East Central University
Assessment of Student Learning

ASSESSMENT OF THE MAJOR
CARTOGRAPHY & GEOGRAPHY

Bachelor of Science

Year: 2010 (Spring & Fall)

Prepared by

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Assessment Chair, April 2011

OVERVIEW

The Department of Cartography and Geography contributes to the educational mission of East Central University on three fronts; by 1) offering a Bachelor of Science Degree in Cartography with two concentrations in Geotechniques and Geography; 2) offering minors in Cartography and in Geography; and 3) offering courses contributing to the General Education requirements of all ECU students. The Department contributes to the mission of the College of Health and Science to provide quality instruction, applied research projects, and service to the University and community. The objective of the baccalaureate program is to provide a curriculum enabling graduates to gain entry level employment in associated professions utilizing cartography, geographic information systems, global positioning systems, and remote sensing within the private sector as well as in local, state, and federal government. Additionally, the program aims to adequately prepare students seeking an advanced education in geotechnologies or geography at a post-graduate college or university.

The Assessment Program has one main purpose-- *to provide the information necessary to reveal program strengths and concerns, then to apply that information for developing and implementing plans to improve the program or remedy problems*. Additionally, this activity complies with annual academic review requirements set by the Oklahoma State Regents for Higher Education. Finally, the Assessment Program is holistic in nature and intended to assess departmental strengths and concerns via graduating seniors, alumni, and faculty.

Faculty in the department has the primary responsibility for the review of the program. When assessment results suggest any major change for the program, input will be sought from the Dean of the College of Health and Sciences, the Academic Committee, and the Vice-President for Academic Affairs.

Program components subject to modifications include course offerings and course content, adequacy of laboratory equipment and technology, delivery of courses, and strategies for securing and retaining majors. One instrument for conducting the assessment are surveys taken of the current academic year's graduates, alumni, and returning faculty. Another instrument is an exhaustive evaluation on student portfolios consisting of mapping and analysis projects from class projects and practicals, internships, conferences, and senior projects. Explanation of warranted adjustments from various outcomes, suggestions from faculty, students, and alumni, and accomplishments from previous assessments is highlighted. Lastly, the assessment process itself is assessed; identifying areas in which this process can be improved.

ASSESSMENT OF PROGRAM OBJECTIVES

Program Goal

The goal of the Cartography and Geography Program is to provide a curriculum that enables program graduates to gain entry-level employment in the discipline and to adequately prepare students advancing into graduate school.

Student Outcomes

The program recognizes the following student outcomes in order to achieve the Cartography and Geography Program Goal.

1. Students are provided with a fundamental knowledge of principles and terminology in cartography and geotechniques.
2. Students obtain skills to utilize computer software in cartography and geotechniques.
3. Students demonstrate the ability to develop and implement a mapping and/or analysis project.
4. Students are able to integrate geography and/or their minor field of study with cartography and/or geotechniques.
5. Students demonstrate the ability to communicate geotechniques subjects to others in an oral and written manner.
6. Students demonstrate the ability to work with others in a professional manner.
7. Students are qualified to seek an entry-level or better employment in cartography and/or geotechniques.
8. Students are better qualified to seek and secure employment utilizing a college degree than without one.
9. Students are prepared to enter graduate school.
10. Determination of the overall educational value of the ECU Cartography program.
11. Determination of the student's competitiveness as compared to their cartography/ geotechniques counterparts who graduated from other universities.

Criteria/Instruments

The criteria/instruments used to obtain the goal of the program is evaluated using (1) a set of survey responses sent and returned each spring by cartography graduating seniors (Appendix I) and cartography alumni (Appendix II), and (2) an evaluation of student portfolios by current faculty members using a detailed evaluation (Appendix III). Surveys are based on 11 questions

related to the program's specific outcomes. Each question is similar for each type of respondent (senior, alumni, and employer) so that between group results can be determined. Possible responses are as follows: Excellent = 5; Very Good = 4; Good = 3; Fair = 2; Poor = 1; and Not Applicable (NA). To obtain a better representation of our program from alumni, surveys were sent out to graduates over the past five years beginning with the current academic year. For example, this report covers the year 2010 so surveys sent to alumni who graduated in the last five years would include students who graduated from 2005 - 2009. Sample surveys are provided at the end of this report in the appendices (I – II). Components of the student portfolios are evaluated by each faculty member using the content from each survey question in instrument one. A sample evaluation form is provided at the end of this report (Appendix III).

Instrument One: Of the eleven graduating seniors, eleven survey responses were collected. Of the thirty seven alumni surveys sent out, ten survey responses were collected.

Instrument Two: There were three faculty evaluations submitted for the evaluation of portfolios. The portfolios contain three parts. The first part is the senior project. In the capstone course *CARTO 4653 Senior Cartographic Projects*, students must develop and implement a project of their own unique geographic topic. Thus, the presentations and posters should reveal the geographic analysis behind the results of utilizing cartographic principles with the skills required to use mapping and related software. Senior projects are evaluated from the past calendar year (2010). This part is given a weight of 0.50.

The second part of instrument two is conference posters and presentations. Conference presentations and posters should reveal the geographic analysis behind the results of utilizing cartographic principles with the skills required to use mapping and related software. Conference posters and presentations are evaluated from the past calendar year (2010). This part is given a weight of 0.25. Since no data was collected, this portion was omitted.

The third part of instrument two is the evaluation of course projects and practicals illustrating the understanding and correct use of the main concepts of each course. Under this part, two introductory courses taught in the fall (*CARTO 2253 Introduction to Cartography* and *CARTO 3953 Introduction to GIS*), two advanced courses taught in the fall (*CARTO 3233 Geospatial Research Design and Analysis* and *CARTO 3753 Aerial Photography and Remote Sensing*), and three advanced courses and one sophomore level course taught in the spring (*CARTO 3613 Advanced Cartography*, *CARTO 4953 Advanced GIS*, *CARTO 4753 Advanced Remote Sensing*, and *CARTO 2713 Elementary Data Collection and Field Methods*) are averaged together before applying its weight. This part is given a weight of 0.25.

