

Texas State University

Outcomes Report

General Information

Academic Year:	2011-2012
College:	Liberal Arts
Department:	Geography
Program:	Resource and Environmental Studies (MAGeo)
Program Code:	3.01
Outcome Type:	Student Learning
Degree:	Masters
Contact Name:	Dr. David Butler, Graduate Coordinator
Status:	Data Entry Closed

Mission Statement

The Master of Applied Geography (MAGeo) degree in resource and environmental studies is designed to prepare students to use their skills and background knowledge to solve real-world problems with geographic dimensions within environmental geography. Students will be educated in the process of applied research in a spatial context culminating in the completion of a directed research project.

Evidence of Improvement

The performance of first-year students in Outcome 1 Method 1 and Outcome 2 Method 1 continues to suggest that the higher admission standards implemented fall 2011 have resulted in better prepared students entering the program. This conclusion is further supported by the comment from the instructor for the course in Outcome 3 Method 1 where he states that this was his "best 5300 section I have had so far!"

Action Plan

The advisors for Master's students need to advise their students, especially those in their second year of the program, to make presentations at professional conferences. In particular, students will be encouraged to participate in our local Texas Geography Student Research Symposium (GSRs) which is held during the spring semester.

For Outcome 5, Method 2 which deals with post-graduation placement, the department will complete a data collection transition from using Facebook to using LinkedIn, given that the latter seems to provide a more complete professional connection with recent alumni. The Geography faculty has recommended that the Master of Applied Geography-Land Management program (MAG-LM) be eliminated with new admissions not accepted effective fall 2013. It is felt that the broader focus of the Master of Applied Geography-Resource and Environmental Studies program can absorb the components of the land management program.

Outcome 1

Students will demonstrate an understanding of current research within the breadth of geography, as well as more in depth knowledge of research in their specialty areas.

Outcome 1 - Method 1

The required core course, GEO 5309 Geographical Analysis, is team taught with guest presentations from all Geography faculty members. Course instructors will use a 3-point Likert-type scale to analyze student papers and assignments at the end of the semester in order to assess student understanding of the breadth of current research within geography. Student understanding will be measured based on the following scale: 1 = fails to meet, 2 = meets, or 3 = exceeds expectations. We expect that 100% of students will meet or exceed expectations on this outcome.

Outcome 1 - Method 1 - Result

GEO 5309 is taught once a year and usually taken by students during their first semester in the program. In the Fall 2011 semester, class size was 38 compared to 44 and 51 in the previous two years. Reduced enrollment was expected given the implementation of higher admission standards effective fall 2011. Of the 38 students, 12 (32%) exceeded expectations, 19 (50%) met expectations, and 7 (18%) failed to meet expectations on their papers and assignments. These results were comparable to those for fall 2011, when most students enrolled were also admitted under the newer higher admission standards. While our target of 100% meeting expectations has not been fully met, there is evidence that students perform better as a group over the past four years on basic understanding of geographic principles according to observations by the lead instructor. This is likely due to better preparation as a result of the implementation of higher admission standards.

Outcome 1 - Method 2

After completion of the required comprehensive exam at the end of the student's last year, the student's examination committee will rate the individual student's performance in terms of depth of knowledge of current research within his/her specialty area, using a Likert-type scale. Student performance will be measured based on the following scale: 1 = fails to meet, 2 = meets, or 3 = exceeds expectations. We expect that 100% of students will meet or exceed expectations on this outcome.

Outcome 1 - Method 2 - Result

During 2011-2012, a total of 27 students were assessed after their comprehensive exams for this outcome and method, which compares to 47 the previous year (representing the last group admitted under the old admissions standards). Of these 27 students, 100% met (59%) or exceeded (41%) expectations. Thus we met our target.

Outcome 2

Students will demonstrate an understanding of basic spatial statistics and multivariate quantitative and analytical methods, and other appropriate tools for spatial analysis.

Outcome 2 - Method 1

Student performance on embedded key examination questions in the required core course, GEO 5301 Multivariate Quantitative Methods, will be assessed by the course instructor using a Likert-type scale at the end of the semester. Student performance will be measured based on the following scale: 1 = fails to meet, 2 = meets, or 3 = exceeds expectations. It is expected that 100% of students will meet or exceed expectations on this outcome.

Outcome 2 - Method 1 - Result

GEO 5301 was taught during each of Summer 2010, Fall 2010 and Spring 2011 and is usually taken during a student's first year in the program. Three different instructors were involved. Combining results for all three course offerings, 51 students (versus 40 last year) were rated using Method 1. Of these, 30 (59%) exceeded expectations, 21 (41%) met expectations, and no one failed to meet expectations. Thus we again met our target of 100% at least meeting expectations. The results for the past two years were significantly better than those for the previous two years. As implied in last year's report, this suggests that successful implementation of higher admission standards effective Fall 2011 may have resulted in first-year incoming students being better prepared in quantitative methods.

Outcome 2 - Method 2

After completion of the required comprehensive exam at the end of the student's last semester, the student's examination committee will rate the individual student's understanding of basic and multivariate quantitative methods and other analytical methods or technical tools relevant to the student's intended research area, using a Likert-type scale. Student understanding will be measured based on the following scale: 1 = fails to meet, 2 = meets, or 3 = exceeds expectations. It is expected that 100% of students will meet or exceed expectations on this outcome.

Outcome 2 - Method 2 - Result

Method 2 examines second year (completing) students for this outcome. During 2011-2012, a total of 27 students were assessed after their comprehensive exams for this outcome and method. Of these students, 9 (33%) exceeded learning objective expectations, 18 (67%) met expectations, and none failed to meet expectations; thus we met our target for this outcome.

Outcome 3

Students will demonstrate an understanding of the components of research design including problem definition, theory, literature review, methodology, and analysis.

Outcome 3 - Method 1

Student performance on the required course paper with regard to problem definition and the other components of research design in the required core course, GEO 5300 Applied Research Design and Techniques, will be rated by the course instructor at the end of the course using a Likert-type scale. Student performance will be measured based on the following scale: 1 = fails to meet, 2 = meets, or 3 = exceeds expectations. It is expected that 100% of students will meet or exceed expectations on this outcome.

Outcome 3 - Method 1 - Result

GEO 5300 was taught during Spring 2012 (two sections) – students typically take this required core course during their first year in the second semester in the program. For the two, final course papers were assessed for a total of 26 MAG students. Of these students, 18 (69%) exceeded expectations, 8 (31%) met expectations, and none failed to meet expectations. Thus, we met our target. Results were skewed according to the two instructors: one rated all 8 of her students as just meeting expectations; the other rated all 18 of his students as exceeding expectation. This latter instructor, who has taught this course over several years, remarked that this was his "best 5300 section I have had so far!" This may, in part, reflect a better quality incoming cohort under the new higher admission standards for the master's degree program.

Outcome 3 - Method 2

After completion of the required Directed Research Project at the end of the student's last year, the student's examination committee will rate the individual student's research project in terms of its research design components, using a Likert-type scale. Student performance will be measured based on the following scale: 1 = fails to meet, 2 = meets, or 3 = exceeds expectations. It is expected that 100% of students will meet or exceed expectations on this outcome.

Outcome 3 - Method 2 - Result

During 2011-2012, a total of 16 students were assessed after completion of their directed research project (these students generally represent the second-year cohort) for this outcome and method, which was a number similar to the 17 during 2009-10 after a blip of 38 last year (the last group dominated by students from the old admission standard era). The number of students by MAG track was: 5 in MAG-Resource and Environment, 3 in MAG-LADM, 3 in MAG-General Geography, and 5 in MAG-GIScience. Of the 16 students, 5 (31%) exceeded learning objective expectations, 10 (63%) met expectations, and 1 student failed to meet expectations. Thus, we fell just short of meeting our target. None of the students in the MAG-LADM program exceeded expectations.

Outcome 4

Students will demonstrate significant research and writing expertise resulting in a meaningful scholarly contribution.

Outcome 4 - Method 1

A compilation of student presentations at professional conferences and student authored or co-authored publications will be maintained by the Department. We strive for at least 50% participation by students on this method for this outcome.

Outcome 4 - Method 1 - Result

In February 2012, the department hosted the 8th annual Texas Geography Student Research Symposium (GSRs). Five Master's degree students presented posters or papers on their research. It is a tradition in the department to use this opportunity as a practice run for students scheduled to participate in the national AAG meeting, which was held in Seattle, WA during April.

During the 2011-12 year, only 7 Master's students made professional presentations (posters or papers) at 5 out-of-state conferences. This level of participation remains significantly below our goal. While it may be difficult to have master's students sufficiently prepared to submit abstracts in a timely fashion for major conferences, participation in the local GSRs should be higher.

Outcome 4 - Method 2

After completion of the required Directed Research Project at the end of the student's final semester, the student's examination committee will rate the individual student's research project in terms of its scholarly contribution and writing quality, using a Likert-type scale. Student performance will be measured using the following scale: 1 = fails to meet, 2 = meets, 3 = exceeds expectations. It is expected that 100% of students will meet or exceed expectations on this outcome.

Outcome 4 - Method 2 - Result

During 2011-2012, a total of 16 students were assessed after completion of their directed research project (these students generally represent the second-year cohort) for this outcome and method, which was a number similar to the 17 during 2009-10 after a blip of 38 last year (the last group dominated by students from the old admission standard era). The number of students by MAG track was: 5 in MAG-Resource and Environment, 3 in MAG-LADM, 3 in MAG-General Geography, and 5 in MAG-GIScience. Of the 16 students, results were identical to that for Outcome 3, Method 2, with 5 (31%) exceeding learning objective expectations, 10 (63%) meeting expectations, and 1 student failing to meet expectations. Thus, we fell just short of meeting our target.

