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FORM C - DEGREE/PROGRAM CHANGE

Date: 9/15/08

Olen P. Matthews
(Name of individual initiating curricular change form)

Professor, Chair, 277-5007
(Title, position, telephone number)

opmatt@unm.edu
(Email address)

Geography
(Department/Division/Program/Branch)

Mark Appropriate Program:
Undergraduate Degree Program
Graduate Degree Program (For existing degree only)

Assigned by
Associate Provost
for Academic Affairs

- ROUTING (All Four Collated Sets)**
1. Department Chairperson
 2. College Curriculum Committee
 3. College or School Faculty (if necessary)
 4. College or School Dean/Dean of Instruction
 5. Office of the Registrar—Catalog
 6. Director of relevant Library
 7. FS Graduate Committee (graduate courses)
 8. FS Undergraduate Committee (undergraduate courses)
 9. FS Curriculum Committee
 10. Assoc. Provost for Academic Affairs
 11. Faculty Senate
 12. Board of Regents (new degree only)

* Plan for curricular process to take at least 12 months.

This form is for Bachelor of Science, Geography
Name of New or Existing Program

This program is or would be located in current undergraduate/graduate catalog on page(s) 211-212

Mark appropriate category:

	NEW	REVISION OF	DELETION	NAME CHANGE
Degree <u>BS Geography</u>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Type <u>Undergraduate degree only</u>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Major	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Minor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Concentration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Certificate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emphasis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Department	<input type="checkbox"/>	NA	<input type="checkbox"/>	<input type="checkbox"/>
Subject Code	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Give exact title and requirements as they should appear in the catalog. See current catalog for format within the respective college (attach additional sheets if necessary). Identify in bracket form what is being changed.

See attached.

Reason(s) for Request (attach additional sheets if necessary).

See attached.

Attach statements to address Budgetary and Faculty Load Implications and Long-range planning.

Does this change affect in a significant way, any other departmental programs/branch campuses? Yes ___ No
If yes, have you resolved these issues with department/branch involved? n/a (attach statement)

Proposed Effective Term: Fall, 2009
Term Year

Required Signatures:

Department Chair <u>Olen P. Matthews</u>	Date <u>Oct. 14, 2008</u>
College Curriculum Committee _____	Date _____
College or School Faculty (if necessary) _____	Date _____
College or School Dean/Dean of Instruction <u>Carol</u>	Date <u>11/12/08</u>
Office of the Registrar—Catalog <u>Elizabeth A. Boston</u>	Date <u>10/31/08</u>
Director of relevant Library <u>John Harris</u>	Date <u>12-1-08</u>
FS Graduate Committee (graduate courses) _____	Date _____
FS Undergraduate Committee (undergraduate courses) <u>Andrew J. Boyer</u>	Date <u>1/16/08</u>
FS Curriculum Committee <u>Wynne M. King</u>	Date <u>1-3-09</u>
Assoc. Provost for Academic Affairs _____	Date <u>3/11/09</u>
Faculty Senate _____	Date _____
Board of Regents _____	Date _____

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Entered Catalog

For Registrar's Office ONLY

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FORM C – B.S. in Geography - Attachments

Current B.S. degree with changes (Drops) marked in [] are below.

The required curriculum for the Bachelor of Science degree is as follows:

		Credits
GEOG 101	Physical Geography	3
GEOG 105L	Physical Geography Lab	1
GEOG 102	Human Geography	3
GEOG 195	[Survey of Environmental Issues]	3
GEOG 281L	[Survey of Geographic Information Science]	4
[GEOG 470]	[Concepts of Applied Geography]	[1]
GEOG 471	Applied Geography Seminar	4
One course	Environmental Management Group	3
[Two courses]	Geographic Information Science Group	[6-7]
[Three courses]	[300 level or above Physical Environment Group]	[9]
Electives	[Any 300-400 level Geography Course]	3
		[39-40]

Courses included in the above groups are:

[Physical Environment Group: 351, 352, 356, 359.]

Environmental Management Group: 360, 363, 367, 461, 462, 463, 465.

[Geographic Information Science Group: 381L, 383, 386, 483L, 484, 487L, 488L]

Proposed B.S. degree requirements with changes marked in [] are below.