Unduplicated Results

Since there are many students in each part of the portfolio, "n" values are reported for each part. Since total number of scores for each student varies, these are not reported for better ease of display. The estimate of the unduplicated number of students (43), alumni (10), and faculty (3) who supplied data for this report is 56.

Dissemination of Results

Results of this report are disseminated to stakeholders using the department website. It can be found at http://www.ecok.edu/cartogeo/ under the headings: *About the Department / Program Assessment Report (.pdf).*

Performance Goal for Each Outcome

The performance goal for each outcome in the Cartography and Geography program is to achieve the highest ratings from both instruments. Rankings consistently lower than *very good* suggest adjustments may be warranted over one or more department components. Ratings consistently lower than a rating of *good* suggest changes may be needed in one or more department components. A summary of the results follows.

The remaining portion of this report will detail each outcome, the criteria and instruments used to assess the outcomes, the results and interpretation, and conclusions.

Student Outcome 1:
Students are provided with a fundamental knowledge of principles and terminology in cartography and geotechniques.

Criterion 1 for Student Outcome 1:
The opinions of graduating seniors and alumni.

Instruments for Criterion 1 of Student Outcome 1:

a) ECU Graduating Senior Survey (1998 – present)
b) ECU Alumni Survey (2003 – present)

Results:

Survey of Cartography Graduating Senior

Survey Yr	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Overall
Avg Rating	4.0	4.3	4.8	4.2		4.30	4.50	4.75	4.75	4.17	4.60	4.50	4.45	4.44
n	2	3	4	5		6	6	4	4	6	5	12	11	68

Survey of Cartography Alumni

Survey Yr						2003	2004	2005	2006	2007	2008	2009	2010	Overall
Avg Rating						4.75	4.67	4.50	4.36	5.00	4.60	4.00	4.20	4.51
n						4	6	10	11	7	5	15	10	68

Interpretation:

The low number of respondents (shown as the variable *n* in the tables above), is insufficient to perform meaningful inferential statistics. Descriptively, however, it is clear the opinion of both graduating seniors and alumni is above *very good.* Exceptionally high ratings tell us that our seniors and graduates are well-schooled in the discipline. The overall averages of the survey results suggest no adjustments in the program are needed.

Criterion 2 for Student Outcome 1:
The evaluations performed by the faculty

Instrument for Criterion 2 of Student Outcome 1:
Student portfolio rubric

Results: [2010: 1. n = 11; 2. n = 0; 3. n = 43]

Survey of Portfolio

Survey Year	2003	2004	2005	2006	2007	2008	2009	2010	Overall
Senior Projects	4.89	4.48	4.61	4.65	4.60	4.59	4.41	4.78	4.63
Conference Presentation*	4.94	4.90	5.00	4.08	4.67				4.72
Course Projects or Practicals		4.63	4.56	4.22	4.47	4.24	4.29	4.36	4.40
Performance	4.91	4.62	4.70	4.40	4.58	4.47	4.37	4.64	4.59

Interpretation:

The opinions of the faculty for each part of the student portfolios are above *very good.* The faculty agrees that our graduates and returning majors are well-schooled in the discipline. The overall sum of the weighted averages, called performance, suggest no adjustments in the program are needed.

Student Outcome 2:
Students obtain skills to utilize computer software in cartography and geotechniques.

Criterion 1 for Student Outcome 2:
The opinions of graduating seniors and alumni.

Instruments for Criterion 1 of Student Outcome 2:

a) ECU Graduating Senior Survey (1998 – present)
b) ECU Alumni Survey (2003 – present)

Results:

Survey of Cartography Graduating Senior

Survey Yr	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Overall
Avg Rating	4.5	4.3	4.8	4.0		4.30	4.20	4.75	4.50	4.17	3.80	4.18	4.18	4.31
n	2	3	4	5		6	6	4	4	6	5	12	11	68

Survey of Cartography Alumni

Survey Yr						2003	2004	2005	2006	2007	2008	2009	2010	Overall
Avg Rating						4.25	4.50	4.20	4.27	4.71	4.20	3.93	4.10	4.27
n						4	6	10	11	7	5	15	10	68

Interpretation:

The low number of respondents (shown as the variable *n* in the tables above), is insufficient to perform meaningful inferential statistics. Descriptively, however, it is clear the opinion of both graduating seniors and alumni is above *very good.* Both groups recognize that basic skills learned in the program are applicable to their course work and/or respective jobs. Ratings from alumni tell us that our graduates are well-schooled in the discipline. Ratings from graduating seniors are showing the results of having two tracts in the discipline whereby the graduating seniors in the geography tract do not feel as confident as their counterparts in the geotechniques tract. The overall averages of the survey results suggest no adjustments in the program are needed.

Criterion 2 for Student Outcome 2:
The evaluations performed by the faculty.

Instrument for Criterion 2 of Student Outcome 1:
Student portfolio rubric.

Results: [2010: 1. n = 11; 2. n = 0; 3. n = 43]

Survey of Portfolio

Survey Year	2003	2004	2005	2006	2007	2008	2009	2010	Overall
Senior Projects	4.94	4.73	4.62	4.71	4.60	4.58	4.42	4.65	4.66
Conference Presentation*	4.94	4.93	5.00	4.22	4.67				4.75
Course Projects or Practicals		4.74	4.75	4.39	4.63	4.35	4.40	4.49	4.54
Performance	4.94	4.78	4.75	4.51	4.63	4.5	4.41	4.6	4.64

Interpretation:

The opinions of all faculty for each part of the student portfolios is well above *very good.* The faculty agrees that our graduates and returning majors have obtained the necessary skills to utilize computer software in cartography and geotechniques. The overall sum of the weighted averages, called performance, suggest no adjustments in the program are needed.

