

# Texas State University

## Outcomes Report

### General Information

<b>Academic Year:</b>	2020-2021
<b>College:</b>	Liberal Arts
<b>Department:</b>	Geography
<b>Program:</b>	Environmental Interpretation (certificate)
<b>Program Code:</b>	3.01
<b>Outcome Type:</b>	Student Learning (UG)
<b>Degree:</b>	Certificate - Undergraduate
<b>Coordinator/Contact:</b>	Dr. Yongmei Lu
<b>Status:</b>	Result Approvals In Progress

### Mission Statement

The Texas State Department of Geography Environmental Interpretation Certificate prepares students to work as interpretive guides in parks and other tourism venues and to work in the professional areas of public information/education in resource management agencies.

### Evidence of Improvement

During AY 2019 / 2020 we discovered that some students lacked knowledge of the themes, principles, and techniques for the effective interpretation of environmental information (Outcome 2 - Method 1). We decided on an action plan for AY 2020 / 2021 that had the course instructor provide additional examples and explanations to help students grasp the concepts. We implemented our action plan and were pleased to find that student outcomes indicated an (5%) increase in average total scores used to measure student understanding of interpretive themes, principles, and techniques for the effective interpretation of environmental information compared to last year. During AY 2019 / 2020 we also discovered that some students lacked knowledge of the interpretive themes of geographic concepts such as physical, ecological, cultural, and historic landscapes and landscape features (Outcome 2 - Method 2). We decided on an action plan for AY 2020 / 2021 that had the course instructor provide additional examples and explanations to help students grasp the concepts. We implemented our action plan and were pleased to find that student outcomes indicated an (5%) increase in average total scores used to measure student understanding of interpretive themes of geographic concepts such as physical, ecological, cultural, and historic landscapes and landscape features compared to last year.

### Action Plan

Because the AY 2020 / 2021 action plan was successful for (Outcome 2 - Method 1) during AY 2021 / 2022, we will continue last year's action plan and have course instructor provide additional examples and explanations of interpretive themes, principles, and techniques for the effective interpretation of environmental information to improve student learning for AY 2021 / 2022. We also plan to have course instructor provide additional emphasis on of interpretive geographic concepts and themes such as physical, ecological, cultural, and historic landscapes and landscape features (Outcome 2 ; Method 2) for AY 2021 / 2022.

### Outcome 1

Students will demonstrate their knowledge of how the Earth works as an energy / matter system as well as their knowledge of the characteristics of the Earth's lithosphere, atmosphere, hydrosphere, biosphere and cryosphere.

### Outcome 1 - Method 1

Students will be evaluated on their knowledge of how the Earth works as an energy / matter system using an exit examination administered by the learning outcomes coordinator at the completion of all courses required for the certificate. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the exit examination. 90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations. We expect at least 70% of the students will meet or exceed expectations for this outcome.

### Outcome 1 - Method 1 - Result

During AY 2020 / 2021, 5 undergraduate students who completed requirements for the Environmental Interpretation Certificate were evaluated on their knowledge of how the Earth works as an energy / matter system using an exit examination created from questions provided by the course instructors and administered by the Geography Department's Learning Outcomes Coordinator via an on-line survey website. The Geography Department's Learning Outcomes Coordinator found that 100% of the students met or exceeded expectations for this learning outcome / method. The target of 70% of the students meeting or exceeding expectations was achieved.

### Outcome 1 - Method 2

Students will be evaluated on their knowledge of the characteristics of the Earth's lithosphere, atmosphere, hydrosphere, biosphere and cryosphere using an exit examination administered by the learning outcomes coordinator at the completion of all courses required for the certificate. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the exit examination. 90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations. We

expect at least 70% of the students will meet or exceed expectations for this outcome.

#### **Outcome 1 - Method 2 - Result**

During AY 2020 / 2021, 5 undergraduate students who completed requirements for the Environmental Interpretation Certificate were evaluated on their knowledge of the Earth's lithosphere, atmosphere, hydrosphere, biosphere and cryosphere using an exit examination created from questions provided by the course instructors and administered by the Geography Department's Learning Outcomes Coordinator via an on-line survey website. The Geography Department's Learning Outcomes Coordinator found that 100% of the students met or exceeded expectations for this learning outcome / method. The target of 70% of the students meeting or exceeding expectations was achieved.

#### **Outcome 2**

Students will demonstrate their knowledge of the themes, principles and techniques for the effective interpretation of environmental information as well as their knowledge of interpretive geographic concepts and themes such as physical, ecological, cultural and historic landscapes and landscape features.

#### **Outcome 2 - Method 1**

Students will be evaluated on their knowledge of the themes, principles and techniques for the effective interpretation of environmental information using an exit examination administered by the learning outcomes coordinator at the completion of all courses required for the certificate. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the exit examination. 90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations. We expect at least 70% of the students will meet or exceed expectations for this outcome.

#### **Outcome 2 - Method 1 - Result**

During AY 2020 / 2021, 5 undergraduate students who completed requirements for the Environmental Interpretation Certificate were evaluated on their knowledge of the principles, themes and techniques for the effective interpretation of environmental information using an exit examination created from questions provided by the course instructors and administered by the Geography Department's Learning Outcomes Coordinator via an on-line survey website. The Geography Department's Learning Outcomes Coordinator found that 80% of the students met or exceeded expectations for this learning outcome / method. The target of 70% of the students meeting or exceeding expectations was achieved.

#### **Outcome 2 - Method 2**

Students will be evaluated on their knowledge of interpretive geographic concepts and themes such as physical, ecological, cultural and historic landscapes and landscape features using an exit examination administered by the learning outcomes coordinator at the completion of all courses required for the certificate. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the exit examination. 90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations. We expect at least 70% of the students will meet or exceed expectations for this outcome.

#### **Outcome 2 - Method 2 - Result**

During AY 2020 / 2021, 5 undergraduate students who completed requirements for the Environmental Interpretation Certificate were evaluated on their knowledge of the interpretive themes of geographic concepts such as physical, ecological, cultural and historic landscapes and landscape features using an exit examination created from questions provided by the course instructors and administered by the Geography Department's Learning Outcomes Coordinator via an on-line survey website. The Geography Department's Learning Outcomes Coordinator found that 80% of the students met or exceeded expectations for this learning outcome / method. The target of 70% of the students meeting or exceeding expectations was achieved.

#### **Outcome 3**

Students will demonstrate their knowledge of the role of interpretation in resource management, particularly the protection of natural and cultural resources as well as their knowledge of the various traditional and digital techniques used by professional environmental interpreters to engage the public.

#### **Outcome 3 - Method 1**

Students will be evaluated on their knowledge of the role of interpretation in resource management, particularly the protection of natural and cultural resources using an exit examination administered by the learning outcomes coordinator at the completion of all courses required for the certificate. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the exit examination. 90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations. We expect at least 70% of the students will meet or exceed expectations for this outcome.

#### **Outcome 3 - Method 1 - Result**

During AY 2020 / 2021, 5 undergraduate students who completed requirements for the Environmental Interpretation Certificate were evaluated on their knowledge of the role of interpretation in resource management, particularly the protection of natural and cultural resources at the completion of all courses required for the certificate using an exit examination created from questions provided by the course instructors and administered by the Geography Department's Learning Outcomes Coordinator via an on-line survey website. The Geography Department's Learning Outcomes

Coordinator found that 100% of the students met or exceeded expectations for this learning outcome / method. The target of 70% of the students meeting or exceeding expectations was achieved.

### Outcome 3 - Method 2

Students will be evaluated on their knowledge of the various traditional and digital techniques used by professional environmental interpreters to engage the public using an exit examination administered by the learning outcomes coordinator at the completion of all courses required for the certificate. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the exit examination. 90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations. We expect at least 70% of the students will meet or exceed expectations for this outcome.

### Outcome 3 - Method 2 - Result

During AY 2020 / 2021, 5 undergraduate students who completed requirements for the Environmental Interpretation Certificate were evaluated on their knowledge of the various traditional and digital techniques used by professional environmental interpreters to engage the public using an exit examination created from questions provided by the course instructors and administered by the Geography Department's Learning Outcomes Coordinator via an on-line survey website. The Geography Department's Learning Outcomes Coordinator found that 100% of the students met or exceeded expectations for this learning outcome / method. The target of 70% of the students meeting or exceeding expectations was achieved.

### Approval History

Approval History Event	Approver
Outcomes Approved Level 1	Yongmei Lu (yl10)
Outcomes Approved Level 2	Mary Brennan (mb18)
Outcomes Audit Report Submitted	Susan Day (sd01)
Results Approved Level 1	Yongmei Lu (yl10)
Results Audit Report Submitted	Susan Day (sd01)

## General Information

<b>Academic Year:</b>	2020-2021
<b>College:</b>	Liberal Arts
<b>Department:</b>	Geography
<b>Program:</b>	GEO 1305
<b>Program Code:</b>	3.00
<b>Outcome Type:</b>	General Education
<b>Degree:</b>	Other
<b>Coordinator/Contact:</b>	Dr. Yongmei Lu
<b>Status:</b>	Results Approvals Complete

## Mission Statement

The mission of the general education core curriculum at Texas State University is to provide students with a broad academic foundation in the component areas of communication; mathematics; life and physical sciences; language, philosophy and culture; creative arts; American history; government/political science; and social and behavioral sciences.

### Life and Physical Sciences Mission:

The mission of the life and physical sciences component is to focus on describing, explaining, and predicting natural phenomena using the scientific method.

## Evidence of Improvement

Some students lacked mathematical skills need to solve equations used by meteorologists and climate scientists. (Outcome 2 and Outcome 4 along with part of Outcome 3) due to a failure to complete their General Studies mathematics requirement in a timely manner. We decided on an action plan for AY 2020 / 2021 that had the course instructor provide additional examples and explanations and continue use of the new textbook that emphasized mathematical concepts. We implemented our action plan and were pleased to find that student learning outcomes indicated a 10% increase in average total scores used to measure student understanding for Outcome 2 and a 1% increase in average total scores used to measure student understanding for Outcome 4 compared to last year. Learning Outcomes 2 and 4 require students to use their mathematical skill to study and analyze weather and climate data.

## Action Plan

Because the AY 2020 / 2021 action plan was successful for Outcomes 2 and 4, we will continue with the new textbook and continue to have course instructors emphasize those mathematical skills needed to work with weather and climate data including radiation equations heating degree days, wind chill, and vapor pressure for AY 2021 / 2022. Additional emphasis will be placed on atmospheric stability calculations and applications of the Ideal Gas Law. A return to the classroom will provide the opportunity to provide more drill on computations needed to address the decrease in Outcome 3. Most of the decrease in Outcome 5 is attributable to student difficulty in using the Canvas LMS for the group project which should be eased in the coming AY.

## Outcome 1

Students will describe interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

### Outcome 1 - Method 1

Students taking Meteorology (GEO 1305) will be evaluated during and/or at the end of the semester by course instructors on their knowledge of the natural phenomena of meteorology using embedded test questions administered during Meteorology (GEO 1305) class examinations. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the embedded test questions. (90% - 100% = exceeded expectations, 70% - 89% = met expectations, 69% or below = failed to meet expectations). We expect at least 70% of the students will meet or exceed expectations for this outcome.

### Outcome 1 - Method 1 - Result

During AY 2020 / 2021, 1009 undergraduate students were evaluated by their course instructors on their ability to describe interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences using embedded exam questions. The course instructors found that 85% of the students met (54%) or exceeded (31%) expectations. The target of 70% of the students meeting or exceeding expectations was achieved.

## Outcome 2

**Competency:** Critical Thinking

Students will demonstrate creative thinking innovation, inquiry, and analysis, evaluation and synthesis of information.

### Outcome 2 - Method 1

Students taking Meteorology (GEO 1305) will be evaluated during and/or at the end of the semester by course instructors on their ability to apply the scientific method to the study of the natural phenomena of meteorology using climate and weather data with embedded test questions administered during Meteorology (GEO 1305) class examinations. Students' knowledge will be assessed on the basis of exceeding, meeting or

failing to meet expectations, which will be determined by the students' total score on the embedded test questions. (90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations). We expect at least 70% of the students will meet or exceed expectations for this outcome.

#### **Outcome 2 - Method 1 - Result**

During AY 2020 / 2021, 1009 undergraduate students were evaluated by their course instructors on their ability to demonstrate creative thinking innovation, inquiry, and analysis, evaluation and synthesis of information using embedded exam questions. The course instructors found that 86% of the students met (53%) or exceeded (33%) expectations. The target of 70% of the students meeting or exceeding expectations was achieved.