Outcome 5

Students will be prepared to apply their skills in professional careers.

Outcome 5 - Method 1

At the end of each semester, the Department conducts evaluations of student assistantship duties, including student teaching evaluations, peer teaching evaluations, and mentor evaluations of research duties. The Graduate Coordinator and/or Chair will review these evaluations and arrange appropriate mentoring as needed. Student performance on assistantship duties will be measured using the following scale: 1 = fails to meet expectations, 2 = meets, 3 = exceeds expectations. It is expected that 100% of students will meet or exceed expectations on this outcome.

Outcome 5 - Method 1 - Result

The Department conducts student evaluations every semester for all instructors. The instrument uses a 5 point scale. Instructors scoring below 3.5 on this scale are deemed to have failed to meet expectations and mentoring action is initiated. Those scoring between 3.5 and 4.0 have met expectations while those scoring over 4.0 have exceeded expectations.

During both Fall 2011, 11 Master's students served as IA lab instructors while during Spring 2012, 15 served in this capacity. Student evaluations of instructor resulted in one of these instructors receiving a score below 3.5 (on the 5 point scale) during the spring semester. Whether this instructor will be reassigned a teaching role is under review, and if she is, appropriate mentoring will be provided.

Other Master's assistants served in instructional (IA) roles as graders and in other instructional support activities, and some served in research assistant (RA) roles. Faculty members who have IA or RA support provide formal written feedback to the Chair at the end of the semester. The vast majority received strong evaluations from the faculty members for whom they worked (mostly 4 or 5 scores on five questions, each with a scale of 1-5, with "5" being the highest level of performance and scores below a "3" on an individual question being of concern – i.e. failing to meet expectations on that one question). Two Master's graduate assistants received scores below a 3 on

two or more of the five questions. While disappointing, both students were in their last semester of assistantship support. Overall, we fell just short of having all Master's graduate assistants at least meeting expectations.

Outcome 5 - Method 2

The Department will maintain a record of post-graduate placement in professional employment or continuing education (including placement in PhD programs) upon students' degree completion. This record will provide the Department with statistical frequencies of particular student post-graduate positions in order to determine how and to what degree student success is applied beyond this program. We expect that 100% of our students who seek employment or acceptance to programs to further their education will have positions within one year of graduation.

Outcome 5 - Method 2 - Result

In order to connect with Master's degree alumni and ascertain their post-graduate placement in professional employment or continuing education, the Department launched alumni sites in late 2008 on Facebook. Early in 2012, we also launched a LinkedIn site. For comparison to the past, note that of the 302 students who graduated from our Master's degree programs during calendar years 2002 through 2010, we have placement information for 165 Master's degree alumni which is 55% of those who graduated during this period. The breakdown of placement upon graduation for this 9-year collective group was about 1/3 private sector; 1/4 public sector (state, local, etc.); 1/4 enrolled in PhD programs; and 1/6 employed in the education field or other activities.

For calendar year 2011, 33 additional students graduated from the geography Master's degree programs, of which we have placement information for 24 (i.e. 73% of the total). The higher rate of obtaining placement information is due to the initiation of using LinkedIn to supplement the Facebook data.

Of the 24 new alumni, 13 (54%) went into the private sector, 8 (33%) are employed in the public sector, 0 (0%) went or are going into PhD programs, and 3 (13%) are employed in education. The most notable difference is the much larger proportion of Master's graduates who have gone into the private employment sector compared to last year and the nine-year collective sample noted above. This might be reflective of the tightening of state government employment in Texas.

This placement record for our Master's alumni continues to suggest that our students are well-prepared for post-graduate careers in the private and public sectors. The number of recent graduates who have entered/are entering PhD programs this year (zero) represents a significant departure from the recent past.

Since the data available on Master's alumni placement is incomplete, it is impossible to ascertain whether we have reached this outcome's targeted goal of 100% placement. Nevertheless, results suggest that students continue to do well after graduation.

Approval History

Approval History Event	Approver
Outcomes Approved Level 1	Philip Suckling (PS33)
Outcomes Approved Level 2	Michael Hennessy (mh17)
Outcomes Audit Report Submitted	Lucy Harney (ld12)
Results Approved Level 1	Philip Suckling (PS33)
Results Approved Level 2	Michael Hennessy (mh17)
Results Audit Report Submitted	Lucy Harney (ld12)

General Information

Academic Year:	2010-2011
College:	Liberal Arts
Department:	Geography
Program:	Resource and Environmental Studies (MAGeo)
Program Code:	3.01
Outcome Type:	Student Learning
Degree:	Masters
Contact Name:	Dr. David Butler, Graduate Coordinator
Status:	Data Entry Closed

Mission Statement

The Master of Applied Geography (MAGeo) degree in resource and environmental studies is designed to prepare students to use their skills and background knowledge to solve real-world problems with geographic dimensions within environmental geography. Students will be educated in the process of applied research in a spatial context culminating in the completion of a directed research project.

Evidence of Improvement

The performance of first-year students in understanding the current research within the breadth of geography for Outcome 1 (Method 1) showed significant improvement. Half as many student failed to meet expectation compared to the previous year (7 versus 14 students or 17% versus 27%). The performance of first-year students in quantitative methods for Outcome 2 (Method 1) showed significant improvement. The performance of first-year students in research design for Outcome 3 (Method 1) showed significant improvement.

Action Plan

Results for Method 1 versus Method 2 indicate that last year's Action Plan to rigidly enforce entrance standards may have had a positive impact upon our program. In order to further ensure that incoming students are well prepared for our Master's degree programs, admission GPA standards are being raised effective Fall 2011.

The success of coordination of the different sections of GEO 5301 will continue in order to ensure that all students have an opportunity to acquire the quantitative methods skills needed. In order to ensure that incoming students are well prepared for our Master's degree programs, admission GPA standards are being raised effective Fall 2011.

The failure of some students to meet expectations in Method 2 while performance of first-year students in Method 1 improved, supports our action plan of last year in which the department more rigorously enforced its entrance requirements to ensure that students were ready to enter graduate school. In order to further ensure that incoming students are well prepared for our Master's degree programs, admission GPA standards are being raised effective Fall 2011.

While the department places considerable emphasis on supporting student travel to participate in professional conferences, Master's degree students have not taken advantage of these opportunities. Especially for the MS program, the department needs to find methods to motivate greater student participation. This will be a challenge given the current fiscal climate; however, encouraging participation at on-campus and nearby venues should be feasible. For example, MAGeo students will be strongly encouraged to take advantage of participating in the on-campus conferences sponsored by the Graduate College in November and the Geography Department in the spring. With respect to Method 2, most students met or exceeded expectations and therefore have achieved a sufficient level of writing and research expertise.

The assistantship duties of Master's students were deemed to be very well-done. Given that less than 20% of Master's degree students have assistantships, such high quality should be expected. Performance will continue to be monitored closely. For Method 2, efforts will continue to gather placement data for recent Master's degree graduates.

Outcome 1

Students will demonstrate an understanding of current research within the breadth of geography, as well as more in depth knowledge of research in their specialty areas.

Outcome 1 - Method 1

The required core course, GEO 5309 Geographical Analysis, is team taught with guest presentations from all Geography faculty members. Course instructors will use a 3-point Likert-type scale to analyze student papers and assignments at the end of the semester in order to assess student understanding of the breadth of current research within geography. Student understanding will be measured based on the following scale: 1 = fails

to meet, 2 = meets, or 3 = exceeds expectations. We expect that 100% of students will meet or exceed expectations on this outcome.

Outcome 1 - Method 1 - Result

GEO 5309 is taught once a year. In the Fall 2010 semester, class size was 44 compared to 51 the previous year. Of the 44 students, 21 (48%) exceeded expectations, 16 (36%) met expectations, and 7 (16%) failed to meet expectations on their papers and assignments. Compared to last year, half as many students (7 versus 14; or 17% versus 27%) failed to meet expectations indicating substantial improvement. This suggests successful implementation of last year's action plan and/or first-year incoming students were better prepared in quantitative methods. It should be noted that admission standards were rigidly enforced this past year with far fewer students admitted under provisional status compared to Fall 2009. Looking over the past three years, students who exceeded expectations (the top performing category) went from 33% in Fall 2008, to 41% in Fall 2009, to 48% in Fall 2010. While our target of 100% meeting expectations has not been fully met, progress towards that goal is being made.

Outcome 1 - Method 2

After completion of the required comprehensive exam at the end of the student's last year, the student's examination committee will rate the individual student's performance in terms of depth of knowledge of current research within his/her specialty area, using a Likert-type scale. Student performance will be measured based on the following scale: 1 = fails to meet, 2 = meets, or 3 = exceeds expectations. We expect that 100% of students will meet or exceed expectations on this outcome.

Outcome 1 - Method 2 - Result

During 2010-2011, a total of 47 students were assessed after their comprehensive exams for this outcome and method, which compares to only 30 the previous year. Of these students, 25 (53%) exceeded expectations, 21 (45%) met learning objectives expectations, and 1 (2%) failed to meet expectations; thus we did not fully meet our target. These results were not as strong as the previous year when no one failed to meet expectations and 70% exceeded expectations. This suggests that, while most students mastered this outcome, these graduating students were not as strong as in the previous year.

Outcome 2

Students will demonstrate an understanding of basic spatial statistics and multivariate quantitative and analytical methods, and other appropriate tools for spatial analysis.

