LONG SIGNATURE SHEET

Proposal Number: GES 02-11-12

UNC CHARLOTTE Proposal Title: Proposal to establish two new courses: GEOG 5215 Urban Ecology and GEOG 5216 Landscape Ecology

Originating Department: Geography and Earth Sciences

TYPE OF PROPOSAL: UNDERGRADUATE_____ GRADUATE__X___

DATE RECEIVED	DATE CONSIDERED	DATE FORWARDED	ACTION	SIGNATURES
2/11/12	2/24/12	7/2/12	Approved	DEPARTMENT CHAIR Humpfillef. Assoc. CHAIR. [Craig Allan]
			Approved	COLLEGE CURRICULUM COMMITTEE CHAIR
		9/27/12	Approved	[print name here]
		10/1/12	Approved	[print name here]
			Approved	GENERAL EDUCATION (for General Education courses) [print name here]
			Approved	UNDERGRADUATE COURSE & CURRICULUM COMMITTEE CHAIR (for undergraduate courses)
7-3-12	9-4-12	4-16-13	Approved	GRADUATE COUNCIL CHAIR (for graduate courses) Kob Koy Mc Aregos
			Approved	FACULTY GOVERNANCE ASSISTANT (Faculty Council approval on Consent Calendar)
				FACULTY EXECUTIVE COMMITTEE (if decision is appealed)

Revised 08/01/11 OAA/lz



LONG FORM COURSE AND CURRICULUM PROPOSAL

*To: Graduate Council

From: Sara Gagne

Date: June 26, 2012

Re: New course proposals: GEOG 5215 Urban Ecology; GEOG 5216 Landscape Ecology

The Long Form is used for major curriculum changes. Examples of major changes can include: creation of a new major, creation of a new minor, creation of a new area of concentration, or significant changes (more than 50%) to an existing program (Note: changing the name of an academic department does not automatically change the name(s) of the degree(s). The requests must be <u>approved</u> separately by the Board of Governors.)

*Proposals for undergraduate courses should be sent to the Undergraduate Course and Curriculum Committee Chair. Proposals related to both undergraduate and graduate courses, (e.g., courses co-listed at both levels) must be sent to both the Undergraduate Course and Curriculum Committee and the Graduate Council. University of North Carolina at Charlotte

New Graduate Course

Course and Curriculum Proposal from Geography and Earth Sciences

I. Title: Establishment of two new graduate courses: Urban Ecology; and Landscape Ecology

II. CONTENT OF PROPOSALS

- A. PROPOSAL SUMMARY.
 - <u>SUMMARY</u>. The Department of Geography and Earth Sciences proposes to add two new courses to the graduate curriculum: GEOG 5215 and GEOG 5216.

B. JUSTIFICATION.

1. Identify the need addressed by the proposal and explain how the proposed action meets the need.

The Department of Geography and Earth Sciences proposes to add two new courses to the graduate curriculum: GEOG 5215 Urban Ecology and GEOG 5216 Landscape Ecology. These courses will form an important component of the Department's renewed focus on humanenvironmental interaction. GEOG 5215 will focus on urban ecosystems and the interplay of physical, biological, and human systems with special reference to urban sustainability. GEOG 5216 also emphasizes human-environmental interaction with special reference to temporal and spatial global environmental problems.

2. Discuss prerequisites/corequisites for course(s) including classstanding.

Prerequisites include graduate standing. There are no other prerequisites for GEOG 5215; a basic understanding biology is helpful for GEOG 5216.

3. Demonstrate that course numbering is consistent with the level of academic advancement of students for whom it is intended.

Both courses are cross-listed at the 4000-level. The 5000-level designation makes the course available to Master's students and is thus

appropriately numbered.

4. In general, how will this proposal improve the scope, quality and/or efficiency of programs and/or instruction?

Human-Environmental interaction is one cornerstone of Geography as a discipline. In the last several years, the Department of Geography and Earth Sciences has devoted significant resources and hired faculty in this area of study to broaden its offerings and provide added depth in ecological processes. Further, both ecological studies and humanenvironmental interaction are major issues at local, regional and international scales. The courses address each of these in addition to strengthening the Department's existing focus on urban and developing areas/regions.