#### **Outcome 3**

**Competency:** Communication

Students will effectively develop, interpret and express ideas through written, oral and visual communication.

#### **Outcome 3 - Method 1**

Students taking Meteorology (GEO 1305) will be evaluated during and/or at the end of the semester by course instructors on their ability to use writing, speech and visualizations to express ideas about the natural phenomena of meteorology using an out-of-class project / presentation with grading rubric from the course: Meteorology (GEO 1305). Students' ability will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on an out-of-class project with grading rubric (90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations). We expect at least 70% of the students will meet or exceed expectations for this outcome.

#### **Outcome 3 - Method 1 - Result**

During AY 2020 / 2021, 1009 undergraduate students were evaluated by their course instructors on their ability to effectively develop, interpret and express ideas through written, oral and visual communication using an out-of-class assignment. The course instructors found that 77% of the students met (32%) or exceeded (45%) expectations. The target of 70% of the students meeting or exceeding expectations was achieved.

#### **Outcome 4**

**Competency:** Empirical and Quantitative Skills

Students will manipulate and analyze numerical data or observable facts resulting in informed conclusions.

#### **Outcome 4 - Method 1**

Students taking Meteorology (GEO 1305) will be evaluated during and/or at the end of the semester by course instructors on their ability to manipulate and analyze numerical meteorological data and observable climatic and weather facts using an out-of-class project with grading rubric from the course: Meteorology (GEO 1305). Students' ability will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on an out-of-class project with grading rubric (90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations). We expect at least 70% of the students will meet or exceed expectations for this outcome.

#### **Outcome 4 - Method 1 - Result**

During AY 2020 / 2021, 1009 undergraduate students were evaluated by their course instructors on their ability to manipulate and analyze numerical data or observable facts resulting in informed conclusions using an out-of-class assignment. The course instructors found that 82% of the students met (52%) or exceeded (30%) expectations. The target of 70% of the students meeting or exceeding expectations was achieved.

#### **Outcome 5**

**Competency:** Teamwork

Students will recognize different points of view and work effectively with others to support a shared purpose or goal.

#### **Outcome 5 - Method 1**

Students taking Meteorology (GEO 1305) will be evaluated during and/or at the end of the semester by course instructors on their ability to work effectively with others to support a shared purpose and goal using an out-of-class group project with grading rubric from the course: Meteorology (GEO 1305). Students' ability will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on an out-of-class group project with grading rubric (90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations). We expect at least 70% of the students will meet or exceed expectations for this outcome.

#### **Outcome 5 - Method 1 - Result**

During AY 2020 / 2021, 1009 undergraduate students were evaluated by their course instructors on their ability to recognize different points of view and work effectively with others to support a shared purpose or goal using an out-of-class assignment. The course instructors found that 87% of the students met (42%) or exceeded (45%) expectations. The target of 70% of the students meeting or exceeding expectations was achieved.

#### **Approval History**

**Approval History Event**

**Approver**

Outcomes Approved Level 1  
Outcomes Approved Level 2  
Outcomes Audit Report Submitted  
Results Approved Level 1  
Results Approved Level 2  
Results Audit Report Submitted

Yongmei Lu (yl10)  
Mary Cavitt (mc58)  
Celeste Domsch (cd23)  
Yongmei Lu (yl10)  
Mary Cavitt (mc58)  
Celeste Domsch (cd23)

## General Information

<b>Academic Year:</b>	2020-2021
<b>College:</b>	Liberal Arts
<b>Department:</b>	Geography
<b>Program:</b>	GEO 1310
<b>Program Code:</b>	8.00
<b>Outcome Type:</b>	General Education
<b>Degree:</b>	Other
<b>Coordinator/Contact:</b>	Dr. Yongmei Lu / Dr. Brian Cooper
<b>Status:</b>	Results Approvals Complete

## Mission Statement

The mission of the general education core curriculum at Texas State University is to provide students with a broad academic foundation in the component areas of communication; mathematics; life and physical sciences; language, philosophy and culture; creative arts; American history; government/political science; and social and behavioral sciences.

### Social and Behavioral Sciences Mission:

The mission of the social and behavioral sciences component is to focus on the application of empirical and scientific methods that contribute to the understanding of what makes us human.

## Evidence of Improvement

During AY 2019 / 2020 we observed that some students continued to be challenged when asked to develop, interpret and express ideas about the major physical and cultural aspects of world geography through written, oral and visual communication including the use of maps as a tool to locate and visualize the Earth's major physical and cultural features (Outcome 3), as well as their ability to manipulate and analyze numerical data or observable facts for the world's regions resulting in informed conclusions to gain an understanding of the distribution and variation of the Earth's physical and cultural variables (Outcome 4). We decided on an action plan for AY 2020 / 2021 that had the course instructors provide additional lecture time to showing students how to more effectively use maps to locate and identify the Earth's major physical and cultural features, as well as to explain how the spatial patterns of the Earth's various cultural and physical phenomena can be investigated quantitatively. We implemented our action plan and were pleased to find that student outcomes indicated a slight improvement (increase of 1.3% overall) in average total scores used to measure student understanding for Outcome 3 for this year compared to last year, especially relating to using maps to identify cultural features on Earth. We also saw an increase of 1.7% (2.2% increase among students exceeding expectations) in average total scores used to measure the ability of students to manipulate and analyze numerical data or observable facts for the world's regions resulting in informed conclusions to gain an understanding of the distribution and variation of the Earth's physical and cultural variables (Outcome 4), as we continued to build upon substantial improvement from the year before.

## Action Plan

Because the AY 2020 / 2021 action plan continued to improve upon student performance for Outcome 3 and Outcome 4, we will continue to have course instructors provide additional lecture time to explain how the spatial patterns of the Earth's various cultural and physical phenomena can be investigated quantitatively for AY 2021 / 2022. We also plan to have course instructors provide students additional classroom time and assignments to improve their abilities to develop, interpret and express ideas about the major physical and cultural aspects of world geography through written, oral and visual communication including the use of maps as a tool to locate and visualize the Earth's major physical and cultural features (Outcome 3) for AY 2021 / 2022. Although all methods saw some degree of improvement from AY 2019 / 2020 to AY 2020 / 2021, we would also like to devise some strategies, such as tips for helping students be better prepared for assessments with the ways in which they can study more effectively, to improve the percentage of students who exceed expectations for all outcomes in AY 2021 / 2022, particularly for Outcome 3, which remains the outcome with the lowest percentage of students meeting expectations overall or exceeding expectations.

## Outcome 1

Students will explore behavior and interactions among individuals, groups, institutions, and events, examining their impact on the individual, society, and culture.

### Outcome 1 - Method 1

Students taking World Geography (GEO 1310) will be evaluated during and/or at the end of the semester by course instructors on their knowledge of the major cultural features of the Earth and their impacts on the individual and society using embedded test questions administered during World Geography (GEO 1310) class examinations. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the embedded test questions. (90% - 100% = exceeded expectations, 70% - 89% = met expectations, 69% or below = failed to meet expectations). We expect at least 70% of the students will meet or exceed expectations for this outcome.

### Outcome 1 - Method 1 - Result

During AY 2020-2021, 1118 undergraduate students were evaluated by their course instructors on their knowledge of the major cultural features of the Earth and their impacts on the individual and society by their course instructors using embedded test questions from the course: World Geography (GEO1310). The course instructors found that 84.1% of the undergraduate students met (64.5%) or exceeded (19.6%) expectations for

this outcome / method. The target of 70% of the students meeting or exceeding expectations was achieved.

## **Outcome 2**

**Competency:** Critical Thinking

Students will demonstrate creative thinking innovation, inquiry, and analysis, evaluation and synthesis of information.

### **Outcome 2 - Method 1**

Students taking World Geography (GEO 1310) will be evaluated during and/or at the end of the semester by course instructors on their success in using creative thinking, innovation, inquiry, analysis, evaluation and synthesis of information to build their knowledge and understanding of the major physical features of the Earth using embedded test questions administered during World Geography (GEO 1310) class examinations. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the embedded test questions. (90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations). We expect at least 70% of the students will meet or exceed expectations for this outcome.

### **Outcome 2 - Method 1 - Result**

During AY 2020-2021, 1118 undergraduate students were evaluated by their course instructors on their success in using creative thinking, innovation, inquiry, analysis, evaluation and synthesis of information to build their knowledge and understanding of the major physical features of the Earth by their course instructors using embedded test questions from the course: World Geography (GEO1310). The course instructors found that 85.4% of the undergraduate students met (62.9%) or exceeded (22.5%) expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations was achieved.

## **Outcome 3**

**Competency:** Communication

Students will effectively develop, interpret and express ideas through written, oral and visual communication.

### **Outcome 3 - Method 1**

Students taking World Geography (GEO 1310) will be evaluated during and/or at the end of the semester by course instructors on their ability to develop, interpret and express ideas about the major physical and cultural aspects of world geography through written, oral and visual communication including the use of maps as a tool to locate and visualize the Earth's major physical and cultural features using embedded test questions administered during World Geography (GEO 1310) class examinations. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the embedded test questions. (90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations). We expect at least 70% of the students will meet or exceed expectations for this outcome.

### **Outcome 3 - Method 1 - Result**

During AY 2020-2021, 1118 undergraduate students were evaluated by their course instructors on their ability to develop, interpret and express ideas about the major physical and cultural aspects of world geography through written, oral and visual communication including the use of maps as a tool to locate and visualize the Earth's major physical and cultural features by their course instructor using embedded test questions from the course: World Geography (GEO1310). The course instructors found that 74.1% of the undergraduate students met (65.9%) or exceeded (8.2%) expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations was achieved.

## **Outcome 4**

**Competency:** Empirical and Quantitative Skills

Students will manipulate and analyze numerical data or observable facts resulting in informed conclusions.

### **Outcome 4 - Method 1**

Students taking World Geography (GEO 1310) will be evaluated during and/or at the end of the semester by course instructors on their ability to manipulate and analyze numerical data or observable facts for the world's regions resulting in informed conclusions to gain an understanding of the distribution and variation of the Earth's physical and cultural variables using embedded test questions administered during World Geography (GEO 1310) class examinations. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the embedded test questions. (90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations). We expect at least 70% of the students will meet or exceed expectations for this outcome.

### **Outcome 4 - Method 1 - Result**

During AY 2020-2021, 1118 undergraduate students were evaluated by their course instructors on their ability to manipulate and analyze numerical data or observable facts for the world's regions resulting in informed conclusions to gain an understanding of the distribution and variation of the Earth's physical and cultural variables by their course instructors using embedded test questions from the course: World Geography (GEO1310). The course instructors found that 78.4% of the undergraduate students met (62.8%) or exceeded (15.6%) expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations was achieved.

## **Outcome 5**

**Competency:** Social Responsibility

Students will demonstrate intercultural competence, knowledge of civic responsibility, and the ability to engage effectively in regional, national, and global communities.

**Outcome 5 - Method 1**

Students taking World Geography (GEO 1310) will be evaluated during and/or at the end of the semester by course instructors on their ability demonstrate intercultural competence, knowledge of civic responsibility and the ability to engage effectively in regional, national and global communities through an understanding of the physical and cultural geographies of the Earth using embedded test questions administered during World Geography (GEO 1310) class examinations. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the embedded test questions. (90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations). We expect at least 70% of the students will meet or exceed expectations for this outcome.

**Outcome 5 - Method 1 - Result**

During AY 2020-2021, 1118 undergraduate students were evaluated by their course instructors on their ability demonstrate intercultural competence, knowledge of civic responsibility and the ability to engage effectively in regional, national and global communities through an understanding of the physical and cultural geographies of the Earth by their instructor using embedded test questions from the course: World Geography (GEO1310).

The course instructors found that 84.3% of the undergraduate students met (60.1%) or exceeded (24.2%) expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations was achieved.

**Approval History**

**Approval History Event**

**Approver**

Outcomes Approved Level 1	Yongmei Lu (yl10)
Outcomes Approved Level 2	Mary Cavitt (mc58)
Outcomes Audit Report Submitted	Elizabeth Blunk (eb03)
Outcomes Audit Report Submitted	Quazi Fidia Farah (Q_f4)
Results Approved Level 1	Yongmei Lu (yl10)
Results Approved Level 2	Mary Cavitt (mc58)
Results Audit Report Submitted	Quazi Fidia Farah (Q_f4)

## General Information

<b>Academic Year:</b>	2020-2021
<b>College:</b>	Liberal Arts
<b>Department:</b>	Geography
<b>Program:</b>	Geographic Information Sciences (certificate)
<b>Program Code:</b>	45.07
<b>Outcome Type:</b>	Student Learning (UG)
<b>Degree:</b>	Certificate - Undergraduate
<b>Coordinator/Contact:</b>	Dr. Yongmei Lu
<b>Status:</b>	Result Approvals In Progress

## Mission Statement

The Texas State Department of Geography Geographic Information Science Certificate prepares students for professional positions using the theoretical and applied aspects of Geographic Information Science.