Student Outcome 3:
Students demonstrate the ability to develop and implement a mapping and/or analysis project.

Criterion 1 for Student Outcome 3:
The opinions of graduating seniors and alumni.

Instruments for Criterion 1 of Student Outcome 3:

a) ECU Graduating Senior Survey (1998 – present)
b) ECU Alumni Survey (2003 – present)

Results:

Survey of Cartography Graduating Senior

Survey Yr	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Overall
Avg Rating	5.0	4.3	5.0	4.6		4.00	4.20	4.50	4.50	4.50	4.40	4.09	4.27	4.45
n	2	3	4	5		6	6	4	4	6	5	12	11	68

Survey of Cartography Alumni

Survey Yr						2003	2004	2005	2006	2007	2008	2009	2010	Overall
Avg Rating						4.25	4.50	4.10	4.27	4.71	4.20	3.87	4.20	4.26
n						4	6	10	11	7	5	15	10	68

Interpretation:

The low number of respondents (shown as the variable *n* in the tables above), is insufficient to perform meaningful inferential statistics. Descriptively, however, it is clear the opinion of both graduating seniors and alumni is above *very good.* This shows that the program is preparing our majors for project-oriented work and alumni are able to continue building on their skills learned from the program. Ratings from both graduating seniors and alumni show the results of having two tracts in the discipline whereby the graduating seniors and alumni in the geography tract do not feel as confident as their counterparts in the geotechniques tract. The overall averages of the survey results suggest no adjustments in the program are needed.

Criterion 2 for Student Outcome 3:

The evaluations performed by the faculty.

Instrument for Criterion 2 of Student Outcome 3:

Student portfolio rubric.

Results: [2010: 1. n = 11; 2. n = 0; 3. n = 43]

Survey of Portfolio

Survey Year	2003	2004	2005	2006	2007	2008	2009	2010	Overall
Senior Projects	4.94	4.66	4.66	4.61	4.61	4.66	4.48	4.83	4.68
Conference Presentation*	4.93	4.84	4.90	4.24	4.40				4.66
Course Projects or Practicals		4.72	4.69	4.49	4.57	4.30	4.40	4.65	4.55
Performance	4.94	4.72	4.73	4.49	4.55	4.54	4.45	4.77	4.65

Interpretation:

The opinions of all faculty for each part of the student portfolios is well above *very good.* The faculty agrees that our graduates and returning majors have demonstrated the ability to develop and implement a mapping and/or analysis project. The overall sum of the weighted averages, called performance, suggest no adjustments in the program are needed.

Student Outcome 4:

Students are able to integrate geography and/or their minor field of study with cartography and/or geotechniques.

Criterion 1 for Student Outcome 4:
The opinions of graduating seniors and alumni.

Instruments for Criterion 1 of Student Outcome 4:

a) ECU Graduating Senior Survey (1998 – present)
b) ECU Alumni Survey (2003 – present)

Results:

Survey of Cartography Graduating Senior

Survey Yr	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Overall
Avg Rating	4.5	4.3	3.5	4.6		4.30	4.50	3.75	4.50	3.67	4.40	3.58	4.18	4.15
n	2	3	4	5		6	6	4	4	6	5	12	11	68

Survey of Cartography Alumni

Survey Yr						2003	2004	2005	2006	2007	2008	2009	2010	Overall
Avg Rating						3.50	4.50	4.00	4.18	4.43	4.20	3.87	4.40	4.14
n						4	6	10	11	7	5	15	10	68

Interpretation:

The low number of respondents (shown as the variable *n* in the tables above), is insufficient to perform meaningful inferential statistics. Descriptively, however, it is clear the opinion of both the graduating seniors and alumni is *very good*. This has been an up and down trend in the department as many students find themselves switching majors and their former major, be default, becomes their minor and not as useful. This trend has increased due to the significant increase in majors and with the addition of the geography tract now offered in the discipline. The overall averages of the survey results suggest no adjustments in the program are needed.

Criterion 2 for Student Outcome 4:
The evaluations performed by the faculty.

Instrument for Criterion 2 of Student Outcome 4:
Student portfolio rubric.

Results: [2010: 1. n = 11; 2. n = 0; 3. n = 43]

Survey of Portfolio

Survey Year	2003	2004	2005	2006	2007	2008	2009	2010	Overall
Senior Projects	4.56	4.33	4.24	4.54	4.63	4.70	4.46	4.87	4.54
Conference Presentation*	4.69	4.57	4.93	4.50	4.65				4.67
Course Projects or Practicals		4.78	4.71	4.70	4.66	4.62	4.56	4.52	4.65
Performance	4.60	4.50	4.53	4.57	4.64	4.67	4.49	4.75	4.59

Interpretation:

The opinions of all faculty for each part of the student portfolios is well above *very good.* The faculty agrees that our graduates and returning majors have demonstrated the ability to integrate geography and/or their minor field of study with cartography and/or geotechniques. Although, with a significant increase in majors as converts from other majors and the addition of the geography tract now offered in the discipline, the overall trend of averages will likely decline. The overall sum of the weighted averages, called performance, suggest no major adjustments in the program are needed.

Student Outcome 5:
Students demonstrate the ability to communicate geotechniques subjects to others in an oral and written manner.

Criterion 1 for Student Outcome 5:
The opinions of graduating seniors and alumni.