C. IMPACT.

 What group(s) of students will be served by this proposal? (Undergraduate and/or graduate; majors and/or non-majors, others? Explain). Describe how you determine which students will be served.

These courses will primarily serve Master's-level students in Geography MA program and Earth Science MS program. It will also attract a limited number of students from Biology as their focus has shifted away from ecology, generally. Both courses have been previously offered as Topics courses which serves as the basis for this determination.

2. What effect will this proposal have on existing courses and curricula?a. When and how often will added course(s) be taught?

Both courses will be taught annually in the spring semester.

b. How will the content and/or frequency of offering of other courses be affected?

Other courses will not be affected. Both proposed courses will be taught by Dr. Sara Gange who was hired expressly for this purpose.

c. What is the anticipated enrollment in course(s) added (for credit and auditors)?

We anticipate graduate enrollment of 5-10 students in each course. Additional undergraduate students will also be served. **d**. How will enrollment in other courses be affected? How did you determine this?

Based on past experience, we do not expect significant enrollment impacts on other courses. Neither of the two proposed courses are required of Geography MA students or Earth Science MS students.

e. If course(s) has been offered previously under special topics numbers, give details of experience including number of times taught and enrollment figures.

Urban Ecology has been taught twice. In 2011 it had no graduate students; in 2012 it had 5 graduate students enrolled.

Landscape ecology has been offered once and had 2 graduate students enrolled.

f. Identify other areas of catalog copy that would be affected, including within other departments and colleges (e.g., curriculum outlines, requirements for the degree, etc.)

No changes to departments' or colleges' curriculum, outlines, or degree requirements are anticipated.

III. RESOURCES REQUIRED TO SUPPORT PROPOSAL.

When added resources are not required, indicate "none". For items which require "none" explain how this determination was made.

A. <u>PERSONNEL</u>. Specify requirements for new faculty, part-time teaching, student assistant and/or increased load on present faculty. List by name qualified faculty members interested in teaching the course(s).

These courses will not require new personnel for their offering. They will be taught by an existing faculty member, Dr. Sara Gagne, as part of her regular course offerings. These courses, therefore, do not affect other course offerings in the Department. They could also be taught by Dr. Sandra Clinton if needed.

B. PHYSICAL FACILITY

Current facilities and classroom space in the Department of Geography and Earth Sciences are sufficient to conduct this course.

C. EQUIPMENT AND SUPPLIES

Equipment and supplies required for this course are currently available in the Department of Geography and Earth Sciences and are provided under its regular operating budget.

D. <u>COMPUTER.</u> Specify requirements for computer usage by students and/or faculty, and include an assessment of the adequacy of computing resources by Computing Services.

Computer facilities required for this course are currently available in the Department of Geography and Earth Sciences and are provided under its regular operating budget.

E. <u>AUDIO-VISUAL</u>. Specify requirements for audio and/or visual equipment and media production services from Media Services.

Audio-Visual facilities required for this course are currently available in the Department of Geography and Earth Sciences and are provided under its regular operating budget.

F. <u>OTHER RESOURCES</u>. Specify and estimate cost of other new/added resources required, e.g., travel, communication, printing and binding.

No other resources are required.

G. <u>SOURCE OF FUNDING</u>. Indicate source(s) of funding for new/additional resources required to support this proposal.

None necessary.

IV. CONSULTATION WITH THE LIBRARY AND OTHER DEPARTMENTS OR UNITS

A. <u>LIBRARY CONSULTATION</u>. Indicate written consultation with the Library Reference Staff at the departmental level to ensure that library holdings are adequate to support the proposal prior to its leaving the department. (Attach copy of <u>Consultation on Library Holdings</u>).

Library consultation dated 06/07/12 indicates library holdings for both courses are adequate. See attached consultation for GEOG 4215 and GEOG 4216.