## Evidence of Improvement

During AY 2019 / 2020 we discovered that some students lacked knowledge of the technical and theoretical aspects of spatial modeling including point pattern analysis, surface analysis and raster analysis (Outcome 2 - Method 2). We decided on an action plan for AY 2020 / 2021 that had the course instructors provide students with additional explanations of the technical and theoretical aspects of spatial modeling including point pattern analysis, surface analysis and raster analysis. We implemented our action plan and were pleased to find a 5% increase in average total scores used to measure student knowledge for (Outcome 2 - Method 2) this year compared to last year.

During AY 2019 / 2020 we also discovered that some students lacked knowledge of geographic data presentation, thematic map use and cartographic mapping techniques (Outcome 3 – Method 2). We decided on an action plan for AY 2020 / 2021 that had the course instructors provide students with additional explanations of the technical and theoretical aspects of spatial modeling including point pattern analysis, surface analysis and raster analysis. We implemented our action plan and were very pleased to find a 5% increase in average total scores used to measure student knowledge for (Outcome 3 - Method 2) this year compared to last year.

## Action Plan

Because the AY 2020 / 2021 action plan was successful for (Outcome 2 - Method 2), we will continue last year's action plan and have course instructors provide students with additional explanations of the technical and theoretical aspects of spatial modeling including point pattern analysis, surface analysis and raster analysis to improve student learning for AY 2021 / 2022.

Because the AY 2020 / 2021 action plan was also successful for (Outcome 3 - Method 2), we will also continue last year's action plan and have course instructors provide additional examples and explanations to help students improve their knowledge of geographic data presentation, thematic map use and cartographic mapping techniques for AY 2021 / 2022.

## Outcome 1

Students will demonstrate their knowledge of the basics of Geographic Information Systems (GIS) including types of spatial data, data acquisition, data structure, data quality and data interpretation as well as their knowledge of GIS applications, GIS visualization and GIS modeling.

### Outcome 1 - Method 1

Students will be evaluated on their knowledge of the basics of GIS including types of spatial data, data acquisition, data structure, data quality and data interpretation using an exit examination administered by the learning outcomes coordinator at the completion of all courses required for the certificate. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the exit examination. 90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations. We expect at least 70% of the students will meet or exceed expectations for this outcome.

### Outcome 1 - Method 1 - Result

During AY 2020 / 2021, 11 undergraduate students who completed requirements for the Geographic Information Sciences Certificate were evaluated on their knowledge of the basics of GIS including types of spatial data, data acquisition, data structure, data quality and data interpretation using an exit examination created from questions provided by the course instructors and administered by the Geography Department's Learning Outcomes Coordinator via an on-line survey website. The Geography Department's Learning Outcomes Coordinator found that 85% of the students met or exceeded expectations for this learning outcome / method. The target of 70% of the students meeting or exceeding expectations was achieved.

### Outcome 1 - Method 2

Students will be evaluated on their knowledge of the basics of GIS applications, GIS visualization and GIS modeling at the completion of all courses required for the certificate using an exit examination administered by the learning outcomes coordinator at the completion of all courses required for the certificate. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the exit examination. 90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations. We expect at least 70% of the students will meet or exceed expectations for this outcome.

### Outcome 1 - Method 2 - Result

During AY 2020 / 2021, 11 undergraduate students who completed requirements for the Geographic Information Sciences Certificate were evaluated on their knowledge of the basics of GIS applications, GIS visualization and GIS modeling using an exit examination created from questions provided by the course instructors and administered by the Geography Department's Learning Outcomes Coordinator via an on-line survey website. The Geography Department's Learning Outcomes Coordinator found that 100% of the students met or exceeded expectations for this learning outcome / method. The target of 70% of the students meeting or exceeding expectations was achieved.

## **Outcome 2**

Students will demonstrate their knowledge of the technical aspects of GIS spatial data handling and analysis as well as their knowledge of the technical and theoretical aspects of spatial modeling including point pattern analysis, surface analysis and raster analysis.

### **Outcome 2 - Method 1**

Students will be evaluated on their knowledge of the technical aspects of GIS spatial data handling and analysis using an exit examination administered by the learning outcomes coordinator at the completion of all courses required for the certificate. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the exit examination. 90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations. We expect at least 70% of the students will meet or exceed expectations for this outcome.

### **Outcome 2 - Method 1 - Result**

During AY 2020 / 2021, 11 undergraduate students who completed requirements for the Geographic Information Sciences Certificate were evaluated on their knowledge of the technical aspects of GIS spatial data handling and analysis using an exit examination created from questions provided by the course instructors and administered by the Geography Department's Learning Outcomes Coordinator via an on-line survey website. The Geography Department's Learning Outcomes Coordinator found that 80% of the students met or exceeded expectations for this learning outcome / method. The target of 70% of the students meeting or exceeding expectations was achieved.

### **Outcome 2 - Method 2**

Students will be evaluated on their knowledge of the technical and theoretical aspects of spatial modeling including point pattern analysis, surface analysis and raster analysis using an exit examination administered by the learning outcomes coordinator at the completion of all courses required for the certificate. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the exit examination. 90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations. We expect at least 70% of the students will meet or exceed expectations for this outcome.

### **Outcome 2 - Method 2 - Result**

During AY 2020 / 2021, 11 undergraduate students who completed requirements for the Geographic Information Sciences Certificate were evaluated on their knowledge of the technical and theoretical aspects of spatial modeling including point pattern analysis, surface analysis and raster analysis using an exit examination created from questions provided by the course instructors and administered by the Geography Department's Learning Outcomes Coordinator via an on-line survey website. The exit examination showed found that 85% of the students met or exceeded expectations for this learning outcome / method. The target of 70% of the students meeting or exceeding expectations was achieved.

## **Outcome 3**

Students will demonstrate their knowledge of the basic concepts of cartography and map design principles as well as their knowledge of geographic data presentation, thematic map use and cartographic mapping techniques for quantitative and qualitative data.

### **Outcome 3 - Method 1**

Students will be evaluated on their knowledge of the basic concepts of cartography and map design principles using an exit examination administered by the learning outcomes coordinator at the completion of all courses required for the certificate. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the exit examination. 90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations. We expect at least 70% of the students will meet or exceed expectations for this outcome.

### **Outcome 3 - Method 1 - Result**

During AY 2020 / 2021, 11 undergraduate students who completed requirements for the Geographic Information Sciences Certificate were evaluated on their knowledge of the technical aspects of GIS spatial data handling and analysis using an exit examination created from questions provided by the course instructors and administered by the Geography Department's Learning Outcomes Coordinator via an on-line survey website. The Geography Department's Learning Outcomes Coordinator found that 80% of the students met or exceeded expectations for this learning outcome / method. The target of 70% of the students meeting or exceeding expectations was achieved.

### **Outcome 3 - Method 2**

Students will be evaluated on their knowledge of geographic data presentation, thematic map use and cartographic mapping techniques for quantitative and qualitative data using an exit examination administered by the learning outcomes coordinator at the completion of all courses

required for the certificate. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the exit examination. 90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations. We expect at least 70% of the students will meet or exceed expectations for this outcome.

### **Outcome 3 - Method 2 - Result**

During AY 2020 / 2021, 1 undergraduate students who completed requirements for the Geographic Information Sciences Certificate were evaluated on their knowledge of geographic data presentation, thematic map use and cartographic mapping techniques for quantitative and qualitative data created from questions provided by the course instructors and administered by the Geography Department's Learning Outcomes Coordinator via an on-line survey website. The Geography Department's Learning Outcomes Coordinator found that 85% of the students met or exceeded expectations for this learning outcome / method. The target of 70% of the students meeting or exceeding expectations was achieved.

### **Approval History**

<b>Approval History Event</b>	<b>Approver</b>
Outcomes Approved Level 1	Yongmei Lu (yl10)
Outcomes Approved Level 2	Mary Brennan (mb18)
Outcomes Audit Report Submitted	Susan Day (sd01)
Results Approved Level 1	Yongmei Lu (yl10)
Results Audit Report Submitted	Susan Day (sd01)

## General Information

<b>Academic Year:</b>	2020-2021
<b>College:</b>	Liberal Arts
<b>Department:</b>	Geography
<b>Program:</b>	Geography (BA/BS/Cert.)
<b>Program Code:</b>	45.07
<b>Outcome Type:</b>	Student Learning (UG)
<b>Degree:</b>	Undergraduate
<b>Coordinator/Contact:</b>	Brian J Cooper
<b>Status:</b>	Result Approvals In Progress

## Mission Statement

Geography prepares students for meaningful careers in both the public and private sectors by providing them a program of studies that focuses on the systematic study of the spatial distribution and interrelationships of people, natural resources, plant and animal life, including instruction in historical and political geography, cultural geography, economic and physical geography, regional science, cartographic methods, remote sensing, spatial analysis, and applications to areas such as land-use planning, development studies, and analyses of specific countries, regions, and resources.

In addition to general and specialized lecture-format courses, the Geography program offers a variety of project-based lab and field-trip experiences, career development through advising, job-shadowing and internships as well as team-building and leadership opportunities available by joining one or more geography department student organizations. Finally, the Geography program provides students with the foundation for a liberal education, preparing graduates to think independently, to choose free and to base personal and professional decisions on a broad understanding of the Earth's physical and cultural landscapes in order to live full, rewarding lives.

## Evidence of Improvement

During AY 2019 / 2020, we continued to observe that some students were challenged with linking knowledge of the physical geography of Southwest Asia and Sub-Saharan Africa to their location on a map (Outcome 1 - Method 2) and some students were challenged with knowledge of the cultural geography of Southeast Asia and Sub-Saharan Africa (Outcome 2 - Method 1). We decided on an action plan for AY 2020 / 2021 that the course instructors provide additional lecture time and emphasis on physical geography of Southwest Asia and Sub-Saharan Africa to their location on a map and the cultural geography of Southeast Asia and Sub-Saharan Africa, as well as additional lecture time and emphasis to help students locate examples of major cultural features of the Earth on a map, particularly with Central America and Sub-Saharan Africa (Outcome 2 – Method 2). We implemented our action plan and were pleased to find a 0.3% increase in average total scores used to measure improvement in student learning for (Outcome 1 - Method 2), a 0.4% increase in average total scores used to measure improvement in student learning for (Outcome 2 - Method 1), and a 1.1% increase in average total scores used to measure improvement in student learning for (Outcome 2 – Method 2) during AY 2020 / 2021 compared to last year. Also, during AY 2019 / 2020 we continued to observe students were challenged by questions about inferential statistics (Outcome 3 – Method 1). We decided on an action plan for AY 2020 / 2021 that had the course instructors provide additional lecture time on inferential statistics and were pleased to find a 2% increase in average total scores used to measure improvement in student learning for AY 2020 / 2021 compared to last year. Finally, during AY 2019 / 2020 we continued to observe that students continued to struggle on the topic of map project/coordinate systems (Outcome 4 – Method 1). We decided on an action plan for AY 2020 / 2021 that had the course instructors provide additional lecture time explaining map project/coordinate systems and were pleased to find a 3.96% increase in average total scores used to measure student learning for AY 2020 / 2021 compared to last year.

## Action Plan

Because the AY 2020 / 2021 action plan was successful for (Outcome 1 - Method 2), (Outcome 2 - Method 1) and (Outcome 2 – Method 2), we will continue to have course instructors provide additional lecture time and map work on the physical geography of Southwest Asia and Sub-Saharan Africa, knowledge of the cultural geography of Southeast Asia and Sub-Saharan Africa, and provide additional lecture time and emphasis to help students locate examples of major cultural features of the Earth on a map, particularly with Central America and Sub-Saharan Africa to improve student learning for AY 2021 / 2022. Also, because the AY 2020 / 2021 action plan was successful for (Outcome 3 - Method 1) we will continue to have course instructors provide additional lecture time on inferential statistics for AY 2021 / 2022. Finally, because the AY 2020 / 2021 action plan was successful for (Outcome 4 – Method 1) we will continue to have course instructors provide additional lecture time explaining map project/coordinate systems for AY 2021 / 2022.

## Outcome 1

Students will demonstrate their knowledge of the major physical features of the Earth such as mountains, deserts, rivers and oceans and their ability to locate examples of the Earth's major features on a map.