The required curriculum for the Bachelor of Science degree is as follows:

		Credits
GEOG 101	Physical Geography	3
GEOG 105L	Physical Geography Lab	1
GEOG 102	Human Geography	3
GEOG 195	[Humans as Modifiers of the Earth]	3
GEOG 281L	[Computer Mapping]	4
[GEOG 381L]	[Introduction to GIS]	[4]
GEOG 471	Applied Geography Seminar	4
[Three courses]	Geographic Information Science Group	[9]
One course	Environmental Management Group	3
[One course]	Physical Environment Group	[3]
Electives	[Any 200-300-400 level GEOG course]	3
		[40]

[Physical Environment Group: 251, 350, 352.]

Environmental Management Group: 360, 363, [365], 461, 462, 463, [464].

[Geographic Information Science Group: 480L, 482L, 483L, 484L, 485L, 486L, 487L, 488L]

Reasons for Request

The Geography Department went through Academic Program Review in the Spring of 2008. The reviewers approved the Department's proposed modifications of the B.S. degree and recommended a substantial number of courses be dropped with additional courses being added as new faculty are added to the Department. The review team also recommended that the B.S. degree be revised to focus on Geographic Information Science as the Department proposed. Implementing these changes has required the deletion, modification, and addition of a substantial number of courses. Changes in the B.S. degree reflect those course modifications. With the addition of four new faculty members in the past two years, these revitalized programmatic changes can be implemented.

Budgetary and Faculty Load Implications and Long Term Planning

As a result of the Academic Program Review recommendations, the Department's course offering will be more focused. The Department's revitalized degree programs will require a smaller Part-time/Temporary Budget. Currently the Department offers 18 courses each year with Part-time/Temporary faculty. With the revisions in place this will be reduced to 10 courses per year. Most of these courses are evening or weekend courses or will be taught by experts in GIScience currently employed at UNM's Earth Data Analysis Center. A course rotation list is included to show that the faculty can cover the changes. Also included is a list of course changes so the total number of courses dropped, modified, or added can be seen.

Department of Geography
Bachelor of Science in Geography
Plan for Assessment of Student Learning Outcomes
The University of New Mexico

A. College, Department and Date

1. College: *College of Arts & Science*
2. Department: *Department of Geography*
3. Date: *May 15, 2008*

B. Academic Program of Study

B.S. Geography

C. Contact Person for the Assessment Plan

Paul Zandbergen, Associate Professor, zandberg@unm.edu

D. Broad Program Goals & Measurable Student Learning Outcomes

1. Broad Program Learning Goals for this Degree Program

These goals reflect the Department's overarching mission to promote, develop, and improve spatial literacy through all of its programs.

- A. Students will develop an ability to see meaning in the arrangement of things in space.
- B. Students will become geographical problem-solvers capable of using quantitative and spatial methods of analysis.
- C. Students will be able to employ geospatial technologies in the acquisition, manipulation, and analysis of digital spatial data.
- D. Students will become clear and effective communicators.

2. List of Student Learning Outcomes (SLOs) for this Degree Program

- A.1. Students will be able to explain a prominent geographic pattern using core geographic concepts.
- B.1. Students will be able to identify the geographic contexts relevant to an inquiry.
- B.2. Students will be able to acquire and manipulate data relevant to a geographic inquiry.
- B.3. Students will be able to assess the results of a data-driven geographical inquiry.
- C.1. Students will be able to identify, collect and process digital spatial data using industry-standard tools
- C.2. Students will be able to employ appropriate geospatial analysis methods and interpret the results
- D.1. Students will be able to communicate clearly and effectively in an oral format.
- D.2. Students will be able to communicate clearly and effectively in a written format.
- D.3. Students will be able to communicate clearly and effectively in cartographic format.

E. Assessment of Student Learning Three-Year Plan

1. Priority Student Learning Outcomes

Over the next three years (2008-2011), the Department of Geography will assess all of the learning outcomes listed above. These program outcomes are responsive to UNM's broad student learning goals, as shown in the following table.