Outcome 2 - Method 1

Student performance on embedded key examination questions in the required core course, GEO 5301 Multivariate Quantitative Methods, will be assessed by the course instructor using a Likert-type scale at the end of the semester. Student performance will be measured based on the following scale: 1 = fails to meet, 2 = meets, or 3 = exceeds expectations. It is expected that 100% of students will meet or exceed expectations on this outcome.

Outcome 2 - Method 1 - Result

GEO 5301 was taught during each of Summer 2010, Fall 2010 and Spring 2011. Three different instructors were involved. Combining results for all three course offerings, 40 students were rated using Method 1. Of these, 30 (75%) exceeded expectations, 10 (25%) met expectations, and no one failed to meet expectations. Thus we met our target this year. These results were significantly better than those for the previous two years especially in terms of the number of students exceeding expectations. This suggests successful implementation of last year's action plan and/or first-year incoming students were better prepared in quantitative methods. It should be noted that admission standards were rigidly enforced this past year with far fewer students admitted under provisional status compared to Fall 2009.

Outcome 2 - Method 2

After completion of the required comprehensive exam at the end of the student's last semester, the student's examination committee will rate the individual student's understanding of basic and multivariate quantitative methods and other analytical methods or technical tools relevant to the student's intended research area, using a Likert-type scale. Student understanding will be measured based on the following scale: 1 = fails to meet, 2 = meets, or 3 = exceeds expectations. It is expected that 100% of students will meet or exceed expectations on this outcome.

Outcome 2 - Method 2 - Result

Method 2 examines second year (completing) students for this outcome. During 2010-2011, a total of 47 students were assessed after their comprehensive exams for this outcome and method, compared to only 30 the previous year. Of these students, 18 (38%) exceeded learning objective expectations, 28 (60%) met expectations, and 1 (2%) failed to meet expectations; thus we fell just short of meeting the target for this outcome. The results were very similar to those reported for the past two years except that 1 student did fail to meet expectations this year. It is notable that fewer students exceeded expectations for outcome 2 compared to outcome 1 (i.e. 38% versus 75%) at this end-of-program stage. This may, in part, reflect a better quality incoming cohort this past year when admission standards were rigidly enforced with far fewer students admitted under provisional status compared to Fall 2009. Nevertheless, all but one student at least met expectations for Method 2.

Outcome 3

Students will demonstrate an understanding of the components of research design including problem definition, theory, literature review, methodology, and analysis.

Outcome 3 - Method 1

Student performance on the required course paper with regard to problem definition and the other components of research design in the required core course, GEO 5300 Applied Research Design and Techniques, will be rated by the course instructor at the end of the course using a Likert-type scale. Student performance will be measured based on the following scale: 1 = fails to meet, 2 = meets, or 3 = exceeds expectations. It is expected that 100% of students will meet or exceed expectations on this outcome.

Outcome 3 - Method 1 - Result

GEO 5300 was taught during Summer 2010 and Spring 2011 (two sections) – students typically take this required core course during their first year in the second semester in the program. For the three sections, final course papers were assessed for a total of 30 MAG students. Of these students, 24 (80%) exceeded expectations, 5 (17%) met expectations, and 1 (3%) failed to meet expectations. Thus, all but one student at least met expectations. Therefore, we almost met our target. The number who exceeded expectations showed a significant improvement over last year (80% versus 46%). This may, in part, reflect a better quality incoming cohort this past year when admission standards were rigidly enforced with far fewer students admitted under provisional status compared to Fall 2009.

Outcome 3 - Method 2

After completion of the required Directed Research Project at the end of the student's last year, the student's examination committee will rate the individual student's research project in terms of its research design components, using a Likert-type scale. Student performance will be measured based on the following scale: 1 = fails to meet, 2 = meets, or 3 = exceeds expectations. It is expected that 100% of students will meet or exceed expectations on this outcome.

Outcome 3 - Method 2 - Result

During 2010-2011, a total of 38 students were assessed after completion of their directed research project for this outcome and method, which was a huge increase over 17 during 2009-10. These students generally represent the second-year cohort. The number of students by MAG track was: 11 in MAG-Resource and Environment, 14 in MAG-LADM, 8 in MAG-General Geography, 4 in MAG-GIScience, and 1 in the MAG-Geographic Education program. Of the 38 students, 18 (47%) exceeded learning objective expectations, 18 (47%) met expectations, and 2 students failed to meet expectations. Thus, we fell just short of meeting our target. While no students failed to meet expectations the previous year, the results were otherwise comparable. Having some of these second year students fail to meet expectations may be reflective of the greater number of marginal students who entered the program in Fall 2009 under provisional status (some of whom never reached the directed research project level).

Outcome 4

Students will demonstrate significant research and writing expertise resulting in a meaningful scholarly contribution.

Outcome 4 - Method 1

A compilation of student presentations at professional conferences and student authored or co-authored publications will be maintained by the Department. We strive for at least 50% participation by students on this method for this outcome.

Outcome 4 - Method 1 - Result

In April 2011, the department hosted the 7th annual Texas Geography Student Research Symposium. Five Master's degree students presented posters or papers on their research. It is a tradition in the department to use this opportunity as a practice run for students scheduled to participate in the national AAG meeting, which was held in Seattle, WA during April.

During the 2010-11 year, only 5 Master's students made professional presentations (posters or papers) at 3 out-of-state conferences. This level of participation was only about half of the previous year. Overall conference participation by Master's students represented less than 10% of all enrolled Master's degree students, which was significantly below our goal.

Outcome 4 - Method 2

After completion of the required Directed Research Project at the end of the student's final semester, the student's examination committee will rate the individual student's research project in terms of its scholarly contribution and writing quality, using a Likert-type scale. Student performance will be measured using the following scale: 1 = fails to meet, 2 = meets, 3 = exceeds expectations. It is expected that 100% of students will meet or exceed expectations on this outcome.

Outcome 4 - Method 2 - Result

During 2010-2011, a total of 38 students were assessed after completion of their directed research project for this outcome and method, which was a huge increase over 17 during 2009-10. These students generally represent the second-year cohort. The number of students by MAG track was: 11 in MAG-Resource and Environment, 14 in MAG-LADM, 8 in MAG-General Geography, 4 in MAG-GIScience, and 1 in the MAG-Geographic Education program. Of the 38 students, 21 (55%) exceeded learning objective expectations, 16 (42%) met expectations, and 1 (3%) failed to meet expectations. These results were slightly better than last year, although we fell just short of meeting the outcome target.

Outcome 5

Students will be prepared to apply their skills in professional careers.

Outcome 5 - Method 1

At the end of each semester, the Department conducts evaluations of student assistantship duties, including student teaching evaluations, peer teaching evaluations, and mentor evaluations of research duties. The Graduate Coordinator and/or Chair will review these evaluations and arrange appropriate mentoring as needed. Student performance on assistantship duties will be measured using the following scale: 1 = fails to meet expectations, 2 = meets, 3 = exceeds expectations. It is expected that 100% of students will meet or exceed expectations on this outcome.

Outcome 5 - Method 1 - Result

The Department conducts student evaluations every semester for all instructors. The instrument uses a 5 point scale. Instructors scoring below 3.5 on this scale are deemed to have failed to meet expectations and mentoring action is initiated. Those scoring between 3.5 and 4.0 have met expectations while those scoring over 4.0 have exceeded expectations.

During both Fall 2010 and Spring 2011 semesters, 9 Master's students served as IA lab instructors. Student evaluations of instructor resulted in none of these instructors receiving scores below 3.5 (on the 5 point scale). Faculty instructors concurred with these strong evaluations for the lab instructors in their courses.

Other Master's assistants served in instructional (IA) roles as graders for courses and in other instructional support activities, and some served in research assistant (RA) roles. Faculty members who have IA or RA support provide formal written feedback to the Chair at the end of the semester. The vast majority received strong evaluations from the faculty members for whom they worked (mostly 4 or 5 scores on five questions, each with a scale of 1-5, with "5" being the highest level of performance and scores below a "3" on an individual question being of concern – i.e. failing to meet expectations on that one question). No graduate assistants received a score below a 3 on any of the five questions.

Overall, we met our target with all students at least meeting expectations.

Outcome 5 - Method 2

The Department will maintain a record of post-graduate placement in professional employment or continuing education (including placement in PhD programs) upon students' degree completion. This record will provide the Department with statistical frequencies of particular student post-graduate positions in order to determine how and to what degree student success is applied beyond this program. We expect that 100% of our students who seek employment or acceptance to programs to further their education will have positions within one year of graduation.

Outcome 5 - Method 2 - Result

In order to connect with Master's degree alumni and ascertain their post-graduate placement in professional employment or continuing education, the Department launched alumni sites in late 2008 on Facebook to supplement alumni information from our Alumni Business Card Directory which has been maintained by the department's Grosvenor Center for Geographic Education for several years. As reported last year, of the 261 students who graduated from our Master's degree programs during calendar years 2002 through 2009, placement information gleaned from these sources was available for 142 Master's degree alumni which was 54% of those who graduated during this period. The breakdown of placement upon graduation for this 8-year collective group was: 35% private sector; 24% public sector (state, local, etc.); 27% enrolled in PhD programs; and 14% employed in the education field.

For calendar year 2010, 41 additional students graduated from the geography Master's degree programs, 23 for which we have placement information (i.e. 56% of the total). Of these 23 individuals, 5 (22%) went into the private sector, 11 (48%) are employed in the public sector, 5 (22%) went or are going into PhD programs, and 2 (9%) are employed in education. The most notable difference is the large proportion of Master's graduates who have gone directly into the public employment (compared to the previous eight-year collective sample) sector despite tightening government budgets.