B. <u>CONSULTATION WITH OTHER DEPARTMENTS OR UNITS</u>. List

departments/units consulted in writing and dates consulted. Summarize results of consultation and attach correspondence. Provide information on voting and dissenting opinions (if applicable).

N/A

V. INITIATION, ATTACHMENTS AND CONSIDERATION OF THE PROPOSAL

ORIGINATING UNIT. Briefly summarize action on the proposal in the originating unit including information on voting and dissenting opinions.

The Department of Geography and Earth Sciences received this proposal and passed it unanimously on September 16, 2011.

B. <u>ATTACHMENTS</u>

A.

1. <u>CONSULTATION:</u> Attach relevant documentation of consultations with other units.

N/A

 <u>COURSE OUTLINE</u>: For undergraduate courses attach course outline(s) including basic topics to be covered and suggested textbooks and reference materials with dates of publication.

N/A

3. <u>SYLLABUS</u>: For Graduate Courses attach a course syllabus. Please see <u>Boiler Plate for Syllabi for New/Revised Graduate Courses</u>.

See Attached

4. <u>PROPOSED CATALOG COPY</u>: Copy should be provided for all courses in the proposal. Include current subject prefixes and course numbers, full titles, credit hours, prerequisites and/or corequisites, concise descriptions, and an indication of when the courses are to be offered as to semesters and day/evening/weekend. Copy and paste the <u>current catalog copy</u> and use the Microsoft Word "track changes" feature (or use "strikethrough" formatting in red text for text to be deleted, and adding and highlighting any new text in blue font).

GEOG 5215. Urban Ecology. (3) An introduction to the emerging field of urban ecology. This course will explore the biological, physical and social components of the urban ecosystem at local, regional and global scales. Emphasis on the interplay among components and the sustainability of cities. One three-hour lecture per week. Cross-listed as GEOG 4215. (Spring)

GEOG 5216. Landscape Ecology. (3) An introduction to landscape ecology, the study of the effects of spatial pattern on ecological processes. Emphasis on the application of broad temporal and spatial perspectives to solving global environmental problems. One three-hour lecture per week. Cross-listed as GEOG 5216 (Spring)

- *a*. For a new course or revisions to an existing course, check all the statements that apply:
- X This course will be cross listed with another course.
- _____ There are prerequisites for this course.
- _____ There are corequisites for this course.
- _____ This course is repeatable for credit.
- _____ This course will increase/decrease the number of credits hours currently offered by its program.
- _____This proposal results in the deletion of an existing course(s) from the degree program and/or catalog.

For all items checked above, applicable statements and content must be reflected in the proposed catalog copy.

If overall proposal is for a new degree program that requires approval from General Administration, please contact the <u>facultygovernance@uncc.edu</u> for consultation on catalog copy.

 <u>ACADEMIC PLAN OF STUDY</u>: Please indicate whether the proposed change will impact an existing Academic Plan of Study. If so, provide an updated Academic Plan of Study in template format (Academic Plan of Study templates can be found online at provost.uncc.edu/resources-and-reports).

These courses will not impact an existing Academic Plan of Study.

GEOG/ESCI 4000/5000 Landscape Ecology

Spring 2013

Meeting time: Wednesday, 2 – 4h45pm Location: McEniry 405 Credits: 3 Course website: Moodle

Instructor: Dr. Sara Gagné Office: McEniry 319 E-mail: sgagne@uncc.edu Office hours: Wednesday, 12h30 pm – 1h30 pm, or by appointment. Please use your UNCC e-mail address to contact me. I will not respond to e-mails from other addresses.

Teaching assistant: Stuart Wine Office: 406 E-mail: swine@uncc.edu Office hours: Tuesday, 1 – 2 pm, or by appointment.

Course objectives

This course is intended as an introduction to the field of landscape ecology, the study of the interaction between spatial patterning and ecological processes. We will explore the theories and principles underlying the major themes in landscape ecology and delve into the applied aspects of the science. Lectures will be complemented by group discussions of a weekly reading. Readings have been selected to provide you with a thorough understanding of the topics covered in lecture and/or to be representative of current research. Weekly discussions and short assignments as well as a final review paper and presentation will help to sharpen your critical-thinking and communication skills.

