. The jaguar may stalk prey or hide and wait for the opportunity to pounce from an area of dense cover (Arizona Game and Fish 1999; Taber et al. 1997).
Jaguars must range over large areas. Their average home range is 54.3 sq km during the dry season. Dry season area requirements should be used in the potential habitat model because of the arid conditions of the study region. Daily movements within this range vary in accordance with the abundance of prey species. Typical jaguar habitat, driven by the habitat requirements of prey species, consists of a mosaic of large trees consisting of conifers, oaks, or cottonwoods surrounded by or interwoven within relatively open areas. Forest areas serve as cover from which the jaguar may pounce and catch its prey, while open areas provide foraging areas where prey may be located. The jaguar will carry its prey up to 185m to a tree for consumption (Hoogesteijn and Mondolfi 1992; Crawshaw and Quigley 1991).

The large habitat area required by individual jaguars creates difficulties. Most potential habitat exists within lower elevations of mountainous areas. Elevations above 2000 m are less favorable for habitation. A single montane area is not sufficient to guarantee the survival of the species. Adequate lowland corridors through which jaguars may move between mountain ranges in safety are essential. Free movement through large areas is required for breeding. With the presence of people in the lowlands, movement corridors are disrupted, and jaguars are seen as a threat. Ranchers know that jaguars take livestock and traditionally have shot jaguars on sight. A change of attitude toward the jaguar, especially in Mexico, must come if the species is to survive (Hoogesteijn and Mondolfi 1992).

Potential jaguar habitat includes two parts, cover habitat and feeding habitat. All potential habitat is below 2000 m elevation. Cover habitat contains large trees to allow the jaguar to consume its prey in peace and sufficient density of vegetation to provide cover. Feeding habitat includes areas of open vegetation close to cover habitat. Feeding habitat must be within 185 m of cover habitat. The combined area of feeding and cover habitat must exceed 54.3 sq km for a single individual to survive. Smaller areas should be eliminated as potential habitat unless they are connected by movement corridors. Movement corridors represent areas connected by cover habitat. Cover habitat corridors should be located away from human residences. Although specific distances from residences are unknown a potential cover habitat corridor located at least 100 m from a residence is assumed to be distant enough. Furthermore, any corridor at least 10 m in width would easily support movement of a jaguar.

Estimations of current and future locations of jaguar habitat would require GIS technology to locate and determine the extent of jaguar habitat. Additionally, the health of vegetation within these habitats could be assessed using remote sensing technologies to determine the quality of grasslands which prey species feed upon. The integration of the scientific knowledge about habitat in conjunction with spatial technologies would aid in the interpretation of where, why and how jaguars may move or live within an area. Threats posed by human disturbance could be assessed based on the juxtaposition of human uses and jaguar habitat.

The jaguar itself is a single species that may be representative of the health of an environmental system through its dependence on an array of prey species and large area required for survival. Loss or gains in potential jaguar habitat would be reflective of changes in habitat conditions above. These losses or gains would be indicative of the overall environmental health of natural areas.

**Literature Cited**

Arizona Game and Fish 1999. *The Arizona Game and Fish Department’s Jaguar Page.*

[www.gf.state.az.us/frames/fish-wild/jaguar.htm](http://www.gf.state.az.us/frames/fish-wild/jaguar.htm)