This placement record for our Master's alumni continues to suggest that our students are well-prepared for post-graduate careers in the private and public sectors. The number of recent graduates who have entered/are entering PhD programs seems to be consistent with the recent past.

Unfortunately, the data available on Master's alumni placement remains very incomplete. As such, it is impossible to ascertain whether we have reached this outcome's targeted goal of 100% placement. Nevertheless, results suggest that students are doing well after graduation, which is noteworthy given the current economic climate.

Approval History

Approval History Event

Outcomes Approved Level 1

Outcomes Approved Level 2

Outcomes Audit Report Submitted

Results Approved Level 1

Results Approved Level 2

Results Audit Report Submitted

General Information

Academic Year:	2009-2010
College:	Liberal Arts
Department:	Geography
Program:	Resource and Environmental Studies (MAGeo)
Program Code:	3.01
Outcome Type:	Student Learning
Degree:	Masters
Contact Name:	Dr. David Butler, Graduate Coordinator
Status:	Data Entry Closed

Mission Statement

The Master of Applied Geography (MAGeo) degree in resource and environmental studies is designed to prepare students to use their skills and background knowledge to solve real-world problems with geographic dimensions within environmental geography. Students will be educated in the process of applied research in a spatial context culminating in the completion of a directed research project.

Evidence of Improvement

For outcome 5, a significantly better record of post-graduate student placement was gathered this year. Results indicate that we have a good placement record in jobs and that about 1 in 4 graduates have enrolled in PhD programs. For outcome 4, a larger percentage of MAGeo student directed research projects were rated as "exceeding" expectations which suggests an improvement in meaningful research work. For outcome 4, whereas there were no research papers published by our Master's degree students during 2008-09, seven peer-reviewed student-authored papers were published during 2009-10.

Action Plan

An analysis of the entrance statistics for the incoming Fall 2009 Master's degree students revealed that about half of the students did not fully meet the guidelines for acceptance into the Master's program (i.e. either fell below the recommended GRE scores or upper-level GPA) – these students were therefore admitted "provisionally". Almost all of the students who "failed to meet expectations" for method 1 were among this group. The department needs to more rigorously enforce its entrance requirements to ensure that students are ready to enter graduate school. Instructors of GEO 5309 also intend to review the list of "geo-concepts" appropriate for emphasis in the course in order to help with student performance for this outcome. Method 2 revealed that all students completing the Master's degree had met or exceeded expectations for this outcome for the 2009-2010 academic year. This will continue to be monitored in order to ensure continuity of this positive outcome.

Coordination of the different sections of GEO 5301 will continue to be improved through instructor communication in order to ensure that all students have an opportunity to acquire the quantitative methods skills needed. It is notable that Method 2 revealed that all students completing the Master's degree had met or exceeded expectations for this outcome for the 2009-2010 academic year. This will continue to be monitored in order to ensure continuity of this positive outcome.

The failure of some students to meet expectations in Method 1 suggests that some of our first year students were not ready for graduate school. As was noted in the Action Plan for Outcome 1, the department needs to more rigorously enforce its entrance requirements to ensure that students are ready to enter graduate school. As was the case for Outcomes 1 and 2, Method 2 revealed that all students completing the MAG degree had met or exceeded expectations for this outcome for the 2009-2010 academic year. This will continue to be monitored in order to ensure continuity of this positive outcome.

The Department will continue to place considerable emphasis on supporting student travel to participate in professional conferences. With respect to Method 2, all students met or exceeded expectations and therefore have achieved a sufficient level of writing and research expertise. Nevertheless, more students will be encouraged to participate in professional conferences by making poster or paper presentations in order to garner critical feedback from such experiences that can help improve the quality of their research work. Also, MAGeo students will be strongly encouraged to take advantage of participating in the on-campus conferences sponsored by the Graduate College in November and the Geography Department in March.

The assistantship duties of Master's students will continue to be monitored closely. The Department Chair assumed responsibility for the teaching practicum course in Spring 2010 with a revised course format that was well-received by participants. The Chair will teach the full sequence of GEO 5150 (Fall) and GEO 5250 (Spring) during the 2010-2011 academic year. Student learning will be enhanced through a series of methodological and teaching philosophy presentations from faculty colleagues. For Method 2, significant improvement in tracking of Master's alumni was accomplished during the past year. Efforts will be expanded further in order to gather placement data for recent Master's degree graduates.

Outcome 1

Students will demonstrate an understanding of current research within the breadth of geography, as well as more in depth knowledge of research in their specialty areas.

Outcome 1 - Method 1

The required core course, GEO 5309 Geographical Analysis, is team taught with guest presentations from all Geography faculty members. Course

instructors will use a 3-point Likert-type scale to analyze student papers and assignments at the end of the semester in order to assess student understanding of the breadth of current research within geography. Student understanding will be measured based on the following scale: 1 = fails to meet, 2 = meets, or 3 = exceeds expectations. We expect that 100% of students will meet or exceed expectations on this outcome.

Outcome 1 - Method 1 - Result

GEO 5309 is taught once a year. In the Fall 2009 semester, class size was one of the larger for this course given recent enrollment growth for the master's program. As a result, 51 students (compared to 33 last year) were rated using Method 1. Of these, 21 (41%) exceeded expectations, 16 (31%) met expectations, and 14 (28%) failed to meet expectations on their papers and assignments, which fell short of our target. Compared to last year, more students were rated in the top category (41% compared to 33%). However, far more students (28% versus 9% last year) failed to meet expectations. The three instructors collectively observed that there were far more marginal students enrolled in this beginning (generally first semester) course.

Outcome 1 - Method 2

After completion of the required comprehensive exam at the end of the student's last year, the student's examination committee will rate the individual student's performance in terms of depth of knowledge of current research within his/her specialty area, using a Likert-type scale. Student performance will be measured based on the following scale: 1 = fails to meet, 2 = meets, or 3 = exceeds expectations. We expect that 100% of students will meet or exceed expectations on this outcome.

Outcome 1 - Method 2 - Result

During 2009-2010, a total of 30 students were assessed after their comprehensive exams for this outcome and method. Of these students, 21 (or 70%) exceeded expectations, while 9 (or 30%) met learning objectives expectations. No students failed meet expectations, so we met our target. The results were significantly better than the previous year when only 49% exceeded expectations and 6% failed to meet expectations. This suggests that students who completed the program during this academic year had substantially mastered this outcome.

Outcome 2

Students will demonstrate an understanding of basic spatial statistics and multivariate quantitative and analytical methods, and other appropriate tools for spatial analysis.

Outcome 2 - Method 1

Student performance on embedded key examination questions in the required core course, GEO 5301 Multivariate Quantitative Methods, will be assessed by the course instructor using a Likert-type scale at the end of the semester. Student performance will be measured based on the following scale: 1 = fails to meet, 2 = meets, or 3 = exceeds expectations. It is expected that 100% of students will meet or exceed expectations on this outcome.

Outcome 2 - Method 1 - Result

GEO 5301 was taught during each of Summer 2009, Fall 2009 and Spring 2010 since the last learning outcomes report. Three different instructors were involved. Combining results for all three course offerings, 41 students were rated using Method 1. Of these, 13 (32%) exceeded expectations, 24 (59%) met expectations, and 4 (10%) failed to meet expectations, which fell short of our target. These results were comparable to those for the 2008-09 academic year when 24% exceeded expectations, 68% met expectations and 8% failed to meet expectations. Method 1 revealed that some students continue to be challenged by quantitative methods. Last year, instructors noted explicit problems with the topic of spatial sampling – this was not reported this year.

Outcome 2 - Method 2

After completion of the required comprehensive exam at the end of the student's last semester, the student's examination committee will rate the individual student's understanding of basic and multivariate quantitative methods and other analytical methods or technical tools relevant to the student's intended research area, using a Likert-type scale. Student understanding will be measured based on the following scale: 1 = fails to meet, 2 = meets, or 3 = exceeds expectations. It is expected that 100% of students will meet or exceed expectations on this outcome.

Outcome 2 - Method 2 - Result

During 2009-2010, a total of 30 students were assessed after their comprehensive exams for this outcome and method. Of these students, 13 (43%) exceeded learning objective expectations while the other 17 (57%) met expectations. No students failed to meet expectations. The results were very similar to those reported for 2008-09 when 49% exceeded expectation and 51% met expectations. It is notable that fewer students exceeded expectations for outcome 2 compared to outcome 1 (i.e. 49% versus 70%) at this end-of-program stage. This suggests that high mastery of quantitative methods is more of a challenge, which is not unanticipated based upon informal faculty observations. Nevertheless, all students at least met expectations, which was our target.

Outcome 3

Students will demonstrate an understanding of the components of research design including problem definition, theory, literature review, methodology, and analysis.

Outcome 3 - Method 1

Student performance on the required course paper with regard to problem definition and the other components of research design in the required core course, GEO 5300 Applied Research Design and Techniques, will be rated by the course instructor at the end of the course using a Likert-type scale. Student performance will be measured based on the following scale: 1 = fails to meet, 2 = meets, or 3 = exceeds expectations. It is expected that 100% of students will meet or exceed expectations on this outcome.