Instruments for Criterion 1 of Student Outcome 5:

a) ECU Graduating Senior Survey (1998 – present)
b) ECU Alumni Survey (2003 – present)

Results:

Survey of Cartography Graduating Senior

Survey Yr	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Overall
Avg Rating	4.0	4.7	4.3	4.0		4.30	3.83	4.25	4.25	4.00	4.00	4.20	4.00	4.15
n	2	3	4	5		6	6	4	4	6	5	12	11	68

Survey of Cartography Alumni

Survey Yr						2003	2004	2005	2006	2007	2008	2009	2010	Overall
Avg Rating						4.25	4.50	4.40	3.55	4.43	4.20	3.67	4.20	4.15
n						4	6	10	11	7	5	15	10	68

Interpretation:

The low number of respondents (shown as the variable *n* in the tables above), is insufficient to perform meaningful inferential statistics. Descriptively, however, it is clear that the opinion of both graduating seniors and alumni is above *very good*. Due to the high number of graduating seniors in the geography tract of the major, communication of geotechnical skills lack compared to their counterparts in the geotechniques tract. The program continues to prepare our majors by increased exposure to more oral projects in their coursework and on and off-campus activities. The overall averages of the survey results suggest no adjustments in the program are needed.

Criterion 2 for Student Outcome 5:
The evaluations performed by the faculty.

Instrument for Criterion 2 of Student Outcome 5:
Student portfolio rubric.

Results: [2010: 1. n = 11; 2. n = 0; 3. n = 43]

Survey of Portfolio

Survey Year	2003	2004	2005	2006	2007	2008	2009	2010	Overall
Senior Projects	4.72	4.45	4.30	4.54	4.52	4.62	4.27	4.68	4.51
Conference Presentation*	4.72	4.62	4.43	4.10	4.49				4.47
Course Projects or Practicals		4.65	4.58	4.03	4.42	4.32	4.21	4.41	4.37
Performance	4.72	4.54	4.4	4.3	4.49	4.52	4.25	4.59	4.48

Interpretation:

The opinions of all faculty for each part of the student portfolios is above *very good.* The faculty agrees that our graduates and returning majors have demonstrated the ability to communicate geotechniques subjects to others in an oral and written manner. The faculty also recognizes that due to the high number of graduating seniors in the geography tract of the major, communication of geotechnical skills lack compared to their counterparts in the geotechniques tract and averages are more than likely to decline in the future. The overall sum of the weighted averages, called performance, suggest no adjustments in the program are needed.

Student Outcome 6:
Students demonstrate the ability to work with others in a professional manner.

Criterion 1 for Student Outcome 6:
The opinions of graduating seniors and alumni.

Instruments for Criterion 1 of Student Outcome 6:

a) ECU Graduating Senior Survey (1998 – present)
b) ECU Alumni Survey (2003 – present)

Results:

Survey of Cartography Graduating Senior

Survey Yr	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Overall
Avg Rating	4.0	4.7	4.3	4.8		4.70	4.20	4.25	4.50	4.83	4.40	4.58	4.09	4.45
n	2	3	4	5		6	6	4	4	6	5	12	11	68

Survey of Cartography Alumni

Survey Yr						2003	2004	2005	2006	2007	2008	2009	2010	Overall
Avg Rating						4.50	4.67	4.70	4.45	5.00	4.40	4.13	4.50	4.54
n						4	6	10	11	7	5	15	10	68

Interpretation:

The low number of respondents (shown as the variable *n* in the tables above), is insufficient to perform meaningful inferential statistics. Descriptively, however, it is clear the opinion of the graduating seniors and alumni is above *very good*. All cartography courses have a lab component where students are learning and working together with each other and the faculty. Professionalism is also learned from off-campus activities where interaction with professionals is commonplace. This shows that the program is preparing our majors for professional careers.

Providing students with a real world experience contributes to this outcome. This has been achieved and is continuing in a positive direction. We now have students receiving academic credit for their internships and several students working this summer (2011) for wages and credit. We are meeting the goals of giving our students a real-world experience. We aim to succeed with this program under the direction of Dr. Greg Plumb and will continue the success in subsequent years through contacts with government and business entities, as well as through grant and fellowship programs. The overall averages of the survey results suggest no adjustments in the program are needed.

Criterion 2 for Student Outcome 6:
The evaluations performed by the faculty.

Instrument for Criterion 2 of Student Outcome 6:
Student portfolio rubric.

Results: [2010: 1. n = 11; 2. n = 0; 3. n = 43]

Survey of Portfolio

Survey Year	2003	2004	2005	2006	2007	2008	2009	2010	Overall
Senior Projects						4.62	4.64	4.80	4.62
Conference Presentation*	4.80	4.73	5.00	4.60	4.78				4.78
Course Projects or Practicals		4.78	5.00	4.66	4.58	4.32	4.72	4.83	4.70
Performance	4.80	4.78	5.00	4.63	4.68	4.52	4.67	4.81	4.74

Interpretation:

The opinions of all faculty for each part of the student portfolios is well above *very good.* The faculty agrees that our graduates and returning majors have demonstrated the ability to work with others in a professional manner. Senior projects are now evaluated since each student is required to meet with his/her advisor, as well as other faculty members for assistance, although a large portion of the project is performed by the students on their own time. The overall sum of the weighted averages, called performance, suggest no adjustments in the program are needed.

Student Outcome 7:
Students are qualified to seek an entry-level or better employment in cartography and/or geotechniques

Criterion 1 for Student Outcome 7:
The opinions of graduating seniors and alumni.

Instruments for Criterion 1 of Student Outcome 7:

a) ECU Graduating Senior Survey (1998 – present)
b) ECU Alumni Survey (2003 – present)

Results:

Survey of Cartography Graduating Senior

Survey Yr	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Overall
Avg Rating	4.0	4.0	4.5	4.4		3.80	3.67	4.00	4.25	4.67	4.00	4.20	4.27	4.15
n	2	3	4	5		6	6	4	4	6	5	12	11	68

Survey of Cartography Alumni

Survey Yr						2003	2004	2005	2006	2007	2008	2009	2010	Overall
Avg Rating						4.25	3.83	4.00	3.73	4.57	4.80	3.87	4.40	4.18
n						4	6	10	11	7	5	15	10	68

Interpretation:

The low number of respondents (shown as the variable *n* in the tables above), is insufficient to perform meaningful inferential statistics. Descriptively, however, it is clear the opinion of both graduating seniors and alumni is *very good.* Students recognize that they are better equipped to enter the workforce as current students gain confidence by applying lecture material to their laboratory work. This shows that the program is preparing our majors for professional careers. With the help of our alumni database, most of our alumni over the past five years are employed in the field. Due to the recent turn in the economy, some alumni are not able to secure work immediately after graduation. We are confident this trend will increase when the economy recovers in the years to come. The overall averages of the survey results suggest no adjustments in the program are needed.