University of New Mexico Student Learning Goals				
Program SLOs	Knowledge	Skills	Responsibility	Program SLO is conceptually different from university goals.
A.1. Students will be able to explain a prominent geographic pattern using core geographic concepts.	X	X		
B.1. Students will be able to identify the geographic contexts relevant to an inquiry.	X	X	X	
B.2. Students will be able to acquire and manipulate data relevant to a geographic inquiry.		X	X	
B.3. Students will be able to assess the results of a data-driven geographical inquiry.		X	X	
C.1. Students will be able to identify, collect and process digital spatial data using industry-standard tools		X	X	
C.2. Students will be able to employ appropriate geospatial analysis methods and interpret the results		X	X	
D.1. Students will be able to communicate clearly and effectively in an oral format.		X	X	
D.2. Students will be able to communicate clearly and effectively in a written format.		X	X	
D.3. Students will be able to communicate clearly and effectively in cartographic format.		X	X	

2. How will learning outcomes be assessed?

Learning outcomes will be assessed using a variety of measures that collect evidence of learning from students in the senior capstone course (GEOG 471) as well as in an upper-level elective (GEOG 487L) each year. These measures are described fully on the following page.

All B.A. and B.S. students are required to take GEOG 471 as part of their degree, so this captures the entire population. GEOG 487L is an elective in the BS degree, but it is expected that most B.S. students will take this course. By the time B.S. students enroll in GEOG 487L they will have completed at least two Geographic Information Science courses and possibly more, so determining learning outcomes specific to GI Science in this course is appropriate.

2. How will learning outcomes be assessed? (continued)

MEASUREMENT PROCESS #1

Outcome:

- A.1. Students will be able to explain a prominent geographic pattern using core geographic concepts.

Measurement Process:

- i. Assessment of this outcome will use students' written responses to scenario assignments as evidence of student learning. These assignments will be designed by the GEOG 471 instructor in conjunction with the undergraduate advisor, subject to approval by the voting faculty. Each assignment will present students with a scenario that illustrates a particular spatial pattern and will be asked to explain its probable cause in terms of core geographic concepts (such as scale, diffusion, distance, etc.) The students will complete each assignment with a written response, and the instructor will copy and file the students' written answers for assessment purposes. Note: Two of these scenario assignments will be embedded each semester in the regular grade structure of the course to provide a standard performance incentive. On each of the two assigned scenarios, different core geographic concepts will be relevant. Only one scenario assignment will be assessed each year.
- ii. This is a direct measurement.
- iii. The program performance target for these outcomes is defined as "acceptable" or better performance by 75% of Geography seniors. The standards for "acceptable" are outlined in the attached Rubric A, which will be given to students in advance.

MEASUREMENT PROCESS #2

Outcomes:

- B.1. Students will be able to identify the geographic contexts relevant to an inquiry.
- B.2. Students will be able to acquire and manipulate data relevant to a geographic inquiry.
- B.3. Students will be able to assess the results of a data-driven geographical inquiry.

Measurement Process:

- i. The capstone course is typically organized around student development and completion of a senior research project, which is presented in both oral and written formats at the end of the course. The project will be considered as evidence of learning in the assessment of all three of these outcomes. Each project will be selected by the student, with the assistance of the GEOG471 instructor, and will be oriented toward a geographic inquiry that can be answered via core methods in spatial analysis.
- ii. This is a direct measurement.
- iii. The program performance target for these outcomes is defined as "acceptable" or better performance by 75% of Geography seniors. The standards for "acceptable" are outlined in Rubric B, which will be given to students in advance.

2. How will learning outcomes be assessed? (continued)

MEASUREMENT PROCESS #3

Outcome:

- C.1. Students will be able to identify, collect and process digital spatial data using industry-standard tools
- C.2. Students will be able to employ appropriate geospatial analysis methods and interpret the results

Measurement Process:

- i. Assessment of this outcome will use student's final projects in GEOG 487L. This course is focused on the hands-on use of spatial-analytical techniques as applied to a topic of the student's choice. As part of the project, students need to identify, collect and process digital spatial data relevant to their topic, and then carry out geospatial analysis methods that are appropriate for the specific questions within the topic. Results of the final project need to be delivered in the form of an oral presentation as well as a written report. While students have to develop a project proposal and present their findings (like in GEOG 471), the focus on the learning outcomes is on the student's use of hands-on geospatial tools.
- ii. This is a direct measurement.
- iii. The program performance target for this outcome is defined as "acceptable" or better performance by 75% of graduating students. The standard for "acceptable" is defined in the attached Rubric C, which will be given to students in advance.