Assessment

Attendance incl. participation in discussions (1% x 9)	9%
Summary paragraphs (maximum 350 words) and questions (2% x 9)*	18%
Post-discussion assessments (If you had to schedule a follow-up discussion,	
what issue raised by the class would you consider and why?)**	
(maximum 350 words) (2% x 9)	18%
Habitat fragmentation in-class exercise	5%
Debate position statement ***	15%
Final exam (Take-home questions, written during the final exam period)	35%
	100%

******To be submitted by 5 pm the Tuesday before a discussion

** To be submitted by 5 pm the Friday following a discussion. Your answer must be supported by at least three references from the primary literature.

*****Due April 17th, at the beginning of class.**

<u>Graduate students:</u> The assessment above will constitute 70% of your grade for the class. The remaining 30% will come from a literature review paper (20%) and presentation (10%).

Grading scheme

А	90-100%	Excellent
В	80-89%	Good
С	70-79%	Fair
D	60-69%	Passing
F	<60%	Failing

Graduate grading scheme

А	Commendable
В	Satisfactory
С	Marginal
U	Unsatisfactory

Late policy

Deadlines for submission of work are clearly indicated in this syllabus. Late submissions will be accepted and graded according to the following schedule: work submitted up to 24 hours after the deadline will receive a 25% penalty; work submitted between 24 and 48 hours after the deadline will receive a 50% penalty; and work submitted more than 48 hours after the deadline will not be accepted.

UNC Charlotte Code of Student Responsibility

You are expected to observe the UNC Charlotte Code of Student Responsibility (see the current Undergraduate Calendar at http://catalog.uncc.edu/undergraduate-catalogs/current and http://legal.uncc.edu/policies/up-406).

Electronic devices (cell phones, laptops, iPads, etc.) are not permitted in class. Please refrain from disrupting the learning environment of the class by arriving late, leaving early, or talking during a lecture (unless you are asking the instructor a question).

UNC Charlotte Code of Student Academic Integrity

You are expected to observe the UNC Charlotte Code of Student Academic Integrity (see the current Undergraduate Calendar at http://catalog.uncc.edu/undergraduate-catalogs/current and http://legal.uncc.edu/policies/up-407). The Code prohibits cheating, the fabrication and falsification of information, multiple submission of the same work for credit, plagiarism, the abuse of academic materials, and complicity in academic dishonesty.

If you are unclear as to what constitutes a violation of the Code, please see the TA or me during office hours.

Students with disabilities

If you have a disability for which you wish to receive academic accommodations, please provide me with a letter of accommodation from the Office of Disability Services at the beginning of the semester. For more information about disability services go to <u>http://ds.uncc.edu/</u>.

Readings

- Cushman, S. A., E. L. Landguth, and C. H. Flather. 2012. Evaluating the sufficiency of protected lands for maintaining wildlife population connectivity in the U.S. northern Rocky Mountains. *Diversity and Distributions* **18:** 873–884.
- Dorrough, J., and J. E. Ash. 1999. Using past and present habitat to predict the current distribution and abundance of a rare cryptic lizard, *Delma impar* (Pygopodidae). *Australian Journal of Ecology* **24:** 614–624.
- Fahrig, L. 2003. Effects of habitat fragmentation on biodiversity. *Annual Review of Ecology, Evolution, and Systematics* **34:** 487–515.
- Fahrig, L., J. Baudry, L. Brotons, F. G. Burel, T. O. Crist, R. J. Fuller, et al. 2011. Functional landscape heterogeneity and animal biodiversity in agricultural landscapes. *Ecology Letters* 14: 101-112.
- Ries, L., and T. D. Sisk. 2008. Butterfly edge effects are predicted by a simple model in a complex landscape. *Oecologia* **156**: 75–86.
- Rodewald, A. D., L. J. Kearns, and D. P. Shustack. 2011. Anthropogenic resource subsidies decouple predator–prey relationships. *Ecological Applications* **21**: 936-943.
- Rytwinski, T., and L. Fahrig. 2011. Reproductive rate and body size predict road impacts on mammal abundance. *Ecological Applications* **21:** 589-600.
- Tinker, D. B., C. A. C. Resor, G. P. Beauvais, K. F. Kipfmueller, C. I. Fernandes, and W. L. Baker. 1998. Watershed analysis of forest fragmentation by clearcuts and roads in a Wyoming forest. *Landscape Ecology* 13: 149–165.
- Tittler, R., C. Messier, and A. Fall. 2012. Concentrating anthropogenic disturbance to balance ecological and economic values: applications to forest management. *Ecological Applications* 22: 1268-1277.
- Turner, M. G., D. B. Tinker, W. H. Romme, D. M. Kashian, and C. M. Litton. 2004. Landscape patterns of sapling density, leaf area, and aboveground net primary production in postfire lodgepole pine forests, Yellowstone National Park (USA). *Ecosystems* 7: 751-775.