Outcome 3 - Method 1 - Result

GEO 5300 was taught during Spring 2009 – students typically take this required core course during their second semester in the program. For two sections (with different instructors) final course papers were assessed for a total of 26 MAG students. Of these students, 12 (46%) exceeded expectations, 12 (46%) met expectations, and 2 (8%) failed to meet expectations, which left us short of our target. Last year, no students failed to meet expectations and only 35% exceeded expectations. Thus, the results for this year had a greater range than last year. Having some students fail to meet expectations may be reflective of the greater number of marginal students entering the program in Fall 2009 (see comments in the Action Plan for Outcome 1 above).

Outcome 3 - Method 2

After completion of the required Directed Research Project at the end of the student's last year, the student's examination committee will rate the individual student's research project in terms of its research design components, using a Likert-type scale. Student performance will be measured based on the following scale: 1 = fails to meet, 2 = meets, or 3 = exceeds expectations. It is expected that 100% of students will meet or exceed expectations on this outcome.

Outcome 3 - Method 2 - Result

During 2009-2010, a total of 17 students were assessed after completion of their directed research project for this outcome and method. The number of students by MAG track was: 6 in MAG-Resource and Environment, 5 in MAG-LADM, 3 in MAG-General Geography, and 1 in MAG-GIScience. As was the case last year, no students completed the MAG-Geographic Education program. Of the 17 students, 9 (53%) exceeded learning objective expectations while the other 8 (47%) met expectations. No students failed to meet expectations, which was our target. This compares favorably with the previous year when 47.5% exceeded and 47.5% met expectations while 5% failed to meet expectations for this method.

Outcome 4

Students will demonstrate significant research and writing expertise resulting in a meaningful scholarly contribution.

Outcome 4 - Method 1

A compilation of student presentations at professional conferences and student authored or co-authored publications will be maintained by the Department. We strive for at least 50% participation by students on this method for this outcome.

Outcome 4 - Method 1 - Result

In March 2010, the department hosted the annual Texas Geography Student Research Symposium. Six Master's degree students presented posters or papers on their research. It is a tradition in the department to use this opportunity as a practice run for students scheduled to participate in the national AAG meeting, which was held in Washington, DC during April. During the 2009-10 year, Master's students made 12 professional presentations (posters or papers) at 4 out-of-state national and regional meetings. These included 8 at the national Association of American Geographers meeting held in Washington, DC (this compares to 5 presentations at the 2009 Las Vegas AAG meeting). Other conference presentations by Master's students included two at the Southwest Division of the Association of American Geographers regional meeting held in Arkansas, one at the American Society for Photogrammetry and Remote Sensing and one at the National Council for Geographic Education conference. Overall conference participation represented more than 50% of assistantship funded students, but less than 20% of all enrolled Master's degree students, so our target was not met. Seven papers were published co-authored by Master's degree students (2 MAG; 5 MS) compared to zero the previous year. One student received a second place award in a student paper competition at the national AAG meeting.

Outcome 4 - Method 2

After completion of the required Directed Research Project at the end of the student's final semester, the student's examination committee will rate the individual student's research project in terms of its scholarly contribution and writing quality, using a Likert-type scale. Student performance will be measured using the following scale: 1 = fails to meet, 2 = meets, 3 = exceeds expectations. It is expected that 100% of students will meet or exceed expectations on this outcome.

Outcome 4 - Method 2 - Result

During 2009-2010, a total of 17 students were assessed after completion of their directed research project for this outcome and method. The number of students by MAG track was: 6 in MAG-Resource and Environment, 5 in MAG-LADM, 3 in MAG-General Geography, and 1 in MAG-GIScience. As was the case last year, no students completed the MAG-Geographic Education program. Of the 17 students, 11 (65%) exceeded learning objective expectations while the other 6 (35%) met expectations. No students failed to meet expectations, so we met our target. These results were better than last year when 43% exceeded expectations, 52% met expectations and 5% failed to meet expectations.

Outcome 5

Students will be prepared to apply their skills in professional careers.

Outcome 5 - Method 1

At the end of each semester, the Department conducts evaluations of student assistantship duties, including student teaching evaluations, peer teaching evaluations, and mentor evaluations of research duties. The Graduate Coordinator and/or Chair will review these evaluations and arrange appropriate mentoring as needed. Student performance on assistantship duties will be measured using the following scale: 1 = fails to meet expectations, 2 = meets, 3 = exceeds expectations. It is expected that 100% of students will meet or exceed expectations on this outcome.

Outcome 5 - Method 1 - Result

During both Fall 2009, 7 Master's students served as IA lab instructors and during Spring 2010, 6 served in this role. Student evaluations of instructor resulted in none of these instructors receiving scores below 4.0 (on a 5 point scale), which means that all lab instructors met expectations. Faculty instructors concurred with these strong evaluations for the lab instructors in their courses. Other Master's assistants served in instructional (IA) roles as graders for courses and in other instructional support activities, and some served in research assistant (RA) roles. Faculty members who have IA or RA support provide formal written feedback to the Chair at the end of the semester. The vast majority received strong evaluations from the faculty members for whom they worked (mostly 4 or 5 scores on five questions, each with a scale of 1-5, with "5" being the highest level of performance). One research assistant who received low scores on two questions in the fall improved his work during spring and received a better evaluation from the same professor.

Outcome 5 - Method 2

The Department will maintain a record of post-graduate placement in professional employment or continuing education (including placement in PhD programs) upon students' degree completion. This record will provide the Department with statistical frequencies of particular student post-graduate positions in order to determine how and to what degree student success is applied beyond this program. We expect that 100% of our students who seek employment or acceptance to programs to further their education will have positions within one year of graduation.

Outcome 5 - Method 2 - Result

In order to connect with Master's degree alumni and ascertain their post-graduate placement in professional employment or continuing education, the Department launched alumni sites in late 2008 on Facebook and LinkedIn, to supplement alumni information from our Alumni Business Card Directory which has been maintained by the department's Grosvenor Center for Geographic Education for several years. Of the 261 students who graduated from our Master's degree programs during calendar years 2002 through 2009, placement information gleaned from these sources was available for 142 Master's degree alumni as of May 2010. This represents 54% of those who graduated during this period (up from 29% in last year's report). Of these 142 individuals, 49 (35%) are employed in the private sector, with almost half of these in GIScience-related positions. Employment within the public sector including with non-profit groups (i.e. state government agencies such as TCEQ, county planning agencies, water districts, military, etc) accounted for 34 placements (24%). Thirty-nine (27%) of respondents are currently students in PhD programs (which is double the percentage reported last year – likely due to under-reporting last year since these are not all first-year PhD students). Lastly, 20 individuals (14%) are employed in the education field as school teachers or as professors at colleges or universities. This strong diverse placement record for our Master's alumni suggests that our students are well-prepared for post-graduate careers in the private and public sectors. This year's analysis indicates a much higher percentage of students pursuing PhD degrees (i.e. greater than 1 in 4) compared to that indicated by the data available for last year's report.

Approval History

Approval History Event

Outcomes Approved Level 1

Outcomes Approved Level 2

Outcomes Audit Report Submitted

Results Approved Level 1

Results Approved Level 2

Results Audit Report Submitted

General Information

Academic Year:	2008-2009
College:	Liberal Arts
Department:	Geography
Program:	Resource and Environmental Studies (MAGeo)
Program Code:	3.01
Outcome Type:	Student Learning
Degree:	Masters
Contact Name:	Dr. David Butler, Graduate Coordinator
Status:	Data Entry Closed

Mission Statement

The Master of Applied Geography (MAGeo) degree in resource and environmental studies is designed to prepare students to use their skills and background knowledge to solve real-world problems with geographic dimensions within environmental geography. Students will be educated in the process of applied research in a spatial context culminating in the completion of a directed research project.

Evidence of Improvement

For Outcomes 1, 2 and 3, results indicate that, as students progress through their graduate career, they improve in performance with respect to their understanding of research in geography, abilities in quantitative methods and skills in research design. This is indicated by a greater number of students exceeding expectations for Method 2 (assessed late in students' programs) versus Method 1 (assessed early in students' programs) for each of these Outcomes.

During 2008-2009, a larger number of Master's degree students presented research papers or posters at regional and national professional meetings and conferences (25 versus 16 the previous year). Master's students won five awards at these meetings compared to none the previous year.

Action Plan

As already noted in the discussion of the results, the change from a 4-category scale to a 3-category scale makes problematic any comparisons of the 2008-2009 results with the results from the previous year. Nevertheless, the 2008-2009 results indicate that students have a solid grasp of current geographic research, with fewer than 10% failing to meet expectations. Given that Method 1 involves an assessment at the end of the students' first semester, while Method 2 is an assessment late in the students' program, the absolute and relative increase (from 11, or 33% for Method 1 to 17, or 49% for Method 2) in the number of students who exceed expectations is notable.

The number of students failing to meet expectations is small. Either these students do not belong in the program or an effort needs to be made to increase their performance. In order to improve performance during students' first semester in the program, students will be assigned a more comprehensive set of readings in GEO 5309 that provide a broader overview of research themes in geography.

The results from this year's Method 1 for this Outcome are of sufficient concern that during Spring 2009, the Chair established a Task Force to review the content of the Department's quantitative methods courses. The work of this Task Force, which is still ongoing, is expected to result in recommendations for the GEO 5301 course that will ultimately result in improved student learning. Beginning in Fall 2009, students will do a new spatial sampling exercise addressing data collection, data analysis and data synthesis.

As was the case for Outcome 1, Methods 1 and 2 for Outcome 2 assesses students' learning near the beginning of the program (students usually take GEO 5301 during their first year) and at the end of the program (during the Comprehensive Exam). Results indicate that there is an increase in the number of students who exceed expectations from Method 1 to Method 2, that is, as students advance in the program. This is a positive outcome that shows that the students do increase their skills as they progress through the program.