### Outcome 1 - Method 1

Students taking World Geography (GEO 1310) will be evaluated during and/or at the end of the semester by course instructors on the students' knowledge of the major physical features of the Earth using embedded test questions administered during World Geography (GEO 1310) class examinations. Students' knowledge will be assessed on the basis of: Exceeding Expectations (10 embedded test questions answered correctly); Meeting Expectations (7 - 9 embedded test questions answered correctly); or Failing to Meet Expectations (6 or fewer embedded test questions answered correctly). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 1 - Method 1 - Result**

During AY 2020 / 2021, 709 undergraduate students were evaluated on their knowledge of the major physical features of the Earth by their course instructors using embedded test questions from the course: World Geography (GEO1310). The course instructors found that 87.7% of the students met (33.5%) or exceeded (55.2%) expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 1 - Method 2**

Students taking World Geography (GEO 1310) will be evaluated during and/or at the end of the semester by course instructors on the students' ability to locate examples of major physical features of the Earth on a map using embedded test questions administered during World Geography (GEO 1310) class examinations. Students' ability will be assessed on the basis of: Exceeding Expectations (10 embedded test questions answered correctly); Meeting Expectations (7 - 9 embedded test questions answered correctly); or Failing to Meet Expectations (6 or fewer embedded test questions answered correctly). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 1 - Method 2 - Result**

During AY 2020 / 2021, 709 undergraduate students were evaluated on their ability to locate examples of major physical features of the Earth on a map by their course instructors using embedded test questions from the course: World Geography (GEO1310). The course instructors found that 84.5% of the students met (50.6%) or exceeded (33.9%) expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 2**

Students will demonstrate their knowledge of the major cultural features of the Earth such as political boundaries, major agricultural regions and language groups and their ability to locate examples of Earth's major cultural features on a map.

#### **Outcome 2 - Method 1**

Students taking World Geography (GEO 1310) will be evaluated during and/or at the end of the semester by course instructors on the students' knowledge of the major cultural features of the Earth using embedded test questions administered during World Geography (GEO 1310) class examinations. Students' knowledge will be assessed on the basis of: Exceeding Expectations (10 embedded test questions answered correctly); Meeting Expectations (7 - 9 embedded test questions answered correctly); or Failing to Meet Expectations (6 or fewer embedded test questions answered correctly). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 2 - Method 1 - Result**

During AY 2020 / 2021, 709 undergraduate students were evaluated on their knowledge of the major cultural features of the Earth by their course instructors using embedded test questions from the course: World Geography (GEO 1310). The course instructors found that 88.8% of the undergraduate students met (50.2%) or exceeded (38.6%) expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 2 - Method 2**

Students taking World Geography (GEO 1310) will be evaluated during and/or at the end of the semester by course instructors on the students' ability to locate examples of major cultural features of the Earth on a map using embedded test questions administered during World Geography (GEO 1310) class examinations. Students' ability will be assessed on the basis of: Exceeding Expectations (10 embedded test questions answered correctly); Meeting Expectations (7 - 9 embedded test questions answered correctly); or Failing to Meet Expectations (6 or fewer embedded test questions answered correctly). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 2 - Method 2 - Result**

During AY 2020 / 2021, 709 undergraduate students were evaluated on their ability to locate examples of major cultural features of the Earth on a map by their course instructors using embedded test questions from the course: World Geography (GEO 1310). The course instructors found that 86.1% of the undergraduate students met (45%) or exceeded (41.1%) expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 3**

Students will demonstrate their knowledge of research methods used by geographers and their ability to use statistical software to solve geographic problems.

#### **Outcome 3 - Method 1**

Students taking Research Methods in Geography (GEO 3301) will be evaluated during and/or at the end of the semester by course instructors on the students' knowledge of research methods using embedded test questions administered during Research Methods in Geography (GEO 3301) class examinations. Students' knowledge will be assessed on the basis of: Exceeding Expectations (100% - 90% embedded test questions

answered correctly); Meeting Expectations (89% - 70% embedded test questions answered correctly); or Failing to Meet Expectations (69% or fewer embedded test questions answered correctly). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 3 - Method 1 - Result**

During AY 2020 / 2021, 50 undergraduate students were evaluated on their knowledge of research methods by their course instructor using embedded test questions from the course: Research Methods for Geography (GEO 3301). The course instructor found that 80% of the students met or exceeded expectations on embedded knowledge questions about descriptive statistics, bi-variate relationships, and inferential statistics for this outcome / method. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 3 - Method 2**

Students taking Research Methods in Geography (GEO 3301) will be evaluated during and/or at the end of the semester by course instructors on the students' ability to use statistical software to solve geographic problems using a project graded with rubric. Students' ability will be assessed by the percentage of points received on the grading rubric on the basis of: Exceeding Expectations (100% - 90%); Meeting Expectations (89% - 70%); or Failing to Meet Expectations (69% or less). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 3 - Method 2 - Result**

During AY 2020 / 2021, 50 undergraduate students were evaluated on their ability to use statistical software to solve geographic problems using a project graded with rubric from the course: Research Methods for Geography (GEO 3301). The course instructor found that 84.34% of the students met or exceeded expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 4**

Students will demonstrate their knowledge of the foundations and theories of geographic information systems (GIS) and ability to use the tools and methods of GIS.

#### **Outcome 4 - Method 1**

Students taking Fundamentals of Geographic Information Systems (GEO 2426) will be evaluated during and/or at the end of the semester by course instructors on the students' knowledge of geographic information systems using embedded test questions administered during Fundamentals of Geographic Information Systems (GEO 2426) class examinations. Students' knowledge will be assessed on the basis of: Exceeding Expectations (100% - 90% embedded test questions answered correctly); Meeting Expectations (89% - 70% embedded test questions answered correctly); or Failing to Meet Expectations (69% or fewer embedded test questions answered correctly). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 4 - Method 1 - Result**

During AY 2020 / 2021, 57 undergraduate students were evaluated on their knowledge of geographic information systems by their course instructor using embedded test questions from the course: Fundamentals of Geographic Information Systems (GEO 2426). The course instructor found that 75.96% of the students met or exceeded expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 4 - Method 2**

Students taking Fundamentals of Geographic Information Systems (GEO 2426) will be evaluated during and/or at the end of the semester by course instructors on the students' ability to use the tools and methods of GIS using a project graded with a rubric. Students' ability will be assessed by the percentage of points received on the grading rubric on the basis of: Exceeding Expectations (100% - 90%); Meeting Expectations (89% - 70%); or Failing to Meet Expectations (69% or less). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 4 - Method 2 - Result**

During AY 2020 / 2021, 57 undergraduate students were evaluated on their ability to use the tools and methods of GIS by their course instructor using a rubric-graded GIS Project from the course: Fundamentals of Geographic Information Systems (GEO 2426). The course instructor found that 69.56% of the students met (39.13%) or exceeded (30.43%) expectations. The target of 70% of the students meeting or exceeding expectations for this outcome / method was barely achieved.

#### **Outcome 5**

Students will demonstrate their knowledge of physical geography and their ability to use scientific methods and techniques for observing, measuring, recording and reporting on geographic phenomena.

#### **Outcome 5 - Method 1**

Students taking Field Methods (GEO 4430) Capstone Course will be evaluated during and/or at the end of the semester by course instructors on the students' knowledge of physical geography using embedded test questions administered during Field Methods (GEO 4430) class examinations.

Specific embedded questions will target areas that need improvement as identified by the previous year's assessment. Students' knowledge will be assessed on the basis of: Exceeding Expectations (10 embedded test questions answered correctly); Meeting Expectations (7 - 9 embedded test questions answered correctly); or Failing to Meet Expectations (6 or fewer embedded test questions answered correctly). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 5 - Method 1 - Result**

During AY 2020 / 2021, 30 undergraduate students were evaluated on their knowledge of physical geography by their course instructor using embedded test questions from the course: Field Methods (GEO 4430). The course instructor found that 88.66% of the students met (44.98%) or exceeded (43.68%) expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 5 - Method 2**

Students taking Field Methods (GEO 4430) Capstone Course will be evaluated during and/or at the end of the semester by course instructors on the students' ability to use scientific methods and techniques for observing, measuring, recording and reporting on geographic phenomena using a project graded with a rubric. Students' ability will be assessed by the number of points received on the grading rubric on the basis of: Exceeding Expectations (10 points); Meeting Expectations (7 – 9 points); or Failing to Meet Expectations (6 or fewer points). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 5 - Method 2 - Result**

During AY 2020 / 2021, 18 undergraduate students were evaluated on their ability to use scientific methods and techniques for observing, measuring, recording and reporting on geographic phenomena by their course instructor using a rubric-graded project from the course: Field Methods (GEO 4430). The course instructor found that 100% of the undergraduate students met (53.33%) or exceeded (46.67%) expectations for this outcome. The target of 70% of the students meeting or exceeding expectations for this outcome was achieved.

#### **Outcome 6**

- Goal:** 1. Promote the success of all students.  
**Initiative:** 1.3 Increase student retention and graduation rates.

The academic program will promote and realize gains in student success.

#### **Outcome 6 - Method 1**

Student retention success will be measured by observing one year retention rates of students enrolled in the academic program from their freshman to sophomore year. Data will be obtained from the university's certified enrollment records at the end of the fall semester. Rates of retention success will be expected to be at or above the university average for this level of program.

#### **Outcome 6 - Method 1 - Result**

Student retention success measured by freshman-to-sophomore one-year retention rate (78%) for students enrolled in Geography (fall 2019 cohort semester) met the expectation to be at or above the University average (76.7%) for this level of program.

#### **Outcome 6 - Method 2**

Student graduation success will be measured by observing the number of graduates from the academic program in during the fall, spring, and summer semesters and comparing the number of graduates to the number of students enrolled in the program. Data will be obtained from the university's certified enrollment records for the fall, spring, and summer semesters. The number of graduates is expected to be at or above the university rate of graduation for this level of program.

#### **Outcome 6 - Method 2 - Result**

The FY 2020 graduation rate for Geography students of 35% (56 graduates / 162 students enrolled) expectations of exceeding the University graduation rate average of 22.8% (7554 graduates / 33,193 students enrolled).

#### **Outcome 7**

- Goal:** 1. Promote the success of all students.  
**Initiative:** 1.2 Manage student enrollment, both at the graduate and undergraduate level.

The academic program will promote and realize efficiency in the delivery and completion of the program.

#### **Outcome 7 - Method 1**

Delivery efficiency will be measured by reviewing the total number students enrolled in the academic program during the fall semester. Data will be obtained from the university's certified enrollment records at the end of the fall semester. Delivery efficiency will be expected to increase from year to year.

#### **Outcome 7 - Method 1 - Result**

Delivery efficiency will be measured by reviewing the total number students enrolled in the academic program during the fall semester. Data will be

obtained from the university's certified enrollment records at the end of the fall semester. Delivery efficiency will be expected to increase from year to year.

**Outcome 7 - Method 2**

Completion efficiency will be measured by observing the average time-to-completion for students in the academic program. Data will be obtained from the university's certified enrollment records for the fall semester. The time-to-completion of graduates is expected to be at or below the university average for this level of program.

**Outcome 7 - Method 2 - Result**

Completion efficiency measured by the average time to completion (native students) majoring in Geography for FY 2020 (4.3 years) did not meet the expectation to be at or below the University average (3.9 years) for this level of program.

**Approval History**

<b>Approval History Event</b>	<b>Approver</b>
Outcomes Approved Level 1	Yongmei Lu (yl10)
Outcomes Approved Level 2	Mary Brennan (mb18)
Outcomes Audit Report Submitted	Susan Day (sd01)
Results Approved Level 1	Yongmei Lu (yl10)
Results Audit Report Submitted	Susan Day (sd01)

## General Information

<b>Academic Year:</b>	2020-2021
<b>College:</b>	Liberal Arts
<b>Department:</b>	Geography
<b>Program:</b>	Geography (MAGeo/MS)
<b>Program Code:</b>	45.07
<b>Outcome Type:</b>	Student Learning (GR)
<b>Degree:</b>	Masters
<b>Coordinator/Contact:</b>	F Benjamin Zhan
<b>Status:</b>	Result Approvals In Progress

## Mission Statement

The Master of Applied Geography (MAGeo) degree is designed to prepare students to use their skills and background knowledge to solve real-world problems with geographic dimensions and the Master of Science (MS) degree in Geography is designed to provide students with exposure to geographic theory and research at the pre-doctoral level. MAGeo students will be educated in the process of applied research in a spatial context culminating in the completion of a directed research project and MS students will be educated in the process of geographic research culminating in the completion of original research in the form of a MS thesis.