SCHEDULE (subject to change)

Week	Date	Торіс
1	Jan 9	Introduction to course
		What is landscape ecology?
2	Jan 16	NO CLASS
3	Jan 23	How is landscape structure quantified? Discussion (Tinker et al. 1998)
4	Jan 30	An ecological primer for the rest of the course The issue of scale
5	Feb 6	Habitat fragmentation
6	Feb 13	Habitat edges
7	Esh 20	Discussion (Ries & Sisk 2008)
1	Fe0 20	Discussion (Cushman et al. 2012)
8	Feb 27	Landscape change
		Discussion (Dorrough & Ash 1999)
9	March 6	Spring Recess – NO CLASS
10	March 13	Modeling complex landscapes Discussion (Tittler et al. 2012)
11	March 20	Ecosystem processes in the landscape Discussion (Turner et al. 2004)
12	March 27	The ecology of agricultural landscapes
13	April 3	Discussion (Fahrig et al. 2011) Road ecology
14	April 10	Discussion (Rytwinski & Fahrig 2011) Urban landscape ecology
	ľ	Discussion (Rodewald et al. 2011)
15	April 17	Landscape planning
	•	Corridors debate POSITION STATEMENT DUE IN CLASS
16	April 24	Wrap-up and graduate student presentations

The final exam period is Wednesday May 8th between 2 and 4:30 pm.

GEOG/ESCI 4000/5000 Urban Ecology

Spring 2013

Lectures: Wednesday, 9h30 am – 12h15pm Location: McEniry 405 Credits: 3 Course website: Moodle

Instructor: Dr. Sara Gagné Office: McEniry 319 E-mail: sgagne@uncc.edu Office hours: Wednesday, 12h30 pm – 1h30 pm, or by appointment. Please use your UNCC e-mail address to contact me. I will not respond to e-mails from other addresses.

Teaching assistant: Stuart Wine Office: 406 E-mail: swine@uncc.edu Office hours: Tuesday, 1 – 2 pm, or by appointment.

Introduction

Many of us live in cities. In fact, according to the United Nations, 82% of Americans and, for the first time in recorded history, more than half of the global human population now lives in urban areas. Traditionally, we have viewed cities simply as our living spaces, designed by and for us and separate from the natural world. Recently, a new way of thinking about cities has emerged and is forming the basis of the emerging field of urban ecology. Urban ecologists consider cities and urban places as urban ecosystems made up of biogeophysical and socioeconomic components of which humans are but one part. Urban ecologists are increasingly aware that we not only influence the biogeophysical aspects of our cities but that those aspects, in turn, influence and shape *us*.

Cities are the nexus of the major environmental, social and economic issues facing humanity today. Cities produce 75% of the carbon dioxide we emit into the atmosphere. The conversion of tropical rainforest to crops and pastures for grazing cattle is driven by the appetites of city dwellers. One third of the global urban population lives in slums. Obviously, the way we have built and managed cities in the past is not working. We need to improve our understanding of cities and how they function in order to create sustainable urban ecosystems.