Nevertheless, recommendations from the Task Force studying our quantitative methods courses will need to be implemented in order to ensure that all students meet or exceed the expectations for this outcome.

As noted in the discussion of results for Method 1 for this Outcome, it appears that different GEO 5300 instructors rated students' accomplishments quite differently from each other. This is an issue that needs to be addressed through instructor coordination.

Similar to Outcomes 1 and 2, Outcome 3 assesses students' abilities near the beginning of the program (students usually take GEO 5300 early in their graduate career) and at the end of the program with the Directed Research Project. As noted for Outcomes 1 and 2, there is an increase in the number of students who exceed expectations from Method 1 to Method 2, that is, as students advance in the program. This is a positive outcome that shows that the program is successful in providing a base foundation in the components of research design.

While results from Method 2, which is administered toward the end of students' programs, indicate that students generally meet or exceed expectations for this Outcome, there is variation among the various MAG tracks in terms of performance. Students in the MAG-Resource and Environment and MAG-LADM performed particularly well (80% of the MAG-Resource and Environment and 75% of the MAG-LADM students exceeded expectations for this Outcome). By contrast, the majority of students in the MAG-General Geography program only met expectations in

terms of research design expertise. We need to monitor students in the MAG-General Geography program carefully in order to ensure that they not only meet expectations, but that more of them start to exceed expectations. This will require that students seek out and are provided with careful mentoring by his/her faculty advisor.

For Method 1, the Department will continue to place considerable emphasis on supporting student travel to participate in professional conferences. Locally, the Department plans to conduct the 2010 Texas Geography Student Research Symposium during March 2010. Some students will also participate in the Graduate College's planned student conference to be held in November 2009. Students will be strongly encouraged to participate in the student paper competitions since such awards enhance their credentials and resumes.

Method 1 for this outcome will be modified next year to remove determination of student conference presentation performance, which proved to be an unfeasible task.

With respect to Method 2, with a single exception in the MAG-General geography track, all students met or exceeded expectations and therefore appear to achieve a sufficient level of writing and research expertise. While a majority of students completing the MAG-Resource and Environment program rated as exceeding expectations, less than half of students completing the directed research project in the other three MAG programs exceeded expectations. We will monitor students in these three programs carefully in order to ensure that they not only meet expectations, but that more of them start to exceed expectations like that which is already occurring for the MAG-Resource and Environment program. This will require careful mentoring by each student's directed research project advisor. More students will be encouraged to participate in professional conferences by making paper presentations in order to garner critical feedback from such experiences that can help improve the quality of their research work.

The assistantship duties of Master's students will continue to be monitored closely. The teaching practicum courses (5150/5250) will undergo revision under a different instructor for 2009-2010.

For Method 2, efforts will be expanded to gather placement data for recent Master's degree graduates, especially those graduating within the last year. Use of alumni sites in Facebook and LinkedIn will be continued, but other avenues, such as direct e-mail contact with students shortly after graduation, will be explored in order to increase the data on recent alumni.

Outcome 1

Students will demonstrate an understanding of current research within the breadth of geography, as well as more in depth knowledge of research in his/her specialty area. We expect that 100% of students will meet or exceed expectations on this outcome.

Outcome 1 - Method 1

The required core course, GEO 5309 Geographical Analysis, is team taught with guest presentations from all Geography faculty members. Course instructors will use a 3-point Likert-type scale to analyze student papers and assignments at the end of the semester in order to assess student understanding of the breadth of current research within geography. Student understanding will be measured based on the following scale: 1 = fails to meet, 2 = meets, or 3 = exceeds expectations.

Outcome 1 - Method 1 - Result

GEO 5309 is taught once a year. In the Fall 2008 semester, 33 students were rated using Method 1. Of these, 11 (33%) exceeded expectations, 19 (58%) met expectations, and 3 (9%) failed to meet expectations on their papers and assignments. Compared to last year, when 43 students were assessed, the results this year had fewer students rated in the top category (33% compared to 63% in the previous year's assessment). However, this difference is partly due to the change in the number of categories used to assess students as per the procedural change implemented for this year. Students' performance was measured on a four-category Likert scale in 2007-2008 and also during the first part of the 2008-2009 academic year, while the new procedure using a three-category ranking was initiated toward the end of the Fall 2008 semester. For reporting purposes for this year, the decision was made to equate the categories "minimal" and "acceptable" in the four-category scale with the category "meets learning objectives expectations" in the three-category scale, and to equate the categories "superior" and "exceptional" with the category "exceeds learning objectives expectations." The category "fails to meet learning objectives expectations" had no correspondent in the old four-category scale. Note that the three-category ranking system will be used in future assessments so that appropriate comparisons between years can be made.

Outcome 1 - Method 2

After completion of the required comprehensive exam at the end of the student's last year, the student's examination committee will rate the individual student's performance in terms of depth of knowledge of current research within his/her specialty area, using a Likert-type scale. Student performance will be measured based on the following scale: 1 = fails to meet, 2 = meets, or 3 = exceeds expectations.

Outcome 1 - Method 2 - Result

During 2008-2009, a total of 13 forms were completed using the four-category scale and 22 were completed using the three-category scale (see the results for Method 1 for an explanation of the scale change). Of the total of 35 students, 17 (or 49%) exceeded expectations, 16 (or 46%) met learning objectives expectations, and 2 students (or 6%) failed to meet expectations. The results can also be described by type of degree: students in the MAG-GIScience and MS rated the highest, with 60% and 57% respectively exceeding expectations, followed by students in the MAG-

Resource and Environment, who were evenly divided between the "meet" and "exceed" expectations categories. Four out of 9 students (44%) in the MAG-General Geography track exceeded expectations. The 3 students in the MAG-LADM track were all rated as meeting expectations. One MAG-GIScience and one MS student failed to meet expectations.

Outcome 2

Students will demonstrate an understanding of basic spatial statistics and multivariate quantitative and analytical methods, and other appropriate tools for spatial analysis. It is expected that 100% of students will meet or exceed expectations on this outcome.

Outcome 2 - Method 1

Student performance on embedded key examination questions in the required core course, GEO 5301 Multivariate Quantitative Methods, will be assessed by the course instructor using a Likert-type scale at the end of the semester. Student performance will be measured based on the following scale: 1 = fails to meet, 2 = meets, or 3 = exceeds expectations.

Outcome 2 - Method 1 - Result

GEO 5301 is taught in both the Fall and Spring semesters. Combining both course offerings, 25 students were rated using Method 1. Of these, 6 (24%) exceeded expectations, 17 (68%) met expectations, and 2 (8%) failed to meet expectations. Note that during 2007-2008, 18 students were rated using Method 1.

The 2008-2009 results are quite different compared to 2007-2008. Whereas 50% of the 2007-2008 students exceeded expectations, only half as many (24%) were rated as such in 2008-2009. However, this difference is partly due to the change in the number of categories used to assess students as per the procedural change implemented for this year. Students' performance was measured on a four-category Likert scale in 2007-2008 and also during the first part of the 2008-2009 academic year, while the new procedure using a three-category ranking was initiated toward the end of the Fall 2008 semester. For reporting purposes for this year, the decision was made to equate the categories "minimal" and "acceptable" in the four-category scale with the category "meets learning objectives expectations" in the three-category scale, and to equate the categories "superior" and "exceptional" with the category "exceeds learning objectives expectations." The category "fails to meet learning objectives expectations" had no correspondent in the old four-category scale. Note that the three-category ranking system will be used in future assessments so that appropriate comparisons between years can be made. However, it is also plausible that this year's students in GEO 5301 simply did not progress as well, and it is that (rather than an artifact of the assessment method), which is reflected in the results. One area of detected student weakness involved spatial sampling for data collection, data analysis and data synthesis.

Outcome 2 - Method 2

After completion of the required comprehensive exam at the end of the student's last semester, the student's examination committee will rate the individual student's understanding of basic and multivariate quantitative methods and other analytical methods or technical tools relevant to the student's intended research area, using a Likert-type scale. Student understanding will be measured based on the following scale: 1 = fails to meet, 2 = meets, or 3 = exceeds expectations.

Outcome 2 - Method 2 - Result

A total of 18 forms were completed using the four-category scale and 17 using the three-category scale (see the results for Method 1 for an explanation of the scale change). Of the total of 35 students in all Master's degree programs, 17 (49%) exceeded learning objective expectations while the other 18 (51%) still met expectations. No students failed to meet expectations. The results can be broken down by type of degree: MS students rated the highest, with 5 out of 7 (or 71%) exceeding expectations, followed by students in the MAG-GIScience track, with 6 out of 10 (or 60%) exceeding expectations. Students in the MAG-Resource and Environment were evenly split between the categories of "meet" and "exceed" expectations. The 3 students in the MAG-LADM track were all rated as meeting expectations. Three out of 9 (or 33%) students in the MAG-General Geography track exceeded expectations.

Outcome 3

Students will demonstrate an understanding of the components of research design including problem definition, theory, literature review, methodology, and analysis. It is expected that 100% of students will meet or exceed expectations on this outcome.

Outcome 3 - Method 1

Student performance on the required course paper with regard to problem definition and the other components of research design in the required core course, GEO 5300 Applied Research Design and Techniques, will be rated by the course instructor at the end of the course using a Likert-type scale. Student performance will be measured based on the following scale: 1 = fails to meet, 2 = meets, or 3 = exceeds expectations.