## Evidence of Improvement

During AY 2020 / 2021 we discovered that some students lacked knowledge of multivariate quantitative methods including basic descriptive and inferential statistical techniques (Outcome 2 - Method 1). We decided on an action plan for AY 2020 / 2021 that had the course instructor provide additional examples and lab problems. We implemented our action plan and were pleased to find that student outcomes indicated a 3.4% increase in average total scores used to measure Outcome 2 - Method 1) this year compared to last year.

Since the related classes were taught online as a result of Covid19 (despite that one of the two sections of Geo5309 met in-person in fall 2020), caution must be taken when comparing this year's data with the previous years'.

## Action Plan

Because the AY 2020 / 2021 action plan was successful for (Outcome 2 - Method 1), we will continue to have course instructors provide additional examples and lab problems to increase student understanding of multivariate quantitative methods including basic descriptive and inferential statistical techniques for AY 2020 / 2021.

Also during AY 2020 / 2021 we discovered some students had difficulty using their knowledge of the components of research design to prepare a draft research proposal. For AY 2021 / 2022 we will also have instructors spend additional time discussing with students on the different components of a successful research design (Outcome 3 - Method 1).

## Outcome 1

Students will demonstrate their knowledge of geographic concepts, research methods and analytic techniques as well as their knowledge of the geographer's perspective on conducting and completing research on a wide range of scholarly and applied geographic topics.

### Outcome 1 - Method 1

Students taking Geographical Analysis (GEO 5309) will be evaluated by course instructors on their knowledge of geographic concepts, research methods and analytic techniques using an embedded course assignment graded with a rubric during and / or at the end of the semester. Students' knowledge will be assessed by the percentage of points received on the grading rubric on the basis of: Exceeding Expectations (100% - 90%); Meeting Expectations (89% - 80%); or Failing to Meet Expectations (79% or less). We expect at least 80% of the students will meet or exceed expectations for this outcome / method.

### Outcome 1 - Method 1 - Result

During AY 2020 / 2021, 52 graduate students were evaluated by course instructor on their knowledge of geographic concepts, research methods and analytic techniques using an embedded course assignment. The course instructor found that 81% of the graduate students met or exceeded expectations for this outcome / method. The target of 96% of the students meeting (10%) or exceeding (86%) expectations was achieved.

### Outcome 1 - Method 2

Students taking Geographical Analysis (GEO 5309) will be evaluated by course instructors on their knowledge of the geographer's perspective on conducting and completing research on a wide range of scholarly and applied geographic topics using an embedded course assignment graded with a rubric during and / or at the end of the semester. Students' knowledge will be assessed by the percentage of points received on the grading rubric on the basis of: Exceeding Expectations (100% - 90%); Meeting Expectations (89% - 80%); or Failing to Meet Expectations (79% or less). We expect at least 80% of the students will meet or exceed expectations for this outcome / method.

### Outcome 1 - Method 2 - Result

During AY 2020 / 2021, 52 graduate students were evaluated by course instructors on their knowledge of the geographer's perspective on conducting and completing research on a wide range of scholarly and applied geographic topics using an embedded course assignment. The course instructors found that 96% of the graduate students met (4%) or exceeded (92%) expectations for this outcome / method. The target of 80%

of the students meeting or exceeding expectations was achieved.

## **Outcome 2**

Students will demonstrate their knowledge of multivariate quantitative methods including basic descriptive and inferential statistical techniques as well as their knowledge of advanced topics such as regression analysis and non-parametric analytical methods, spatial statistics and factor analysis.

### **Outcome 2 - Method 1**

Multivariate Quantitative Methods (GEO 5301) course instructors will evaluate their students' knowledge of knowledge of multivariate quantitative methods including basic descriptive and inferential statistical techniques using questions embedded in the course midterm exam. Students' knowledge will be assessed on the basis of: Exceeding Expectations (100% - 90%); Meeting Expectations (89% - 80%); or Failing to Meet Expectations (79% or less). We expect at least 80% of the students will meet or exceed expectations for this outcome / method.

### **Outcome 2 - Method 1 - Result**

During AY 2020 / 2021, 33 graduate students were evaluated by course instructors on their knowledge of multivariate quantitative methods including basic descriptive and inferential statistical techniques using embedded exam questions. The course instructors found that 90.9% of the graduate students met or exceeded expectations for this outcome / method. The target of 80% of the students meeting or exceeding expectations was achieved.

### **Outcome 2 - Method 2**

Students taking Multivariate Quantitative Methods (GEO 5301) will be evaluated by course instructors will on their knowledge of advanced statistical topics such as regression analysis and non-parametric analytical methods, spatial statistics and factor analysis using questions embedded in the course final exam. Students' knowledge will be assessed on the basis of: Exceeding Expectations (100% - 90% embedded test questions answered correctly); Meeting Expectations (89% - 80% embedded test questions answered correctly); or Failing to Meet Expectations (79% or fewer embedded test questions answered correctly). We expect at least 80% of the students will meet or exceed expectations for this outcome / method.

### **Outcome 2 - Method 2 - Result**

During AY 2020 / 2021, 33 graduate students were evaluated by course instructors on their knowledge of advanced statistical topics such as regression analysis and non-parametric analytical methods, spatial statistics and factor analysis using embedded exam questions. The course instructors found that 87.9 % of the graduate students met or exceeded expectations for this outcome / method. The target of 80% of the students meeting or exceeding expectations was achieved.

## **Outcome 3**

Students will demonstrate their knowledge of the basic components of research grant proposals and their ability to critique research designs and manuscripts as well as their ability to produce a draft research proposal for their thesis.

### **Outcome 3 - Method 1**

Students taking Advanced Geographic Research Design (GEO 7300) will be evaluated by course instructors on their knowledge of the basic components of research grant proposals and their ability to critique research designs and manuscripts using an embedded class assignment graded with a rubric during and / or at the end of the semester. Students' knowledge will be assessed by the percentage of points received on the grading rubric on the basis of: Exceeding Expectations (100% - 90%); Meeting Expectations (89% - 80%); or Failing to Meet Expectations (79% or less). We expect at least 80% of the students will meet or exceed expectations for this outcome / method.

### **Outcome 3 - Method 1 - Result**

During AY 2020 / 2021, 16 graduate students were evaluated by course instructors on their knowledge of the basic components of research grant proposals and their ability to critique research designs and manuscripts using embedded class assignments. The course instructor found that 100% of students met or exceeded expectations for this outcome / method. The target of 80% of the students meeting or exceeding expectations was achieved.

### **Outcome 3 - Method 2**

Students taking Advanced Geographic Research Design (GEO 7300) will be evaluated by course instructors on their ability to produce a draft research proposal for their thesis graded with a rubric at the end of the semester. Students' knowledge will be assessed by the percentage of points received on the grading rubric on the basis of: Exceeding Expectations (100% - 90%); Meeting Expectations (89% - 80%); or Failing to Meet Expectations (79% or less). We expect at least 80% of the students will meet or exceed expectations for this outcome / method.

### **Outcome 3 - Method 2 - Result**

During AY 2020 / 2021, 10 graduate students were evaluated by course instructors on their ability to produce a draft research proposal for their thesis. The course instructor found that 100% of students met or exceeded expectations for this outcome / method. The target of 80% of the students meeting or exceeding expectations was achieved.

**Outcome 4**

**Goal:** 1. Promote the success of all students.  
**Initiative:** 1.3 Increase student retention and graduation rates.

The academic program will promote and realize gains in student success.

**Outcome 4 - Method 1**

Student retention success will be measured by observing one year retention rates of students enrolled in the academic program from their first to second year. Data will be obtained from the university's certified enrollment records at the end of the fall semester. Rates of retention success will be expected to be at or above the university average for this level of program.

**Outcome 4 - Method 1 - Result**

Student retention success measured by first-to-second year retention rate (100%) for students enrolled in Geography: MAGeo / MS (fall 2019 cohort semester) met the expectation to be at or above the University average (80%) for this level of program.

**Outcome 4 - Method 2**

Student graduation success will be measured by observing the number of graduates from the academic program in during the fall, spring, and summer semesters and comparing the number of graduates to the number of students enrolled in the program. Data will be obtained from the university's certified enrollment records for the fall, spring, and summer semesters. The number of graduates is expected to be at or above the university rate of graduation for this level of program.

**Outcome 4 - Method 2 - Result**

The graduation rate for Geography: MAGeo / MS students for FY 2019, 32.4% (11 graduates / 34 students enrolled), close to but did not meet the expectation of exceeding the University graduation rate average of 35.3% (1,278 graduates / 3,620 students enrolled).

**Outcome 5**

**Goal:** 1. Promote the success of all students.  
**Initiative:** 1.2 Manage student enrollment, both at the graduate and undergraduate level.

The academic program will promote and realize efficiency in the delivery and completion of the program.

**Outcome 5 - Method 1**

Delivery efficiency will be measured by reviewing the total number students enrolled in the academic program during the fall semester. Data will be obtained from the university's certified enrollment records at the end of the fall semester. Delivery efficiency will be expected to increase from year to year.

**Outcome 5 - Method 1 - Result**

Delivery efficiency measured by the number of students (58) majoring in Geography: MAGeo / MS in the fall of 2020 compared to the number of majors (37) in the fall 2019 met the expectation of an increase in the number of students from year to year.

**Outcome 5 - Method 2**

Completion efficiency will be measured by observing the average time-to-completion for students in the academic program. Data will be obtained from the university's certified enrollment records for the fall semester. The time-to-completion of graduates is expected to be at or below the university average for this level of program.

**Outcome 5 - Method 2 - Result**

Completion efficiency measured by the average time to completion (native students) majoring in Geography: MAGeo / MS for FY 2019 (2.0 years) met the expectation to be at or below the University average (2.0 years) for this level of program.

**Approval History**

Approval History Event	Approver
Outcomes Approved Level 1	Yongmei Lu (yl10)
Outcomes Approved Level 2	Mary Brennan (mb18)
Outcomes Audit Report Submitted	Susan Day (sd01)
Results Approved Level 1	Yongmei Lu (yl10)
Results Audit Report Submitted	Susan Day (sd01)

## General Information

<b>Academic Year:</b>	2020-2021
<b>College:</b>	Liberal Arts
<b>Department:</b>	Geography
<b>Program:</b>	Geography (PhD)
<b>Program Code:</b>	45.07
<b>Outcome Type:</b>	Student Learning (GR)
<b>Degree:</b>	Doctoral
<b>Coordinator/Contact:</b>	F Benjamin Zhan
<b>Status:</b>	Result Approvals In Progress

## Mission Statement

The doctoral degree in Geography is designed to provide depth and breadth of knowledge in geographic theory and research methods resulting in the completion of significant original research in the form of a PhD dissertation. Students will be educated in the process of geographic research, the development of new knowledge and methods and the application of research, techniques, pedagogy and geographic knowledge to address problems with spatial dimensions.

## Evidence of Improvement

During AY 2019 / 2020, we discovered that some students lacked presentation skills - GEO 7302 (Outcome 1 Method 1). We decided on an action plan for AY 2020 / 2021 that had the course instructor provide additional opportunities for students to practice their presentation skills. We implemented our action plan and were pleased to find that the number of students meeting, or exceeding expectations for (Outcome 1 – Method 1) improved 10% in average total scores used to measure student learning this year compared to last year. During AY 2019 / 2020, we discovered that some students lacked archival research skills - GEO 7302 (Outcome 1 Method 2). We decided on an action plan for AY 2020 / 2021 that had the course instructor create and deliver a lesson on archival research. We implemented our action plan and were pleased to find that the number of students meeting, or exceeding expectations for (Outcome 1 Method 2) improved by 10% in average total scores used to measure student learning this year compared to last year. During AY 2019 / 2020, we discovered that some students lacked the ability to critique research designs and manuscripts - GEO 7300 (Outcome 3 – Method 1). We decided on an action plan for AY 2020 / 2021 that had the course instructor provide more guidance about how to critique research designs and manuscripts to the students in advance of the assignment. We implemented our action plan and were pleased to find that the number of students meeting, or exceeding expectations for (Outcome 3 – Method 1) improved by 10% in average total scores used to measure student learning this year compared to last year.

## Action Plan

During AY 2020 / 2021 we discovered that some students had difficulty developing draft research questions. (Outcome 3 - Method 2) For AY 2021 / 2022 we will have instructor add an additional activity to help students learn the nature of inquiry and how to develop research questions.

## Outcome 1

Students will demonstrate their knowledge of the historical roots, development and contemporary philosophical and theoretical debates in the discipline of geography, as well as their ability to produce a term paper based on primary sources and formatted in the style of the *Annals of the Association of American Geographers*.