The aims of this course are to:

- Explore the structure and functioning of urban ecosystems
- Compare Charlotte's structure and functioning to that of other cities around the world
- Analyze the concept of sustainability as it relates to cities

As we work towards these aims, you will develop the skills necessary to:

- Question established knowledge and ways of doing things
- Create new knowledge and propose solutions to the social, environmental and economic issues facing your own community
- Express your ideas clearly and intelligently to diverse audiences

Assessment

Attendance incl. participation in discussions (2% x 7)	14%
Summary paragraphs (maximum 350 words) and questions (3% x 7)*	21%
Post-discussion assessments (If you had to schedule a follow-up discussion,	
what issue raised by the class would you consider and why?)**	
(maximum 350 words) (3% x 7)	21%
Debate position statement***	15%
Final exam (Take-home questions, written during the final exam period)	29%
	100%

*To be submitted by 5 pm the Tuesday before a discussion ** To be submitted by 5 pm the Friday following a discussion. Your answer must be supported by at least three references from the primary literature. ***Due February 20th, at the beginning of class.

<u>Graduate students:</u> The assessment above will constitute 70% of your grade for the class. The remaining 30% will come from a literature review paper (20%) and presentation (10%).

Undergraduate grading scheme

А	90-100%	Excellent
В	80-89%	Good
С	70-79%	Fair
D	60-69%	Passing
F	<60%	Failing

Graduate grading scheme

А	Commendable
В	Satisfactory
С	Marginal
U	Unsatisfactory

Late policy

Deadlines for submission of work are clearly indicated in this syllabus. Late submissions will be accepted and graded according to the following schedule: work submitted up to 24 hours after the deadline will receive a 25% penalty; work submitted between 24 and 48 hours after the deadline will receive a 50% penalty; and work submitted more than 48 hours after the deadline will not be accepted.

UNC Charlotte Code of Student Responsibility

You are expected to observe the UNC Charlotte Code of Student Responsibility (see the current Undergraduate Calendar at http://catalog.uncc.edu/undergraduate-catalogs/current and http://legal.uncc.edu/policies/up-406).

Electronic devices (cell phones, laptops, iPads, etc.) are not permitted in class. Please refrain from disrupting the learning environment of the class by arriving late, leaving early, or talking during a lecture (unless you are asking the instructor a question).

UNC Charlotte Code of Student Academic Integrity

You are expected to observe the UNC Charlotte Code of Student Academic Integrity (see the current Undergraduate Calendar at http://catalog.uncc.edu/undergraduate-catalogs/current and http://legal.uncc.edu/policies/up-407). The Code prohibits cheating, the fabrication and falsification of information, multiple submission of the same work for credit, plagiarism, the abuse of academic materials, and complicity in academic dishonesty.

If you are unclear as to what constitutes a violation of the Code, please see the TA or me during office hours.

Students with disabilities

If you have a disability for which you wish to receive academic accommodations, please provide me with a letter of accommodation from the Office of Disability Services at the beginning of the semester. For more information about disability services go to http://ds.uncc.edu/.

Readings

- Forman, R. T. T. 2008. The urban region: natural systems in our place, our nourishment, our home range, our future. *Landscape Ecology* **23**: 251-253.
- Kellett, R., A. Christen, N. C. Coops, M. van der Laan, B. Crawford, T. R. Tooke, et al. 2013. A systems approach to carbon cycling and emissions modeling at an urban neighborhood scale. *Landscape and Urban Planning* **110**: 48–58.
- Kendal, D., N. S. G. Williams, and K. J. H. Williams. 2012. Drivers of diversity and tree cover in gardens, parks and streetscapes in an Australian city. Urban Forestry & Urban Greening 11: 257–265.
- Kuo, F. E., and W. C. Sullivan. 2001. Environment and crime in the inner city does vegetation reduce crime? *Environment and Behavior* **33**: 343-367.
- McDonnell, M. J., and S. T. A. Pickett. 1990. Ecosystem structure and function along urban-rural gradients: an unexploited opportunity for ecology. *Ecology* **71**: 1232-1237.
- McKinney, M. L. 2006. Urbanization as a major cause of biotic homogenization. *Biological Conservation* **127**: 247-260.
- McKinney, M. L. 2010. Urban futures. Pages 287-308 *in* K. Gaston, editor. *Urban ecology*. Cambridge University Press, New York, USA.