Criterion 2 for Student Outcome 7:
The evaluations performed by the faculty.

Instrument for Criterion 2 of Student Outcome 7:
Student portfolio rubric.

Results: [2010: 1. n = 11; 2. n = 0; 3. n = 43]

Survey of Portfolio

Survey Year	2003	2004	2005	2006	2007	2008	2009	2010	Overall
Senior Projects	4.67	4.48	4.42	4.73	4.62	4.93	4.46	4.79	4.64
Conference Presentation*	4.84	4.67	4.90	4.23	4.50				4.63
Course Projects or Practicals		4.73	4.75	4.19	4.45	4.42	4.58	4.58	4.53
Performance	4.73	4.59	4.62	4.47	4.55	4.76	4.5	4.72	4.62

Interpretation:

The opinions of all faculty for each part of the student portfolios is above *very good.* The faculty agrees that our graduates and returning majors have demonstrated the ability to obtain an entry-level or better employment in cartography and/or geotechniques. The faculty is continually placing students in entry level positions through student internships and faculty and student contacts made at regional and local conferences. The overall sum of the weighted averages, called performance, suggest no adjustments in the program are needed.

Student Outcome 8:
Students are better qualified to seek and secure employment utilizing a college degree than without one.

Criterion 1 for Student Outcome 8:
The opinions of graduating seniors and alumni.

Instruments for Criterion 1 of Student Outcome 8:

a) ECU Graduating Senior Survey (1998 – present)
b) ECU Alumni Survey (2003 – present)

Results:

Survey of Cartography Graduating Senior

Survey Yr	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Overall
Avg Rating	4.5	4.3	4.5	4.2		4.00	4.20	4.00	4.25	4.83	4.80	4.42	4.36	4.36
n	2	3	4	5		6	6	4	4	6	5	12	11	68

Survey of Cartography Alumni

Survey Yr						2003	2004	2005	2006	2007	2008	2009	2010	Overall
Avg Rating						4.50	4.33	4.38	4.00	4.57	4.80	4.13	4.60	4.41
n						4	6	10	11	7	5	15	10	68

Interpretation:

The low number of respondents (shown as the variable *n* in the tables above), is insufficient to perform meaningful inferential statistics. Descriptively, however, it is clear the opinion of both graduating seniors and alumni are above *very good*. The graduating seniors and alumni are confident that they are well-schooled in the discipline, well-rounded from their general education courses and electives, and can compete with others for employment using their degree. Due to the success of the internship program and projects related to grants, higher demands are placed on the quality and utility of the program curriculum. This gives students confidence in obtaining employment requiring a college degree. The decline in current averages shows the effect of the struggling economy. The overall averages of the survey results suggest no adjustments in the program are needed.

Criterion 2 for Student Outcome 8:
The evaluations performed by the faculty.

Instrument for Criterion 2 of Student Outcome 8:
Student portfolio rubric.

Results: [2010: 1. n = 11; 2. n = 0; 3. n = 43]

Survey of Portfolio

Survey Year	2003	2004	2005	2006	2007	2008	2009	2010	Overall
Senior Projects	4.67	4.59	4.58	4.78	4.78	4.73	4.74	4.87	4.72
Conference Presentation*	4.93	4.73	4.93	4.36	4.75				4.74
Course Projects or Practicals		4.61	4.98	4.52	4.61	4.91	4.91	4.83	4.77
Performance	4.76	4.61	4.77	4.61	4.73	4.79	4.8	4.86	4.74

Interpretation:

The opinions of all faculty for each part of the student portfolios is well above *very good.* The faculty agrees that our graduates and returning majors have and will demonstrate the ability to obtain employment requiring a college degree. The faculty is continually placing students in entry level positions through student internships, projects related to grants, and faculty and student contacts made at regional and local conferences. The overall sum of the weighted averages, called performance, suggest no adjustments in the program are needed.

Student Outcome 9:
Students are prepared to enter graduate school.

Criterion 1 for Student Outcome 9:
The opinions of graduating seniors and alumni.

Instruments for Criterion 1 of Student Outcome 9:

a) ECU Graduating Senior Survey (1998 – present)
b) ECU Alumni Survey (2003 – present)

Results:

Survey of Cartography Graduating Senior

Survey Yr	2003	2004	2005	2006	2007	2008	2009	2010	Overall
Avg Rating	4.40	4.00	4.00	4.00	3.67	4.20	4.00	4.09	4.05
n	6	6	4	4	6	5	12	11	54

Survey of Cartography Alumni

Survey Yr	2003	2004	2005	2006	2007	2008	2009	2010	Overall
Avg Rating	4.30	4.75	4.17	4.17	4.40	5.00	3.83	3.80	4.30
n	3	6	10	11	7	2	15	10	64

Interpretation:

The low number of respondents (shown as the variable *n* in the tables above), is insufficient to perform meaningful inferential statistics. Descriptively, however, it is clear the opinion of graduating seniors is *very good* and the opinion of alumni is *good*. Ratings from both graduating seniors and alumni show the results of having two tracts in the discipline whereby the graduating seniors and alumni in the geography tract do not feel as confident as their counterparts in the geotechniques tract. The program is preparing students adequately for the rigors of graduate school despite having two tracts for students. The overall averages of the survey results suggest no adjustments in the program are needed.

Criterion 2 for Student Outcome 9:
The evaluations performed by the faculty.

Instrument for Criterion 2 of Student Outcome 9:
Student portfolio rubric.