### Outcome 1 - Method 1

Students taking Nature and Philosophy of Geography (GEO 7302) will be evaluated by course instructors on their knowledge of the historical roots, development and contemporary philosophical and theoretical debates in the discipline of geography using an embedded class assignment graded with a rubric during and / or at the end of the semester. Students' knowledge will be assessed by the percentage of points received on the grading rubric on the basis of: Exceeding Expectations (100% - 90%); Meeting Expectations (89% - 80%); or Failing to Meet Expectations (79% or less). We expect at least 80% of the students will meet or exceed expectations for this outcome / method.

### Outcome 1 - Method 1 - Result

During AY 2020 / 2021, 9 graduate students were evaluated by course instructor on their knowledge of the historical roots, development and contemporary philosophical and theoretical debates in the discipline of geography using an embedded class assignment. The course instructors found that 100% of the graduate students met or exceeded expectations for this outcome / method. The target of 80% of the students meeting or exceeding expectations was achieved.

### Outcome 1 - Method 2

Students taking Nature and Philosophy of Geography (GEO 7302) will be evaluated by course instructors on their ability to produce a term paper based on primary sources and formatted in the style of the *Annals of the Association of American Geographers* geography using an embedded class assignment graded with a rubric during and / or at the end of the semester. Students' knowledge will be assessed by the percentage of points received on the grading rubric on the basis of: Exceeding Expectations (100% - 90%); Meeting Expectations (89% - 80%); or Failing to Meet Expectations (79% or less). We expect at least 80% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 1 - Method 2 - Result**

During AY 2020 / 2021, 9 graduate students were evaluated by course instructor on their ability to produce a term paper based on primary sources and formatted in the style of the Annuals of the Association of American Geographers using an embedded class assignment. The course instructors found that 100% of the graduate students met or exceeded expectations for this outcome / method. The target of 80% of the students meeting or exceeding expectations was achieved.

#### **Outcome 2**

Students will demonstrate their advanced proficiency in the use of technical tools for geographic research including quantitative methods and other appropriate statistical tools for spatial analysis, as well as their ability to use statistical research tools to produce a research paper suitable for publication in a refereed journal.

#### **Outcome 2 - Method 1**

Students taking Advanced Quantitative Methods in Geography (GEO 7301) will be evaluated by course instructors on their advanced proficiency in the use of technical tools for geographic research including quantitative methods and other appropriate statistical tools for spatial analysis using an embedded class assignment graded with a rubric at the end of the semester. Students' knowledge will be assessed by the percentage of points received on the grading rubric on the basis of: Exceeding Expectations (100% - 90%); Meeting Expectations (89% - 80%); or Failing to Meet Expectations (79% or less). We expect at least 80% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 2 - Method 1 - Result**

During AY 2019 / 2020, 8 graduate students were evaluated by course instructor on their advanced proficiency in the use of technical tools for geographic research including quantitative methods and other appropriate statistical tools for spatial analysis using an embedded class assignment. The course instructors found that 87.5% of the graduate students met or exceeded expectations for this outcome / method. The target of 80% of the students meeting or exceeding expectations was achieved.

#### **Outcome 2 - Method 2**

Students taking Advanced Quantitative Methods in Geography (GEO 7301) will be evaluated by course instructors on their ability to use statistical research tools to produce a research paper - suitable for publication in a refereed journal - graded with a rubric at the end of the semester. Students' knowledge will be assessed by the percentage of points received on the grading rubric on the basis of: Exceeding Expectations (100% - 90%); Meeting Expectations (89% - 80%); or Failing to Meet Expectations (79% or less). We expect at least 80% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 2 - Method 2 - Result**

During AY 2019 / 2020, 8 graduate students were evaluated by course instructor on their ability to use statistical research tools to produce a research paper suitable for publication in a refereed journal. The course instructors found that 87.5% of the graduate students met or exceeded expectations for this outcome / method. The target of 100% of the students meeting or exceeding expectations was achieved.

#### **Outcome 3**

Students will demonstrate their knowledge of the basic components of research grant proposals and their ability to critique research designs and manuscripts, as well as their ability to produce a draft research proposal for their dissertation.

#### **Outcome 3 - Method 1**

Students taking Advanced Geographic Research Design (GEO 7300) will be evaluated by course instructors on their knowledge of the basic components of research grant proposals and their ability to critique research designs and manuscripts using an embedded class assignment graded with a rubric during and / or at the end of the semester. Students' knowledge will be assessed by the percentage of points received on the grading rubric on the basis of: Exceeding Expectations (100% - 90%); Meeting Expectations (89% - 80%); or Failing to Meet Expectations (79% or less). We expect at least 80% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 3 - Method 1 - Result**

During AY 2020 / 2021, 10 graduate students were evaluated by course instructors on their knowledge of the basic components of research grant proposals and their ability to critique research designs and manuscripts using an embedded class assignment. The course instructors found that 100% of the graduate students met or exceeded expectations for this outcome / method. The target of 80% of the students meeting or exceeding expectations was achieved.

#### **Outcome 3 - Method 2**

Students taking Advanced Geographic Research Design (GEO 7300) will be evaluated by course instructors on their ability to produce a draft research proposal for their dissertation graded with a rubric at the end of the semester. Students' knowledge will be assessed by the percentage of

points received on the grading rubric on the basis of: Exceeding Expectations (100% - 90%); Meeting Expectations (89% - 80%); or Failing to Meet Expectations (79% or less). We expect at least 80% of the students will meet or exceed expectations for this outcome / method.

#### Outcome 3 - Method 2 - Result

During AY 2019 / 2020, 10 graduate students were evaluated by course instructors on their ability to produce a draft research proposal for their dissertation. The course instructors found that 87.5% of the graduate students met or exceeded expectations for this outcome / method. The target of 80% of the students meeting or exceeding expectations was achieved.

#### Outcome 4

- Goal:** 1. Promote the success of all students.  
**Initiative:** 1.3 Increase student retention and graduation rates.

The academic program will promote and realize gains in student success.

#### Outcome 4 - Method 1

Student retention success will be measured by observing one year retention rates of students enrolled in the academic program from their first to second year. Data will be obtained from the university's certified enrollment records at the end of the fall semester. Rates of retention success will be expected to be at or above the university average for this level of program.

#### Outcome 4 - Method 1 - Result

Student retention success measured by first-to-second year retention rate (100%) for students enrolled in Geography: Ph.D. (fall 2019 cohort semester) met the expectation to be at or above the University average (93%) for this level of program.

#### Outcome 4 - Method 2

Student graduation success will be measured by observing the number of graduates from the academic program in during the fall, spring, and summer semesters and comparing the number of graduates to the number of students enrolled in the program. Data will be obtained from the university's certified enrollment records for the fall, spring, and summer semesters. The number of graduates is expected to be at or above the university rate of graduation for this level of program.

#### Outcome 4 - Method 2 - Result

The graduation rate for Geography: Ph.D. students for FY 2019 of 29.8% (14 graduates / 48 students enrolled) met expectations of exceeding the University graduation rate average of 13.4% (72 graduates / 538 students enrolled).

#### Outcome 5

- Goal:** 1. Promote the success of all students.  
**Initiative:** 1.2 Manage student enrollment, both at the graduate and undergraduate level.

The academic program will promote and realize efficiency in the delivery and completion of the program.

#### Outcome 5 - Method 1

Delivery efficiency will be measured by reviewing the total number students enrolled in the academic program during the fall semester. Data will be obtained from the university's certified enrollment records at the end of the fall semester. Delivery efficiency will be expected to increase from year to year.

#### Outcome 5 - Method 1 - Result

Delivery efficiency measured by the number of students (57) majoring in Geography: Ph.D. in the fall of 2020 compared to the number of majors (50) in the fall 2019 met the expectation of an increase in the number of students from year to year.

#### Outcome 5 - Method 2

Completion efficiency will be measured by observing the average time-to-completion for students in the academic program. Data will be obtained from the university's certified enrollment records for the fall semester. The time-to-completion of graduates is expected to be at or below the university average for this level of program.

#### Outcome 5 - Method 2 - Result

Completion efficiency measured by the average time to completion (native students) majoring in Geography: Ph.D. for FY 2020 (4.3 years) met the expectation to be at or below the University average (4.3 years) for this level of program.

#### Approval History

##### Approval History Event

Outcomes Approved Level 1

##### Approver

Yongmei Lu (yl10)

Outcomes Approved Level 2  
Outcomes Audit Report Submitted  
Results Approved Level 1  
Results Audit Report Submitted

Mary Brennan (mb18)  
Susan Day (sd01)  
Yongmei Lu (yl10)  
Susan Day (sd01)

## General Information

<b>Academic Year:</b>	2020-2021
<b>College:</b>	Liberal Arts
<b>Department:</b>	Geography
<b>Program:</b>	Geography Resource and Environmental Studies (BS)
<b>Program Code:</b>	3.01
<b>Outcome Type:</b>	Student Learning (UG)
<b>Degree:</b>	Undergraduate
<b>Coordinator/Contact:</b>	Brian J Cooper
<b>Status:</b>	Result Approvals In Progress

## Mission Statement

The Resource and Environmental Studies program prepares students for a wide variety of government and private sector occupations relating to resource conservation and/or environmental management. In addition to general and specialized lecture-format courses, the program offers a variety of project-based lab and field-trip experiences, career development through advising, job-shadowing and internships as well as team-building and leadership opportunities available by joining one or more geography department student organizations. The Resource and Environmental Studies program also prepares students for graduate programs in resource and environmental studies. Finally, the Resource and Environmental Studies program provides students with the foundation for a liberal education, preparing graduates to think independently, to choose freely and to base personal and professional decisions on a broad understanding of the Earth's physical and cultural landscapes in order to live full, rewarding lives.

## Evidence of Improvement

During AY 2019 / 2020, we continued to observe that some students were challenged with linking knowledge of the physical geography of Southwest Asia and Sub-Saharan Africa to their location on a map (Outcome 1 - Method 2) and some students were challenged with knowledge of the cultural geography of Southeast Asia and Sub-Saharan Africa (Outcome 2 - Method 1). We decided on an action plan for AY 2020 / 2021 that the course instructors provide additional lecture time and emphasis on physical geography of Southwest Asia and Sub-Saharan Africa to their location on a map and the cultural geography of Southeast Asia and Sub-Saharan Africa, as well as additional lecture time and emphasis to help students locate examples of major cultural features of the Earth on a map, particularly with Central America and Sub-Saharan Africa (Outcome 2 – Method 2). We implemented our action plan and were pleased to find a 0.3% increase in average total scores used to measure improvement in student learning for (Outcome 1 - Method 2), a 0.4% increase in average total scores used to measure improvement in student learning for (Outcome 2 - Method 1), and a 1.1% increase in average total scores used to measure improvement in student learning for (Outcome 2 – Method 2) during AY 2020 / 2021 compared to last year. Also, during AY 2019 / 2020 we discovered students were challenged by questions about inferential statistics (Outcome 3 – Method 1). We decided on an action plan for AY 2020 / 2021 that had the course instructors provide additional lecture time on inferential statistics and were pleased to find a 2% increase in average total scores used to measure improvement in student learning for AY 2019 / 2020 compared to last year. Additionally, during AY 2019 / 2020 we discovered that students continued to struggle on the topic of map project/coordinate systems (Outcome 4 – Method 1). We decided on an action plan for AY 2020 / 2021 that had the course instructors provide additional lecture time explaining map project/coordinate systems and were pleased to find a 3.96% increase in average total scores used to measure student learning for AY 2020 / 2021 compared to last year. Finally, during AY 2019 / 2020 we discovered that some students demonstrated a need to improve their command of methods to promote more effective environmental management (Outcome 5 - Method 1). We decided on an action plan for AY 2020 / 2021 that had the course instructors provide additional lecture time and create additional handouts related to effective environmental management and were pleased to find a 11% increase in average total scores used to measure student learning for AY 2020 / 2021 compared to last year.