LECTURE SCHEDULE (subject to change)

Week	Date	Topic/Activity		
Introduction				
1	Jan 9	Introduction to course		
		What is urban ecology?		
		Icebreaker card activity		
2	Jan 16	What is urbanization and how does it change landscapes?		
		Urbanized movie		
3	Jan 23	NO CLASS		
	T	he Urban Ecosystem Part I: Geophysical components		
4	Jan 30	The carbon and nitrogen cycles in the city		
		Discussion (Kellett et al 2013)		
5	Feb 6	Climate and soils of along urban—rural gradients		
		Discussion (McDonnell & Pickett 1990)		
	Г	The Urban Ecosystem Part II: Biological components		
6	Feb 13	Individual species and urbanization		
		Species diversity and urbanization		
7	Feb 20	Urban forests		
		Ecosystem services debate POSITION STATEMENT DUE IN CLASS		
8	Feb 27	Biotic homogenization		
		Invasive species		
		Discussion (McKinney 2006)		
9	March 6	Spring Recess – NO CLASS		
The Urban Ecosystem Part III: Socioeconomic components				
10	March 13	How do socioeconomics influence urban plant composition and diversity?		
		Discussion (Kendal et al 2012)		
11	March 20	Human health and quality of life in the city & environmental equity and		
		justice		
		Discussion (Kuo & Sullivan 2001)		
	I	The urban future		
12	March 27	Green infrastructure		
		Green roof demonstration experiment		
13	April 3	Visit of green roof on the Federal Reserve Bank of Richmond, Charlotte		
		Branch		
14	April 10	Urban regions		
		Discussion (Forman 2008)		
15	April 17	Development pattern and the optimal housing density		
		Discussion (McKinney 2010)		
16	April 24	Wrap-up and graduate student presentations		

The final exam period is Monday May 8th from 8-10h30 am.



J. Murrey Atkins Library

Consultation on Library Holdings

To: Harrison Campbell

From: Alison Bradley

Date: 5/9/12

Subject: GEOG 4215 Urban Ecology

Summary of Librarian's Evaluation of Holdings:

Evaluator: Alison Bradley

Date: 5/9/12

Check One:

- 1. Holdings are superior
- 2. Holdings are adequate
- 3. Holdings are adequate only if Dept. purchases additional items.
- 4. Holdings are inadequate

Comments:

Library holdings should be adequate to support student research for this course (see list of items held by subject heading below). Students will have access to relevant databases including GeoScienceWorld, Environment Abstracts, Avery Index, Public Administration Abstracts, ScienceDirect, Web of Science, and many others.

LC Subject Heading	Total items held
Urban ecology	197
Urbanization	771
City planning	511

Alison Bradley

Evaluator's Signature	Eva	aluator	s Sig	nature
-----------------------	-----	---------	-------	--------

5/9/12

Date



J. Murrey Atkins Library

Consultation on Library Holdings

To: Harrison Campbell

From: Alison Bradley

Date: 5/9/12

Subject: GEOG 4xxx Landscape Ecology

Summary of Librarian's Evaluation of Holdings:

Evaluator: Alison Bradley

Date: 5/9/12

х

Check One:

- 1. Holdings are superior
- 2. Holdings are adequate
- 3. Holdings are adequate only if Dept. purchases additional items.
- 4. Holdings are inadequate

Comments:

Library holdings should be adequate to support student research for this course (see list of items held by subject heading below). Students will have access to relevant databases including GeoScienceWorld, Environment Abstracts, Water Resources Abstracts, ScienceDirect, Web of Science, ASFA: Aquatic Sciences and Fisheries Abstracts, and many others.

LC Subject Heading	Total items held
Landscape ecology	59
Landscape protection	170
Landscape assessment	167

Alison Bradley

Evaluator's Signature

5/9/12

Date