MEASUREMENT PROCESS #4

Outcome:

- D.1. Students will be able to communicate clearly and effectively in an oral format.

Measurement Process:

- i. Assessment of this outcome will use each student's oral presentation of the final research project as evidence of student learning.
- ii. This is a direct measurement.
- iii. The program performance target for this outcome is defined as "acceptable" or better performance by 75% of graduating students. The standard for "acceptable" is defined in the attached Rubric D, which will be given to students in advance.

MEASUREMENT PROCESS #5

Outcome:

- D.2. Students will be able to communicate clearly and effectively in a written format.

Measurement Process:

- i. Assessment of this outcome will use each student's written report of the final research project as evidence of student learning.
- ii. This is a direct measurement.
- iii. The program performance target for this outcome is defined as "acceptable" or better performance by 75% of graduating students. The standard for "acceptable" is defined in the attached Rubric D, which will be given to students in advance.

MEASUREMENT PROCESS #6

Outcome:

- D.3. Students will be able to communicate clearly and effectively in cartographic format.

Measurement Process:

- i. Assessment of this outcome will use student's final projects in GEOG 487L. Producing results in cartographic form is part of the requirements of the final project and are included in the final written report.
- ii. This is a direct measurement.
- iii. The program performance target for this outcome is defined as "acceptable" or better performance by 75% of graduating students. The standard for "acceptable" is defined in the attached Rubric C, which will be given to students in advance.

3. **When will learning outcomes be assessed? When and in what forum will the results of the assessment be discussed?**

Assessment of student learning in the B.S. program will be conducted every semester that the senior capstone course (GEOG 471) is offered, typically once per year in the spring semester, as well as every semester that GEOG 487L is offered, typically once per year in the fall semester. A committee of three Geography faculty members will be tasked with assessment duties, which will include:

- i. attending student presentations in the GEOG 471 and GEOG 487L courses,
- ii. reading student research reports and written responses to the case-study assignments, and
- iii. completing all relevant rubrics at the end of the semester.

The course instructor will communicate with this committee during the semester and will make copies of all relevant materials, such as the case-study assignments and the research reports.

All outcomes will be assessed each time GEOG 471 and GEOG 487L are offered. (See timeline below.)

Completed rubrics will be placed in an assessment file (to be administered by the departmental Assessment Coordinator) as soon as they are completed. Each summer, the Assessment Coordinator will produce an annual report on the number of students assessed and the average scores recorded for each outcome. This report will be distributed to the entire faculty and to the Advisory Board.

Modifications to the assessment instruments/methods will be discussed each year at the annual faculty retreat. Changes in program curriculum/pedagogy will be discussed every third year, beginning in summer 2009. (See next section for details regarding this process.)

TIMELINE

- **Summer 2008**
 - appointment of Assessment Coordinator
 - assignment of assessment duties for 2008-209
- **Spring 2009**
 - assessment of outcomes A.1, B.1, B.2, B.3, C.1, C.2, D.1, D.2, D.3
- **Summer 2009**
 - annual report compiled/distributed
 - faculty review of B.S. program
 - faculty review of assessment procedures
 - assignment of assessment duties for 2009-2010
- **Spring 2010**
 - assessment of outcomes A.1, B.1, B.2, B.3, C.1, C.2, D.1, D.2, D.3
- **Summer 2010**
 - annual report compiled/distributed
 - faculty review of assessment procedures
 - assignment of assessment duties for 2010-2011
- **Spring 2011**
 - assessment of outcomes A.1, B.1, B.2, B.3, C.1, C.2, D.1, D.2, D.3
- **Summer 2011**
 - annual report compiled/distributed
 - faculty review of assessment procedures
 - assignment of assessment duties for 2011-2012

4. What is the unit's process to analyze/interpret assessment data and use results to improve student learning?

All members of the Geography faculty will participate in the assessment process at various levels, as described below.