## Action Plan

Because the AY 2020 / 2021 action plan was successful for (Outcome 1 - Method 2) and (Outcome 2 - Method 1), we will continue to have course instructors provide additional lecture time and map work on the physical geography of Southwest Asia and Sub-Saharan Africa and on knowledge of the cultural geography of Southeast Asia and Sub-Saharan Africa to improve student learning for AY 2021 / 2022. We will also have the course instructors provide additional lecture time and emphasis to help students locate examples of major cultural features of the Earth on a map, particularly with Central America and Sub-Saharan Africa (Outcome 2 – Method 2) for AY 2021 / 2022. Also, because the AY 2019 / 2020 action plan was successful for (Outcome 3 - Method 1) we will continue to have course instructors provide additional lecture time on inferential statistics for AY 2021 / 2022. Additionally, because the AY 2020 / 2021 action plan was successful for (Outcome 4 – Method 1) we will continue to have course instructors provide additional lecture time explaining map project/coordinate systems for AY 2021 / 2022. Finally, because the AY 2020 / 2021 action plan was successful for (Outcome 5 – Method 1) we will continue to have course instructors provide additional lecture time and create additional handouts related to effective environmental management for AY 2021 / 2022.

## Outcome 1

Students will demonstrate their knowledge of the major physical features of the Earth such as mountains, deserts, rivers and oceans and their ability to locate examples of the Earth's major features on a map.

## Outcome 1 - Method 1

Students taking World Geography (GEO 1310) will be evaluated during and/or at the end of the semester by course instructors on the students' knowledge of the major physical features of the Earth using embedded test questions administered during World Geography (GEO 1310) class

examinations. Students' knowledge will be assessed on the basis of: Exceeding Expectations (10 embedded test questions answered correctly); Meeting Expectations (7 - 9 embedded test questions answered correctly); or Failing to Meet Expectations (6 or fewer embedded test questions answered correctly). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 1 - Method 1 - Result**

During AY 2020 / 2021, 709 undergraduate students were evaluated on their knowledge of the major physical features of the Earth by their course instructors using embedded test questions from the course: World Geography (GEO1310). The course instructors found that 87.7% of the students met (33.5%) or exceeded (55.2%) expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 1 - Method 2**

Students taking World Geography (GEO 1310) will be evaluated during and/or at the end of the semester by course instructors on the students' ability to locate examples of major physical features of the Earth on a map using embedded test questions administered during World Geography (GEO 1310) class examinations. Students' ability will be assessed on the basis of: Exceeding Expectations (10 embedded test questions answered correctly); Meeting Expectations (7 - 9 embedded test questions answered correctly); or Failing to Meet Expectations (6 or fewer embedded test questions answered correctly). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 1 - Method 2 - Result**

During AY 2020 / 2021, 709 undergraduate students were evaluated on their ability to locate examples of major physical features of the Earth on a map by their course instructors using embedded test questions from the course: World Geography (GEO1310). The course instructors found that 84.5% of the students met (50.6%) or exceeded (33.9%) expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 2**

Students will demonstrate knowledge of the major cultural features of the Earth such as political boundaries, major agricultural regions and language groups and their ability to locate examples of Earth's major cultural features on a map.

#### **Outcome 2 - Method 1**

Students taking World Geography (GEO 1310) will be evaluated during and/or at the end of the semester by course instructors on the students' knowledge of the major cultural features of the Earth using embedded test questions administered during World Geography (GEO 1310) class examinations. Students' knowledge will be assessed on the basis of: Exceeding Expectations (10 embedded test questions answered correctly); Meeting Expectations (7 - 9 embedded test questions answered correctly); or Failing to Meet Expectations (6 or fewer embedded test questions answered correctly). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 2 - Method 1 - Result**

During AY 2020 / 2021, 709 undergraduate students were evaluated on their knowledge of the major cultural features of the Earth by their course instructors using embedded test questions from the course: World Geography (GEO 1310). The course instructors found that 88.8% of the undergraduate students met (50.2%) or exceeded (38.6%) expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 2 - Method 2**

Students taking World Geography (GEO 1310) will be evaluated during and/or at the end of the semester by course instructors on the students' ability to locate examples of major cultural features of the Earth on a map using embedded test questions administered during World Geography (GEO 1310) class examinations. Students' ability will be assessed on the basis of: Exceeding Expectations (10 embedded test questions answered correctly); Meeting Expectations (7 - 9 embedded test questions answered correctly); or Failing to Meet Expectations (6 or fewer embedded test questions answered correctly). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 2 - Method 2 - Result**

During AY 2020 / 2021, 709 undergraduate students were evaluated on their ability to locate examples of major cultural features of the Earth on a map by their course instructors using embedded test questions from the course: World Geography (GEO 1310). The course instructors found that 86.1% of the undergraduate students met (45%) or exceeded (41.1%) expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 3**

Students will demonstrate knowledge of quantitative methods used by geographers and their ability to use statistical software to solve geographic problems.

#### **Outcome 3 - Method 1**

Students taking Research Methods in Geography (GEO 3301) will be evaluated during and/or at the end of the semester by course instructors on the students' knowledge of research methods using embedded test questions administered during Research Methods in Geography (GEO 3301)

class examinations. Students' knowledge will be assessed on the basis of: Exceeding Expectations (100% - 90% embedded test questions answered correctly); Meeting Expectations (89% - 70% embedded test questions answered correctly); or Failing to Meet Expectations (69% or fewer embedded test questions answered correctly). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 3 - Method 1 - Result**

During AY 2020 / 2021, 50 undergraduate students were evaluated on their knowledge of research methods by their course instructor using embedded test questions from the course: Research Methods for Geography (GEO 3301). The course instructor found that 80% of the students met or exceeded expectations on embedded knowledge questions about measurement and descriptive statistics, bi-variate relationships, and inferential statistics for this outcome /method. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 3 - Method 2**

Students taking Research Methods in Geography (GEO 3301) will be evaluated during and/or at the end of the semester by course instructors on the students' ability to use statistical software to solve geographic problems using a project graded with rubric. Students' ability will be assessed by the percentage of points received on the grading rubric on the basis of: Exceeding Expectations (100% - 90%); Meeting Expectations (89% - 70%); or Failing to Meet Expectations (69% or less). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 3 - Method 2 - Result**

During AY 2020 / 2021, 50 undergraduate students were evaluated on their ability to use statistical software to solve geographic problems using a project graded with rubric from the course: Research Methods for Geography (GEO 3301). The course instructor found that 84.34% of the students met or exceeded expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 4**

Students will demonstrate knowledge of the foundations and theories of geographic information systems (GIS) and their ability to use the tools and methods of GIS.

#### **Outcome 4 - Method 1**

Students taking Fundamentals of Geographic Information Systems (GEO 2426) will be evaluated during and/or at the end of the semester by course instructors on the students' knowledge of geographic information systems using embedded test questions administered during Fundamentals of Geographic Information Systems (GEO 2426) class examinations. Students' knowledge will be assessed on the basis of: Exceeding Expectations (100% - 90% embedded test questions answered correctly); Meeting Expectations (89% - 70% embedded test questions answered correctly); or Failing to Meet Expectations (69% or fewer embedded test questions answered correctly). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 4 - Method 1 - Result**

During AY 2020 / 2021, 57 undergraduate students were evaluated on their knowledge of geographic information systems by their course instructor using embedded test questions from the course: Fundamentals of Geographic Information Systems (GEO 2426). The course instructor found that 75.96% of the students met or exceeded expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 4 - Method 2**

Students taking Fundamentals of Geographic Information Systems (GEO 2426) will be evaluated during and/or at the end of the semester by course instructors on the students' ability to use the tools and methods of GIS using a project graded with a rubric. Students' ability will be assessed by the percentage of points received on the grading rubric on the basis of: Exceeding Expectations (100% - 90%); Meeting Expectations (89% - 70%); or Failing to Meet Expectations (69% or less). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 4 - Method 2 - Result**

During AY 2020 / 2021, 57 undergraduate students were evaluated on their ability to use the tools and methods of GIS by their course instructor using a rubric-graded GIS Project from the course: Fundamentals of Geographic Information Systems (GEO 2426). The course instructor found that 69.56% of the students met (39.13%) or exceeded (30.43%) expectations. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 5**

Students will demonstrate their knowledge of resource and environmental issues and their ability to demonstrate the role that geography plays in analyzing resource / environmental degradation problems and improving resource / environmental management strategies.

#### **Outcome 5 - Method 1**

Students taking Environmental Management (GEO 4313) Capstone Course will be evaluated during and/or at the end the semester by course instructors on the students' knowledge of resource and environmental issues using embedded test administered during Environmental Management (GEO 4313) class examinations. Specific embedded questions will target areas that need improvement as identified by the previous year's assessment. Students' knowledge will be assessed on the basis of: Exceeding Expectations (10 embedded test questions answered correctly); Meeting Expectations (7 - 9 embedded test questions answered correctly); or Failing to Meet Expectations (6 or fewer embedded test questions answered correctly). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 5 - Method 1 - Result**

During AY 2019 / 2020, 44 undergraduate students were evaluated by their course instructor on their knowledge of resource and environmental issues using embedded test questions from the course: Environmental Management (GEO 4313). The course instructor found that 95% of the students met or exceeded performance expectations. The target of 70% of the students meeting or exceeding expectations was achieved.

#### **Outcome 5 - Method 2**

Students Environmental Management (GEO 4313) Capstone Course will be evaluated during and/or at the end of the semester by course instructors on the students' ability to demonstrate the role that geography plays in analyzing resource / environmental degradation problems and improving resource / environmental management strategies using a project graded with a rubric. Students' ability will be assessed by the number of points received on the grading rubric on the basis of: Exceeding Expectations (10 points); Meeting Expectations (7 – 9 points); or Failing to Meet Expectations (6 or fewer points). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 5 - Method 2 - Result**

During AY 2019 / 2020, 44 undergraduate students were evaluated by their course instructor using rubric- graded project (a simplified Environmental Impact Statement) from the course: Environmental Management (GEO 4313). The course instructor found that 90.8% of the students met or exceeded expectations. The target of 70% of the students meeting or exceeding expectation was achieved.

#### **Outcome 6**

- Goal:** 1. Promote the success of all students.  
**Initiative:** 1.3 Increase student retention and graduation rates.

The academic program will promote and realize gains in student success.

#### **Outcome 6 - Method 1**

Student retention success will be measured by observing one year retention rates of students enrolled in the academic program from their freshman to sophomore year. Data will be obtained from the university's certified enrollment records at the end of the fall semester. Rates of retention success will be expected to be at or above the university average for this level of program.

#### **Outcome 6 - Method 1 - Result**

Student retention success measured by freshman-to-sophomore one-year retention rate (88%) for students enrolled in Geography: Resource and Environmental Studies (fall 2019 cohort semester) met the expectation to be at or above the University average (76.7%) for this level of program.

#### **Outcome 6 - Method 2**

Student graduation success will be measured by observing the number of graduates from the academic program in during the fall, spring, and summer semesters and comparing the number of graduates to the number of students enrolled in the program. Data will be obtained from the university's certified enrollment records for the fall, spring, and summer semesters. The number of graduates is expected to be at or above the university rate of graduation for this level of program.

#### **Outcome 6 - Method 2 - Result**

The FY 2020 graduation rate for Geography: Resource and Environmental Studies students of 53.3% (137 graduates / 257 students enrolled) met expectations of exceeding the University graduation rate average of 22.8% (7554 graduates / 33,193 students enrolled).

#### **Outcome 7**

- Goal:** 1. Promote the success of all students.  
**Initiative:** 1.2 Manage student enrollment, both at the graduate and undergraduate level.

The academic program will promote and realize efficiency in the delivery and completion of the program.

#### **Outcome 7 - Method 1**

Delivery efficiency will be measured by reviewing the total number students enrolled in the academic program during the fall semester. Data will be obtained from the university's certified enrollment records at the end of the fall semester. Delivery efficiency will be expected to increase from year to year.

#### **Outcome 7 - Method 1 - Result**

Delivery efficiency measured by the number of students (234) majoring in Geography: Resource and Environmental Studies in the fall of 2020

compared to the number of majors (255) in the fall 2018 failed to meet the expectation of an increase in the number of students from year to year.

**Outcome 7 - Method 2**

Completion efficiency will be measured by observing the average time-to-completion for students in the academic program. Data will be obtained from the university's certified enrollment records for the fall semester. The time-to-completion of graduates is expected to be at or below the university average for this level of program.

**Outcome 7 - Method 2 - Result**

Completion efficiency measured by the average time to completion (native students) majoring in Geography: Resource and Environmental Studies for FY 2020 (3.7 years) met the expectation to be at or below the University average (3.9 years) for this level of program.