Results: [2010: 1. n = 11; 2. n = 0; 3. n = 43]

Survey of Portfolio

Survey Year	2003	2004	2005	2006	2007	2008	2009	2010	Overall
Senior Projects	4.44	4.28	4.18	4.19	4.51	4.33	3.73	4.15	4.23
Conference Presentation*	4.68	4.49	4.50	3.66	4.33				4.33
Course Projects or Practicals		4.40	4.67	4.02	3.98	3.94	4.20	4.14	4.19
Performance	4.52	4.40	4.38	4.61	4.33	4.2	3.89	4.15	4.31

Interpretation:

The opinions of all faculty for each part of the student portfolios is *very good*. Due to the high number of students graduating in the geography tract that were formally in the geotechniques tract within the discipline, these students will usually enter the workplace at entry-level positions and will lack the maturity needed readily enter graduate school. The faculty agrees that our graduates that perform at a high level in their capstone classes are prepared to enter graduate school. The overall sum of the weighted averages, called performance, suggest no adjustments in the program are needed.

Student Outcome 10: *(not assessed by faculty evaluation)*
Determination of the overall educational value of the ECU Cartography program.

Criterion 1 for Student Outcome 10:
The opinions of graduating seniors and alumni.

Instruments for Criterion 1 of Student Outcome 10:

a) ECU Graduating Senior Survey (1998 – present)
b) ECU Alumni Survey (2003 – present)

Results:

Survey of Cartography Graduating Senior

Survey Year	2003	2004	2005	2006	2007	2008	2009	Overall
Avg Rating	4.30	4.00	4.50	4.75	4.33	4.40	4.17	4.35
n	6	6	4	4	6	5	12	43

Survey of Cartography Alumni

Survey Year	2003	2004	2005	2006	2007	2008	2009	Overall
Avg Rating	4.00	5.00	4.30	4.18	5.00	4.60	4.00	4.44
n	3	6	10	11	7	5	15	57

Interpretation:

The low number of respondents (shown as the variable *n* in the tables above), is insufficient to perform meaningful inferential statistics. Descriptively, however, it clear that the opinion of both graduating seniors and alumni are *very good*. It is clear to graduating seniors and alumni that the value of the education offered at ECU in the cartography program is held at a high standard. This shows that the value of the Cartography program is useful to students and the reality of the workplace or graduate school is not far ahead of the current program curriculum. The overall averages of the survey results suggest no adjustments in the program are needed.

Student Outcome 11: *(not assessed by faculty evaluation)*
Determination of the student's competitiveness as compared to their cartography/ geotechniques counterparts who graduated from other universities.

Criterion 1 for Student Outcome 11:
The opinions of graduating seniors and alumni.

Instruments for Criterion 1 of Student Outcome 11:

a) ECU Graduating Senior Survey (1998 – present)
b) ECU Alumni Survey (2003 – present)

Results:

Survey of Cartography Graduating Senior

Survey Yr	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Overall
Avg Rating	4.00	3.30	5.00	4.00		4.30	3.67	4.00	3.75	4.33	4.40	3.70	3.90	4.03
n	2	3	1	5		6	6	4	4	6	5	12	11	65

Survey of Cartography Alumni

Survey Yr						2003	2004	2005	2006	2007	2008	2009	2010	Overall
Avg Rating						4.00	4.67	4.10	4.00	4.50	4.50	4.07	4.30	4.27
n						4	6	10	11	7	4	15	10	67

Interpretation:

The low number of respondents (shown as the variable *n* in the tables above), is insufficient to perform meaningful inferential statistics. Descriptively, however, it clear that the opinion of graduating seniors is *good* and the opinion of alumni is *very good*. Both averages have decreased as evidenced by the results of outcome nine. It is clear to graduating seniors and alumni that the value of the education offered at ECU in the Cartography program is held at a high standard. The overall averages of the survey results suggest no adjustments in the program are needed.

General Student Outcome: *(assessed on faculty evaluation only)*
Overall evaluation of student performance.

Criterion 1 for General Student Outcome:
The opinions of faculty.

Instrument for Criterion 1 of General Student Outcome:
Student portfolio rubric.

Results: [2010: 1. n = 11; 2. n = 0; 3. n = 43]

Survey of Portfolio

Survey Year	2003	2004	2005	2006	2007	2008	2009	2010	Overall
Senior Projects	4.75	4.52	4.56	4.36	4.54	4.69	4.33	4.75	4.56
Conference Presentation*	4.88	4.74	4.73	4.22	4.59				4.63
Course Projects or Practicals		4.63	4.73	4.22	4.45	4.29	4.33	4.50	4.45
Performance	4.79	4.60	4.65	4.43	4.53	4.56	4.33	4.67	4.57

Interpretation:

The opinions of all faculty for each part of the student portfolios is above *very good.* The faculty agrees that our graduates are performing at a competitive level overall.

SUGGESTIONS OF GRADUATING SENIORS, ALUMNI AND FACULTY ACQUIRED FROM "OPTIONAL" COMMENTS ON SURVEYS

A. Increased computer language skills and knowledge of AutoCad.

The use of AutoCad and various other computer languages are still used in the workplace and should be taught at ECU.

B. Incorporate the use of at least one Trimble GeoXT with ArcMap Software.

Instruction to students using survey level location systems is becoming more popular and should be taught in certain ECU courses.

C. Strengthen the effectiveness of the geography-related courses.

This is an ongoing concern that has surfaced on several surveys and will be monitored and discussed with the chair of the department.

D. Stress the use of more vector-based GIS instead of raster-based GIS.

As students enter the workplace, they have commented on the more pervasive use of vector-based GIS since it is mostly used in the workplace today.

E. Introduce the utility of ArcIMS, SDE, and data models.

Students have continually addressed the use of ArcIMS, SDE, and data models used in the workplace and have felt unprepared on its use and importance.