- a) Evidence will be gathered by the regular instructors of GEOG 471 and GEOG 487L through the following assignments: scenario analyses, a case-study analysis, a research report, and a research presentation.
- b) Analysis of these direct measures will be conducted by three members of the Geography faculty, who will use a standard scoring rubric in their work (see attached).
- c) Annual reports will be prepared by the Assessment Coordinator and circulated to the full faculty and the advisory board.
- d) Given the small size of the Geography faculty, interpretation of all measurements will be conducted by the faculty as a whole. Annual reports will be used as a basis for discussing assessment mechanisms/procedures (on an annual basis) as well as curricular design and pedagogical approaches (every third year). Priority areas for discussion at the annual faculty retreat will include:

2009, 2010, 2011

- Quality of data collected
- Completeness of data collected
- Reliability of data collected
- Potential improvements to measurement instruments
- Potential improvements to assessment procedures
- Assignment of assessment responsibilities for the coming year

2009

- Student performance levels on each outcome
 - Potential explanations for any missed targets
 - Desired improvements to student learning
 - Curricular approaches to improving student learning
 - Pedagogical approaches to improving student learning
 - Modifications to program goals and outcomes
 - Modifications to performance targets
- e) Recommendations will be voted on by the entire faculty and will be circulated annually to the advisory board, the Dean of Arts and Sciences, and the Provost's Office of Assessment.

RUBRIC A: COMPETENCIES IN SPATIAL EXPLANATION

Program Outcomes	Criteria for Acceptable Performance	Assessment			
		Superior	Good	Acceptable	Not Acceptable
A.1. Students will be able to explain a prominent geographic pattern using core geographic concepts.	1. Describes the pattern shown in the scenario.				
	2. Explains reasons for the pattern's existence or changes in it.				
	3. Uses relevant core geographic concepts in explanation.				
	4. Uses core geographic concepts correctly.				

RUBRIC B: COMPETENCIES IN SPATIAL PROBLEM-SOLVING

Program Outcomes	Criteria for Acceptable Performance	Assessment			
		Superior	Good	Acceptable	Not Acceptable
B.1. Students will be able to identify the geographic contexts relevant to an inquiry.	1. Describes an issue or problem.				
	2. Explains how the topic is relevant to geography.				
	3. Uses relevant literature to explain the context of the issue or problem.				
B.2. Students will be able to acquire and manipulate data relevant to a geographic inquiry.	1. Identifies data sources needed to solve the issue or problem.				
	2. Relevance of the data sources is explained.				
	3. Data is analyzed in a way appropriate for solving the issue or problem.				
B.3. Students will be able to assess the results of a data-driven geographical inquiry.	1. Draws conclusions.				
	2. Assesses limitations of the research and its conclusions.				

RUBRIC C: COMPETENCIES IN GEOSPATIAL TOOLS

Program Outcomes	Criteria for Acceptable Performance	Assessment			
		Superior	Good	Acceptable	Not Acceptable
C.1. Students will be able to identify, collect and process digital spatial data using industry-standard tools	1. Identifies digital spatial relevant for a topic.				
	2. Collects digital spatial data using appropriate methods.				
	3. Prepares the data correctly for use in spatial analysis.				
C.2. Students will be able to employ appropriate geospatial analysis methods and interpret the results	1. Identifies appropriate geospatial analysis methods to address a particular question.				
	2. Uses geospatial tools correctly for spatial data analysis and modeling.				
	3. Results are correctly interpreted and limitations are recognized.				
D.3. Students will be able to communicate clearly and effectively in cartographic format.	1. Cartographic representations are created correctly.				
	2. Spatial data is visualized effectively.				

RUBRIC D: COMPETENCIES IN COMMUNICATION

Program Outcomes	Criteria for Acceptable Performance	Assessment			
		Superior	Good	Acceptable	Not Acceptable
D.1. Students will be able to communicate clearly and effectively in an oral format.	1. Presentation style is appropriate.				
	2. Presentation includes visual aids appropriate for a geography presentation.				
	3. Presentation is well organized.				
	4. The presentation adheres to the stated time limits without rushing.				
D.2. Students will be able to communicate clearly and effectively in a written format.	1. The report is clearly written.				
	2. The report is well organized.				
	3. Maps and other graphics are easy to read and serve as appropriate illustrations to the text.				