Outcome 3 - Method 1 - Result

GEO 5300 was taught during Spring 2009 with two instructors assessing the course paper for 23 MAG students. Of these students, 8 (35%) exceeded expectations and 15 (65%) met expectations. No students failed to meet expectations. Note that during 2007-2008, 29 students were rated using Method 1.

The results for 2008-2009 were considerably different from the results for 2007-2008. Whereas 93% of the 2007-2008 students were rated as "superior" or "exceptional," only 35% were rated as such in 2008-2009. However, this difference is partly due to the change in the number of

categories used to assess students as per the procedural change implemented for this year. Students' performance was measured using a four-category Likert scale in 2007-2008 and also during the first part of the 2008-2009 academic year, while the new procedure using a three-category ranking was initiated toward the end of the Fall 2008 semester. For reporting purposes for this year, the decision was made to equate the categories "minimal" and "acceptable" in the four-category scale with the category "meets learning objectives expectations" in the three-category scale, and to equate the categories "superior" and "exceptional" with the category "exceeds learning objectives expectations." The category "fails to meet learning objectives expectations" had no correspondent in the old four-category scale. Note that the three-category ranking system will be used in future assessments so that appropriate comparisons between years can be made.

Nevertheless, it is evident that the instructors (two in 2007-2008 and a different one in 2008-2009) rated students quite differently from each other. It is also plausible that this year's students did not acquire and improve their research skills from this course as well as the previous year's students.

Outcome 3 - Method 2

After completion of the required Directed Research Project at the end of the student's last year, the student's examination committee will rate the individual student's research project in terms of its research design components, using a Likert-type scale. Student performance will be measured based on the following scale: 1 = fails to meet, 2 = meets, or 3 = exceeds expectations.

Outcome 3 - Method 2 - Result

A total of 8 forms were completed using the four-category scale and 13 using the three-category scale (see the results for Method 1 for an explanation of the scale change). For 2008-2009, the number of students completing the Directed Research Project by track was: 4 in MAG-LADM, 5 in each of the MAG-Resource and Environment and MAG-GIScience, and 7 in the MAG-General Geography. No students completed a Directed Research Project for the MAG-Geographic Education track. Of the 21 total MAG students, 10 (47.5%) exceeded learning objective expectations, 10 (47.5%) met expectations, and 1 (5%) failed to meet expectations. Notable differences existed between tracks: students in MAG-Resource and Environment exceeded expectations in 80% of the cases, followed by MAG-LADM (75%), MAG-GIScience (40%), and MAG-General Geography (29%). The student failing to meet expectations was in the MAG-GIScience track.

Outcome 4

Students will demonstrate significant research and writing expertise resulting in a meaningful scholarly contribution. It is expected that 100% of students will meet or exceed expectations on this outcome.

Outcome 4 - Method 1

A compilation of student presentations at professional conferences and student-authored or co-authored publications will be maintained by the Department at the end of the student's final semester, and a quality summary prepared by the Graduate Coordinator and/or Chair. The quality of the student's compilation will be measured using a grading rubric to holistically evaluate the student's work on the basis of 1 = fails to meet, 2 = meets, 3 = exceeds expectations.

Outcome 4 - Method 1 - Result

During Spring 2009, an informal workshop was presented to discuss how to prepare and present a professional conference poster or paper. In early March, the department hosted the Texas Geography Student Research Symposium with several students presenting their research. Many used this opportunity as a practice run for their scheduled presentations at the national AAG meeting held in Las Vegas later in March. During the 2008-09 year, Master's students made professional presentations at 8 out-of-state national and regional meetings, plus 17 presentations at the Southwest Division AAG meeting hosted by the Department in San Marcos. The eight out-of-state presentations included 5 at the national Association of American Geographers meeting held in Las Vegas. Other conference presentations included two at the Applied Geography Conference and one at the National Council for Geographic Education conference. The 25 total number of presentations compares to 16 last year. Special professional awards received by Master's students during 2008-09 included: Best Student Paper at the Applied Geography Conference, First Place Student Paper for the AAG's Graduate Student Affinity Group, Second Place Student Paper at the SWAAG meeting, Gilbert F. White Award-Honorable Mention from the AAG Hazards Specialty Group, and the Summer Assembly Award from the University Consortium of Geographic Information Science. During 2007-08, no Master's student won any similar awards. Rating of students' conference presentation performance proved to be unfeasible.

Outcome 4 - Method 2

After completion of the required Directed Research Project at the end of the student's final semester, the student's examination committee will rate the individual student's research project in terms of its scholarly contribution and writing quality, using a Likert-type scale. Student performance will be measured using the following scale: 1 = fails to meet, 2 = meets, 3 = exceeds expectations.

Outcome 4 - Method 2 - Result

A total of 8 forms were completed using the four-category scale and 11 using the three-category scale. For 2008-2009, the number of students completing the Directed Research Project by track was: 4 in MAG-LADM, 5 in each of the MAG-Resource and Environment and MAG-GIScience,, and 7 in the MAG-General Geography. No students completed a Directed Research Project for the MAG-Geographic Education track. Of the total number of students, 9 (or 43%) exceeded learning objective expectations, 11 (52%) met expectations, and 1 (5%) failed to meet expectations. Students in MAG-Resource and Environment were rated considerably higher than students in other tracks, exceeding expectations in 80% of the

cases, followed by 40% of students in MAG-GIScience, by 29% of students in MAG-General Geography, and by 25% of students in MAG-LADM. The student failing to meet expectations was in the MAG-General Geography track.

Outcome 5

Students will be prepared to apply their skills in professional careers. It is expected that 100% of students will meet or exceed expectations on this outcome.

Outcome 5 - Method 1

At the end of each semester, the Department conducts evaluations of student assistantship duties, including student teaching evaluations, peer teaching evaluations, and mentor evaluations of research duties. The Graduate Coordinator and/or Chair will review these evaluations and arrange appropriate mentoring as needed. Student performance on assistantship duties will be measured using the following scale: 1 = fails to meet expectations, 2 = meets, 3 = exceeds expectations.

Outcome 5 - Method 1 - Result

During both Fall 2008 and Spring 2009, 9 Master's students served as IA lab instructors. Only two received scores below 3.5 (on a 5 point scale) during Fall. Both of these individuals have taught previously and done well in the past. Mentoring was provided but neither taught labs during the Spring 2009 semester.

Other Master's assistants served in instructional (IA) roles as graders for courses and in other instructional support activities, and some served in research assistant (RA) roles. Faculty members who have IA or RA support provide formal written feedback to the Chair at the end of the semester. The vast majority received strong evaluations from the faculty members for whom they worked (mostly 4 or 5 scores on five questions, each with a scale of 1-5, with "5" being the highest level of performance). Two research assistants received scores sufficiently low to be deemed "not meeting expectations." Neither of these individuals will be on an assistantship next year.

Outcome 5 - Method 2

The Department will maintain a record of post-graduate placement in professional employment or continuing education (including placement in PhD programs) upon students' degree completion. This record will provide the Department with statistical frequencies of particular student post-graduate positions in order to determine how and to what degree student success is applied beyond this program. We expect that 100% of our students, who seek employment or acceptance to programs to further their education, will have positions within one year of graduation.

Outcome 5 - Method 2 - Result

In order to connect with Master's degree alumni and ascertain their post-graduate placement in professional employment or continuing education, the Department launched a Master's degree alumni Facebook site on December 11, 2008. Of the 219 students who graduated from our Master's degree programs during calendar years 2002 through 2008, 36 joined this Facebook site as of May 8, 2009. Additional placement information was gathered through a LinkedIn site and from data contained in the Alumni Business Card Directory maintained by the department's Grosvenor Center for Geographic Education. In all, placement information for 64 Master's degree alumni who graduated from 2002 through 2008 was available for analysis. This represents 29% of those who graduated during this period. Of these 64 individuals, 28 (44%) are employed in the private sector, half of which are associated with GIS-related firms, while others are employed by private planning firms, environmental firms, in cartography or remote sensing, and elsewhere. Employment within the public sector and with non-profit groups (i.e. state government agencies such as TCEQ, county planning agencies, water districts, military, etc) accounted for 21 placements (33%). Nine (14%) of respondents are currently students in PhD programs. Lastly, 6 individuals (9%) are employed in the education field as school teachers or at colleges.

Overall, the strong employment record of our Master's alumni suggests that our students are well-prepared for their post-graduate careers.

Approval History

Approval History Event

Outcomes Approved Level 1

Outcomes Approved Level 2

Outcomes Audit Report Submitted

Results Approved Level 1

Results Approved Level 2

Results Audit Report Submitted

General Information

Academic Year:	2007-2008
College:	Liberal Arts
Department:	Geography
Program:	Resource and Environmental Studies (MAGeo)
Program Code:	3.01
Outcome Type:	Student Learning
Degree:	Masters
Contact Name:	Dr. David Butler, Graduate Coordinator
Status:	Data Entry Closed

Mission Statement

The Master of Applied Geography (MAGeo) degree in resource and environmental studies is designed to prepare students to use their skills and background knowledge to solve real-world problems with geographic dimensions within environmental geography. Students will be educated in the process of applied research in a spatial context culminating in the completion of a directed research project.

Evidence of Improvement

Academic year 2007-08 represents the first year of data collection and results for Geography's graduate programs. Preliminary data indicate that program improvements can be made in the areas of writing and understanding of the breadth of the discipline.

Action Plan

While more data collection is necessary to establish definitive results and trend lines, preliminary assessment data reveal a need to focus more carefully on expectations of student performance as graduate students and their need to demonstrate an understanding of a breadth of knowledge across the discipline of Geography.