F. Offer more geography-related courses.

Students in the geotechniques tract are beginning to see the utility of their skills and are looking for more avenues where they can apply their skills while students in the geography tract want more selection. Field surveying, spatial statistics, biogeography, advanced physical geography, advanced topics in remote sensing, and advanced topics in GIS have surfaced in recent surveys.

G. Strengthen the effectiveness in the Research Design course.

Students have commented on the disconnect between what they learned in the Data Collection and Field Methods course and the Research Design course. More importantly, they see no value in the course as assisting them in their senior project and as professionals in the discipline. The course is loosely defined and lacks rigor and purpose.

H. Hire another faculty member.

Students see the need for more course offerings and skills as enrollments increase.

I. More space and more computers.

Higher enrollments have put a strain on current capacities in the lab. Ultimately, this creates an uncomfortable environment in which to learn.

J. Incorporate a better way to administer the comprehensive exam.

K. Focus more on script writing, ESRI computer languages, geodatabases and writing.

Students are noticing the importance of script writing and various computer languages in the workplace. In addition, managing geodatabases and professional writing should be stressed.

ACCOMPLISHMENTS AND ADDITIONS FROM PRIOR ASSESSMENTS

1. Strengthen enrollment in the program.

Being a small and unique department, it is particularly desirable to possess a high quality in the quantity of students majoring in the discipline. Recruitment numbers, in terms of commitment and potential commitments are above our goal of eight students a year. We have attracted more freshmen than in previous years and hope to become less dependent on change of major and transfer students to meet our incoming major enrollment goals. Our web page has allowed us to advertise to all grade levels and our new look and appeal in our hallways and labs makes our department vibrant and attractive, despite having our space reduced over the years. We are focused on events on and off campus for our students where we are also more visible. In addition, a full course offering in geography courses and more active recruiting has helped. We are also in contact with our alumni and updating our database is ongoing. Additionally, our earth science assessment is ongoing so that we can strengthen the possibility of increasing enrollment by attracting general education students. World Regional Geography is now part of the G2 general education section while Economic Geography has moved to an upper division course. This may increase enrollment since geography courses will be spread out in the general education sections.

2. Have greater flexibility in courses required in the major.

We have not met our goal of offering more geography courses in the physical realm since there is insufficient faculty teach them and students to enroll in them. We are willing to teach more courses but cannot physically do so. Courses such as weather and climate, biogeography, geomorphology, field surveying, AutoCad, are all possibilities. This would enable students to have "X" number of electives in the major. Increasing enrollment might secure an additional faculty member. The best we can do is increase interest in our program so that it warrants another faculty member in the future. Interest in the department is likely to increase with the Atlas of Oklahoma Project, the NASA Fellowship Program geared to remote sensing and the Earth Science Enterprise within NASA, the resurgence of the remote sensing program, the newer lab and increased space, and a possible study abroad program.

3. Seek interdisciplinary curricular opportunities across campus.

This is slow and on-going. The Geography of Oklahoma is now part of the general studies and history programs and we have secured upper level credit for it. The department is

continuing to offer a summer field course for upper division geography and history credit. This course is a continued success and becomes more popular each year. The faculty is also actively seeking a partnership with the Environmental Health Science (EHS) Department. Many EHS students (with the help of Dr. Weirick) have witnessed an increase in the value of geotechniques in their discipline and see the value of our cartography courses. Likewise, several Cartography students are interested in the EHS program as a minor. In addition, the department has secured a site license for ArcGIS, the main spatial analysis program used by students in the major.

4. Exposure to a wider range of software programs in a timely manner, both in mapping and database management.

This was an issue years ago and has been accomplished. The cartography program is heavily dependent on techniques gained from software and keeping up with new versions requires a steep learning curve. There will be peaks and valleys associated with this issue. The students, as well as faculty, recognize that these transitions take time to implement.

5. Restructure the Research Design course.

Over the past two assessments, the students along with the faculty agreed that the current status of *CARTO 3233 Geospatial Research Design and Analysis* was not an effective course. Lack of "structure, rigor, expectation, and effectiveness" has been sighted as shortcomings. The faculty suggested that this course involve strengthening methods of research design via journal articles and the student's own senior project. The student should also learn how to write a research proposal geared to their own project and how to properly communicate their research to others. The student should be familiar with resume writing and interviewing techniques. In support of these changes, current faculty teaching advanced techniques courses have implemented additional journal article readings to instill methods of the writing and implementing geographic research (as learned in *CARTO 2713 Elementary Data Collection and Field Methods*). In doing so, there should be a direct research linkage among all the cartography courses, and by the time a student reaches their senior year, they will be schooled in how to implement a research project. In the end, this will improve the student's confidence when leaving the program. This is on-going and progress should be noticed in the student's senior projects.

6. Faculty should be more assessable.

Since the last two assessments, this has greatly improved. The faculty has also noticed that accessibility is declining due to higher enrollments, increased grading, more paperwork, and increased grant writing. Faculty should remember that we keep an open door policy to all our students. In retrospect, students should realize that in order to stay on top of the discipline and acquire new research ventures, there will be times when a faculty member is not assessable. When we are assessable, we should be aware of each student's needs.

7. Increase the rigor of the mathematics component.

This has been accomplished and continually being monitored. Because of more software improvements, thinking mathematically is commonplace.

8. Formal acceptance of current changes in Senior Projects.

With the passing of another round of senior projects, the faculty agreed to have formal one week progress reports, implementation of the geographic analysis of their research (a writing component), and a formal presentation to faculty, students, and invited guests. This will prepare the students for post undergraduate ventures and increase their confidence in the discipline. This has been accomplished to some degree and is an on-going process to be monitored.

9. Make college algebra a requirement before junior year.

This has been accomplished and always stressed when enrollment time begins.

10. Investigate a formal lab component (time slot) to selected cartography courses (faculty suggestion).

All courses taught in cartography, except research design and senior project, have a lab component but no designation is given to these courses. Currently, the courses are taught as a lecture (3 credits) and lab (no credits) for a total of 3 credit hours. If courses are offered as a lecture (2 credits) and lab (2 credits) for a total of 3 credit hours, students might feel that they are better prepared for the employment and graduate school since more lab time would be offered. This idea was not accepted by the University and will not be investigated any further.

ASSESSMENT OF ASSESSMENT

"The validity of assessment is only as good as the methodology used."

Both the qualitative and the quantitative components of this assessment have provided useful information. Without statistical validation, however, the results are subjective and prone to individual interpretation. The following are a series of questions whose answers are somewhat uncertain, along with suggestions on how the department can revise its assessment procedures in order to answer them in future years.

1. Why is there a difficult time obtaining 100% of graduating senior surveys? Due to fall and summer graduates, timing becomes essential for proper response. Ideas among the faculty will be addressed to pinpoint proper ways to collect surveys in a timely manner. In the past year, almost 100% of graduating senior surveys have been returned. A new method has been implemented by the assessment chair and is working successfully.

*2. Why are there a low number of alumni surveys? D*espite the small size of the program, one would expect more alumni survey respondents. Survey results are only successful as the data that supports their dissemination. This is due to the lack of time invested by the recruitment chair. The chair of the department has been notified of this issue.

3. Are there other instruments that can be used to assess the program? A third instrument was finally instituted (Fall 2008) and was embedded into the Research Design course. It was given as comprehensive exam that was part of the students' grade. The timing of the individual parts, the initial results, and format are currently under review. In addition, how to better administer each exam from each professor and how to quantify and interpret the results are being changed for next year.

4. How can valid quantitative statistical analyses be achieved? Even if all the surveys are returned, a single year is an insufficient number for inferential statistical study.

5. Can the content and/or wording of the surveys be improved? This was a question in the prior assessments and is an on-going process. The most recent changes were implemented in Spring 2007.

6. Why aren't minors in the program, nor students who took general education courses in the program, assessed? Although important to the faculty in the department, assessment of minors and general education courses does not fall into "the program" as viewed by the University and the State Regents. Data will continue to be collected even though it will not be reported.

CONCLUDING REMARKS

This concludes the assessment of the Bachelor of Science in Cartography and Geography, which includes both the Geotechniques and Geography tracts. In summary, the Cartography Program adequately prepares its graduates for employment in the profession and for continuation in post-graduate study. Overall, the program appears stronger than ever, with no significant academic shortcomings. Due to a small sample size, these conclusions are somewhat subjective.

APPENDIX I:

Graduating Senior Survey

EAST CENTRAL UNIVERSITY
CARTOGRAPHY GRADUATING SENIOR SURVEY

East Central University (ECU) is assessing the effectiveness of the specialized degree programs offered at the University. As a graduate of the ECU Cartography Program, we would like for you to complete the survey below. For convenience, you can simply click the SEND button to return the completed form. Your response will be emailed anonymously.
If you would rather mail it, the address is shown at the bottom of the page.

PLEASE REPLY WITHIN THE NEXT TWO WEEKS. THANKS!!

Rate your academic undergraduate-level preparation in each of the following areas:

1. Provided with a fundamental knowledge of principles and terminology in cartography and geotechniques.
2. Obtained the skills to utilize computer software in cartography and geotechniques.
3. Ability to develop and implement a mapping and/or analysis project.
4. Capability to integrate geography and/or minor field of study with cartography and/or geotechniques.
5. Ability to communicate geotechniques subjects to others in an oral and written manner.
6. Ability to work with others in a professional manner.
7. Students are qualified to seek an entry-level or better employment in cartography and/or geotechniques.
8. Students are better qualified to seek and secure employment utilizing a college degreee than without one.
9. Preparedness to enter graduate school.
10. Overall assessment on the educational value of the ECU Cartography program.
11. Your competitiveness as compared to your cartography/geotechniques counterparts who graduated from other universities.

Feel free to add comments in the box below.

Click Send to submit the completed survey.

or

Use your browser's PRINT command to generate hard-copy. Mail it to:

Dr. Marco Micozzi, Assessment Chair
Department of Cartography & Geography
East Central University
Ada, OK 74820-6899

Thank you for your participation!

APPENDIX II

Alumni Survey

EAST CENTRAL UNIVERSITY
CARTOGRAPHY ALUMNI SURVEY

East Central University (ECU) is assessing the effectiveness of the specialized degree programs offered at the University. As a graduate of the ECU Cartography Program, we would like for you to complete the survey below. For convenience, you can simply click the SEND button to return the completed form. Your response will be emailed anonymously.
If you would rather mail it, the address is shown at the bottom of the page.

PLEASE REPLY WITHIN THE NEXT TWO WEEKS. THANKS!!

Rate your academic undergraduate-level preparation in each of the following areas:

1. Provided with a fundamental knowledge of principles and terminology in cartography and geotechniques.
2. Obtained the skills to utilize computer software in cartography and geotechniques.
3. Ability to develop and implement a mapping and/or analysis project.
4. Capability to integrate geography and/or minor field of study with cartography and/or geotechniques.
5. Ability to communicate geotechniques subjects to others in an oral and written manner.
6. Ability to work with others in a professional manner.
7. Students are qualified to seek an entry-level or better employment in cartography and/or geotechniques.
8. Students are better qualified to seek and secure employment utilizing a college degreee than without one.
9. Preparedness to enter graduate school.
10. Overall assessment on the educational value of the ECU Cartography program.
11. Your competitiveness as compared to your cartography/geotechniques counterparts who graduated from other universities.

Feel free to add comments in the box below.

Click Send to submit the completed survey.

or

Use your browser's PRINT command to generate hard-copy. Mail it to:

Dr. Marco Micozzi, Assessment Chair
Department of Cartography & Geography
East Central University
Ada, OK 74820-6899

Thank you for your participation!

APPENDIX III

Comprehensive Evaluation