Students whose work indicates a deficiency in writing ability will be referred to the Writing Center.

Results for this outcome are preliminary; however, the data reveal a need to focus more on outcomes consistency in different sections of the same course, as well as shared methods and rubrics applied in evaluating these outcomes.

While students completing GEO 5300 were deemed well prepared to undertake a research project, ratings of the quality of completed directed research projects varied considerably. Whether this demonstrates a weakness among some students in preparation for the final project or more critical evaluation of the final project by faculty advisors is unclear. It should be noted that a wide range in the ratings of the quality of final projects represents an opportunity for the truly superior/exceptional students to be identified by their projects.

An ongoing record of the very active professional undertakings of our graduate students will be maintained. The Department will continue to provide substantial travel funds in support of student participation at professional meetings. Data will continue to be collected regarding the quality of the final directed research projects. Students whose writing ability at the beginning of the semester appears to be deficient will be referred to the Writing Center.

Performance of Master's graduate assistants (as lab instructors, in other instructional roles, and in research roles) will continue to be monitored. Students will continue to receive mentoring at orientation workshops in which they receive continuously revised graduate assistants' handbooks. Mentoring through the required teaching practicum courses (GEO 5150, 5250), which were offered in a more formal fashion this past year, has been extremely useful and will continue to be revised and updated.

A systematic data collection method for Master's alumni employment and/or further graduate study will be developed through Facebook. The Department will establish a public Facebook site (Texas State Geography Master's Alumni Site) to track the careers of our alumni.

Outcome 1

Students will demonstrate an understanding of the current research in the discipline of Geography.

Outcome 1 - Method 1

(Direct) Review and evaluation of students' reaction papers in GEO 5309 Geographical Analysis, demonstrating knowledge of current research in Geography.

Procedure: Students' reaction papers will be assessed using a Likert-type scale which measures student performance as "minimal understanding," "acceptable understanding," "superior understanding," or "exceptional understanding."

Outcome 1 - Method 1 - Result

A total of 43 students' reaction papers were assessed in GEO 5309 during Fall 2007. The instructor rated 27 as demonstrating superior or exceptional (the top two categories) understanding of current research in the discipline. Another 13 were deemed acceptable and 3 demonstrated only minimal performance.

Outcome 1 - Method 2

(Direct) Comprehensive Exam. Students will be evaluated on their performance on the required Master's-level oral comprehensive exam to demonstrate knowledge of current research in Geography.

Procedure: After completion of the comprehensive exam by an individual student, the student's Master's degree advisor will complete an assessment of the student's performance on this outcome using a Likert-type scale.

Outcome 1 - Method 2 - Result

During 2007-08, 30 students completed the Master's comprehensive exam (5 MAGEo general; 5 MAGEo resource and environmental studies; 8 MAGEo GIScience; 2 MAGEo land/area development & management; 10 MS). Overall, the modal and median rating for all students by faculty advisors was "superior" performance; only 6 (20%) were deemed "exceptional". Only one student was rated "minimal". The range of ratings suggests a healthy critical standard being employed by faculty during this first year of learning outcomes data gathering for master's programs and superior to excellent student performance.

Outcome 2

Students will demonstrate an understanding of basic spatial statistics and multivariate quantitative and analytical methods and other appropriate tools for spatial analysis.

Outcome 2 - Method 1

(Direct) Review and evaluation of student performance in the required core course GEO 5301 Multivariate Quantitative Methods.

Procedure: At the end of the semester, the instructor for GEO 5301 will complete a Likert-scale based form, cumulative for all students registered in the course, addressing student performance for this outcome.

Outcome 2 - Method 1 - Result

Two sections of GEO 5301 were offered during 2007-08, one in Fall and one in Spring, each with 9 students. The Fall course assessment revealed that students rated quite highly on their knowledge and skills in using multivariate methods (2 students were rated as exceptional, 5 superior and only 2 as acceptable). The Spring assessment by a different instructor revealed that students rated much lower (0 exceptional, 2 superior, 5 acceptable, and 2 minimal). This substantial difference in performance is notable and may be due to differences in instruction, assessment or students' ability. Future assessments will likely provide an answer to this question.

Outcome 2 - Method 2

(Direct) Comprehensive Exam. Review of individual student performance on the required Master's-level oral comprehensive exam, with emphasis on quantitative methods and other spatial analysis tools relevant to the student's intended research area.

Procedure: After completion of the comprehensive exam by an individual student, the student's Master's degree advisor will complete an assessment of the student's performance using a Likert-type scale.

Outcome 2 - Method 2 - Result

Comprehensive exam learning outcomes reports regarding students' abilities in quantitative methods and other spatial analysis tools were filed for 30 graduate students during the academic year. Of the 10 MS students, 8 (80%) were deemed exceptional or superior. For the 20 MAGEo students, 13 (65%) were deemed exceptional or superior. Two MAGEo students were deemed "minimal" in their performance for this outcome.

Outcome 3

Students will demonstrate an understanding of the components of research design including problem definition, theory, literature review, methodology, and analysis.

Outcome 3 - Method 1

(Direct) Review and evaluation of student performance in the required core course GEO 5300 Applied Research Design and Techniques in which students are expected to demonstrate knowledge of the components of research design.

Procedure: At the end of the semester, the instructor will measure students' ability to demonstrate knowledge of the components of a research design through a course project/paper.

Outcome 3 - Method 1 - Result

Two sections of GEO 5300 were taught during the Spring 2008 semester (by two different instructors). In one section, 16 students were rated exceptional or superior (8 in each category) on the application of knowledge of research design as measured by their course project/papers, and only 2 were rated as only acceptable. In the second section, all 11 students were rated exceptional or superior (just 2 exceptional). Overall, both instructors felt that the students understood the components of a research design and would likely be able to use them for the required directed research project course for the MAGEo degree programs.

Outcome 3 - Method 2

(Direct) Directed Research Project. Assessment of the quality of an individual student's directed research project conducted in the student's final semester with respect to this outcome.

Procedure: After completion of the directed research project by an individual student, the student's Master's degree advisor will complete an

assessment of the student's performance on this outcome using a Likert-type scale.

Outcome 3 - Method 2 - Result

During 2007-08, 21 students who completed the directed research project were rated by faculty advisors for this outcome (5 MAGEo general, 6 MAGEo resources and environmental studies, 8 MAGEo GIScience, and 2 MAGEo land/area development and management). The results revealed that 6 students were rated as exceptional, 6 were rated superior, 7 were rated as just acceptable, and 2 were rated as minimal on this outcome. Results across the various MAGEo programs were similar.

Outcome 4

Students will demonstrate significant research and writing expertise resulting in a meaningful scholarly contribution.

Outcome 4 - Method 1

(Direct) Review of student presentations at professional conferences, and student authored or co-authored publications.

Procedure: At the end of Spring semester, the Graduate Coordinator and/or Chair will prepare a summary of student participation at professional conferences and student authored or co-authored publications.

Outcome 4 - Method 1 - Result

During 2007-08, 15 master's students made professional presentations at conferences. The largest participation occurred at the national Association of American Geographers meeting held in Boston (8 students). Other conferences included: Southwest Division AAG (3 students); Binghamton Geomorphology Symposium (3 students), and National Council for Geographic Education (1 student).

Outcome 4 - Method 2

(Direct) Directed Research Project. Assessment of the quality of an individual student's directed research project.

Procedure: After completion of the directed research project by an individual student, the student's Master's degree advisor will complete an assessment of the student's performance on this outcome using a Likert-type scale.

Outcome 4 - Method 2 - Result

Results for this outcome were similar to Outcome 3, Result 2: 6 students were rated as exceptional, 6 as superior, 7 as just acceptable, and 2 were rated as minimal. There was no obvious difference among the various MAGEo programs.

Outcome 5

Students will be prepared to apply their skills in professional careers.

Outcome 5 - Method 1

(Direct) Assessment of student assistantship duties including review of student teaching evaluations, peer teaching evaluations, and mentor evaluations of research duties.

Procedure: At the end of Spring semester, the Graduate Coordinator and/or Chair will review graduate assistant teaching evaluations, peer teaching evaluations, and mentor evaluations of research duties and prepare a summary evaluation of student performance.

Outcome 5 - Method 1 - Result

During Fall 2007, 8 Master's students served as IA lab instructors. All received student evaluations above 4.0 (on a 5 point scale) which is very good. During Spring 2008, 7 Master's students served as IA lab instructors with 6 scoring above 4.0 on student evaluations (the other scored 3.95). Overall, the Master's lab instructors performed very well in the classroom.

Other Master's assistants served in instructional (IA) roles as graders for courses and in other instructional support activities and some served in research assistant (RA) roles. Faculty members who have IA or RA support provide formal feedback to the Chair at the end of the semester. In one case, a Master's assistant had very weak performance (despite mentoring) and has therefore not been offered an assistantship for next year.

Outcome 5 - Method 2

(Indirect) Post-graduate placement in professional employment. Ongoing tabulation of MAG graduates' placement in professional employment or continuing education upon degree completion.

Procedure: The Department will maintain an ongoing record of MAG graduates' placement upon degree completion into professional employment or continuing education programs.

Outcome 5 - Method 2 - Result

Systematic data collection for this outcome/method has not yet been instituted, although anecdotal evidence is collected through alumni business cards, which are arrayed prominently in the department.

Approval History

Approval History Event

Outcomes Approved Level 1
Outcomes Approved Level 2
Results Approved Level 1
Results Approved Level 2