**Approval History**

**Approval History Event**

**Approver**

Outcomes Approved Level 1	Yongmei Lu (yl10)
Outcomes Approved Level 2	Mary Brennan (mb18)
Outcomes Audit Report Submitted	Susan Day (sd01)
Results Approved Level 1	Yongmei Lu (yl10)
Results Audit Report Submitted	Susan Day (sd01)

## General Information

<b>Academic Year:</b>	2020-2021
<b>College:</b>	Liberal Arts
<b>Department:</b>	Geography
<b>Program:</b>	Geography Resource and Environmental Studies (MAGeo)
<b>Program Code:</b>	3.01
<b>Outcome Type:</b>	Student Learning (GR)
<b>Degree:</b>	Masters
<b>Coordinator/Contact:</b>	F Benjamin Zhan
<b>Status:</b>	Result Approvals In Progress

## 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

During AY 2019 / 2020 we discovered that some students lacked knowledge of multivariate quantitative methods including basic descriptive and inferential statistical techniques (Outcome 2 - Method 1). We decided on an action plan for AY 2020 / 2021 that had the course instructor provide additional examples and lab problems. We implemented our action plan and were pleased to find that student outcomes indicated a 3.4% increase in average total scores used to measure (Outcome 2 - Method 1) this year compared to last year.

Since the related classes were taught online as a result of Covid19 (despite that one of the two sections of Geo5309 met in-person in fall 2020), caution must be taken when comparing this year's data with the previous years'.

## Action Plan

Because the AY 2020 / 2021 action plan was successful for (Outcome 2 - Method 1), we will continue to have course instructors provide additional examples and lab problems to increase student understanding of multivariate quantitative methods including basic descriptive and inferential statistical techniques for AY 2021 / 2022.

Also during AY 2020 / 2021 we discovered some students had difficulty using their knowledge of the components of research design to prepare a draft research proposal. For AY 2021 / 2022 we will also have instructors spend additional time discussing with students on the different components of a successful research design (Outcome 3 - Method 1).

## Outcome 1

Students will demonstrate their knowledge of geographic concepts, research methods and analytic techniques as well as their knowledge of the geographer's perspective on conducting and completing research on a wide range of scholarly and applied geographic topics.

### Outcome 1 - Method 1

Students taking Geographical Analysis (GEO 5309) will be evaluated by course instructors on their knowledge of geographic concepts, research methods and analytic techniques using an embedded course assignment graded with a rubric during and / or at the end of the semester. Students' knowledge will be assessed by the percentage of points received on the grading rubric on the basis of: Exceeding Expectations (100% - 90%); Meeting Expectations (89% - 80%); or Failing to Meet Expectations (79% or less). We expect at least 80% of the students will meet or exceed expectations for this outcome / method.

### Outcome 1 - Method 1 - Result

During AY 2020 / 2021, 52 graduate students were evaluated by course instructor on their knowledge of geographic concepts, research methods and analytic techniques using an embedded course assignment. The course instructor found that 96% of the graduate students met (10%) or exceeded (86%) expectations for this outcome / method. The target of 80% of the students meeting or exceeding expectations was achieved.

### Outcome 1 - Method 2

Students taking Geographical Analysis (GEO 5309) will be evaluated by course instructors on their knowledge of the geographer's perspective on conducting and completing research on a wide range of scholarly and applied geographic topics using an embedded course assignment graded with a rubric during and / or at the end of the semester. Students' knowledge will be assessed by the percentage of points received on the grading rubric on the basis of: Exceeding Expectations (100% - 90%); Meeting Expectations (89% - 80%); or Failing to Meet Expectations (79% or less). We expect at least 80% of the students will meet or exceed expectations for this outcome / method.

### Outcome 1 - Method 2 - Result

During AY 2020 / 2021, 52 graduate students were evaluated by course instructors on their knowledge of the geographer's perspective on conducting and completing research on a wide range of scholarly and applied geographic topics using an embedded course assignment. The course instructors found that 96% of the graduate students met (4%) or exceeded (92%) expectations for this outcome / method. The target of 80% of the students meeting or exceeding expectations was achieved.

## **Outcome 2**

Students will demonstrate their knowledge of multivariate quantitative methods including basic descriptive and inferential statistical techniques as well as their knowledge of advanced topics such as regression analysis and non-parametric analytical methods. Students will demonstrate their knowledge of multivariate quantitative methods including basic descriptive and inferential statistical techniques as well as their knowledge of advanced topics such as regression analysis and non-parametric analytical methods, spatial statistics and factor analysis.

### **Outcome 2 - Method 1**

Students taking Multivariate Quantitative Methods (GEO 5301) will be evaluated by course instructors on their knowledge of multivariate quantitative methods including basic descriptive and inferential statistical techniques using questions embedded in the course midterm exam. Students' knowledge will be assessed on the basis of: Exceeding Expectations (100% - 90% embedded test questions answered correctly); Meeting Expectations (89% - 80% embedded test questions answered correctly); or Failing to Meet Expectations (79% or fewer embedded test questions answered correctly). We expect at least 80% of the students will meet or exceed expectations for this outcome / method.

### **Outcome 2 - Method 1 - Result**

During AY 2020 / 2021, 33 graduate students were evaluated by course instructors on their knowledge of multivariate quantitative methods including basic descriptive and inferential statistical techniques using embedded exam questions. The course instructors found that 90.9% of the graduate students met or exceeded expectations for this outcome / method. The target of 80% of the students meeting or exceeding expectations was achieved.

### **Outcome 2 - Method 2**

Students taking Multivariate Quantitative Methods (GEO 5301) will be evaluated by course instructors will on their knowledge of advanced statistical topics such as regression analysis and non-parametric analytical methods, spatial statistics and factor analysis using questions embedded in the course final exam. Students' knowledge will be assessed on the basis of: Exceeding Expectations (100% - 90% embedded test questions answered correctly); Meeting Expectations (89% - 80% embedded test questions answered correctly); or Failing to Meet Expectations (79% or fewer embedded test questions answered correctly). We expect at least 80% of the students will meet or exceed expectations for this outcome / method.

### **Outcome 2 - Method 2 - Result**

During AY 2020 / 2021, 33 graduate students were evaluated by course instructors on their knowledge of advanced statistical topics such as regression analysis and non-parametric analytical methods, spatial statistics and factor analysis using embedded exam questions. The course instructors found that 87.9% of the graduate students met or exceeded expectations for this outcome / method. The target of 80% of the students meeting or exceeding expectations was achieved.

## **Outcome 3**

Students will demonstrate their ability to use their knowledge of the components of research design - including problem definition, theory, literature review, methodology and analysis - to prepare a draft research proposal as well as their ability to produce and present a 'defense-style' final research proposal.

### **Outcome 3 - Method 1**

Students taking Applied Research Design and Techniques (GEO 5300) will be evaluated by course instructors on their ability to use their knowledge of the components of research design - including problem definition, theory, literature review, methodology and analysis - to prepare a draft research proposal graded with a rubric during the midterm of the semester. Students' knowledge will be assessed by the percentage of points received on the grading rubric on the basis of: Exceeding Expectations (100% - 90%); Meeting Expectations (89% - 80%); or Failing to Meet Expectations (79% or less). We expect at least 80% of the students will meet or exceed expectations for this outcome / method.

### **Outcome 3 - Method 1 - Result**

During AY 2020 / 2021, 36 graduate students were evaluated by course instructors on their knowledge of the basic components of research grant proposals and their ability to critique research designs and manuscripts using embedded class assignments. The course instructor found that 89% of students met or exceeded expectations for this outcome / method. The target of 80% of the students meeting or exceeding expectations was achieved.

### **Outcome 3 - Method 2**

Student taking Applied Research Design and Techniques (GEO 5300) will be evaluated by course instructors on their ability to produce and present a 'defense-style' final research proposal graded with a rubric at the end of the semester. Students' knowledge will be assessed by the percentage of points received on the grading rubric on the basis of: Exceeding Expectations (100% - 90%); Meeting Expectations (89% - 80%); or Failing to Meet Expectations (79% or less). We expect at least 80% of the students will meet or exceed expectations for this outcome / method.

### **Outcome 3 - Method 2 - Result**

During AY 2020 / 2021, 36 graduate students were evaluated by course instructors on their ability to produce a draft research proposal for their thesis. The course instructors found that 88.9% of the graduate students met or exceeded expectations for this outcome / method. The target of

80% of the students meeting or exceeding expectations was achieved.

<b>Outcome 4</b>	
<b>Goal:</b>	1. Promote the success of all students.
<b>Initiative:</b>	1.3 Increase student retention and graduation rates.

The academic program will promote and realize gains in student success.

**Outcome 4 - Method 1**

Student retention success will be measured by observing one year retention rates of students enrolled in the academic program from their first to second year. Data will be obtained from the university's certified enrollment records at the end of the fall semester. Rates of retention success will be expected to be at or above the university average for this level of program.

**Outcome 4 - Method 1 - Result**

Student retention success measured by first-to-second year retention rate (100%) for students enrolled in Resource and Environmental Studies: MAGeo (fall 2019 cohort semester) met the expectation to be at or above the University average (80%) for this level of program.

**Outcome 4 - Method 2**

Student graduation success will be measured by observing the number of graduates from the academic program in during the fall, spring, and summer semesters and comparing the number of graduates to the number of students enrolled in the program. Data will be obtained from the university's certified enrollment records for the fall, spring, and summer semesters. The number of graduates is expected to be at or above the university rate of graduation for this level of program.

**Outcome 4 - Method 2 - Result**

The FY 2019 graduation rate for Resource and Environmental Studies: MAGeo students of 23.5% (4 graduates / 17 students enrolled) did not meet expectations of exceeding the University graduation rate average of 35.3% (1,278 graduates / 3,620 students enrolled).

**Outcome 5**

<b>Goal:</b>	1. Promote the success of all students.
<b>Initiative:</b>	1.2 Manage student enrollment, both at the graduate and undergraduate level.

The academic program will promote and realize efficiency in the delivery and completion of the program.

**Outcome 5 - Method 1**

Delivery efficiency will be measured by reviewing the total number students enrolled in the academic program during the fall semester. Data will be obtained from the university's certified enrollment records at the end of the fall semester. Delivery efficiency will be expected to increase from year to year.

**Outcome 5 - Method 1 - Result**

Delivery efficiency measured by the number of students (18) majoring in Resource and Environmental Studies: MAGeo in the fall of 2020 compared to the number of majors (17) in the fall 2019 met the expectation of an increase in the number of students from year to year.

**Outcome 5 - Method 2**

Completion efficiency will be measured by observing the average time-to-completion for students in the academic program. Data will be obtained from the university's certified enrollment records for the fall semester. The time-to-completion of graduates is expected to be at or below the university average for this level of program.

**Outcome 5 - Method 2 - Result**

Completion efficiency measured by the average time to completion (native students) majoring in Resource and Environmental Studies: MAGeo for FY 2020 (2.8 years) did not meet the expectation to be at or below the University average (2.0 years) for this level of program.

<b>Approval History</b>	
<b>Approval History Event</b>	<b>Approver</b>
Outcomes Approved Level 1	Yongmei Lu (yl10)
Outcomes Approved Level 2	Mary Brennan (mb18)
Outcomes Audit Report Submitted	Susan Day (sd01)
Results Approved Level 1	Yongmei Lu (yl10)
Results Audit Report Submitted	Susan Day (sd01)

## General Information

<b>Academic Year:</b>	2020-2021
<b>College:</b>	Liberal Arts
<b>Department:</b>	Geography
<b>Program:</b>	Geography Urban and Regional Planning (BS)
<b>Program Code:</b>	4.03
<b>Outcome Type:</b>	Student Learning (UG)
<b>Degree:</b>	Undergraduate
<b>Coordinator/Contact:</b>	Brian J Cooper
<b>Status:</b>	Result Approvals In Progress

## Mission Statement

The Urban and Regional Planning program prepares students for a wide variety of government and private sector employment opportunities relating to land-use, transportation, economic development, natural resource and waste-management planning occupations. The Urban and Regional Planning program provides students with the knowledge and skills required to evaluate and facilitate programs that benefit our neighborhoods, communities, cities, and regions. In addition to general and specialized lecture-format courses, the program offers a variety of project-based lab and field-trip experiences, career development through advising, job-shadowing and internships as well as team-building and leadership opportunities available by joining one or more geography department student organizations. The Urban and Regional Planning program also prepares students for graduate studies in planning and planning-related fields. Finally, the Urban and Regional Planning program provides students with the foundation for a liberal education, preparing graduates to think independently, to choose freely and to base personal and professional decisions on a broad understanding of the Earth's physical and cultural landscapes in order to live full, rewarding lives.

## Evidence of Improvement

During AY 2019 / 2020, we continued to observe that some students were challenged with linking knowledge of the physical geography of Southwest Asia and Sub-Saharan Africa to their location on a map (Outcome 1 - Method 2) and some students were challenged with knowledge of the cultural geography of Southeast Asia and Sub-Saharan Africa (Outcome 2 - Method 1). We decided on an action plan for AY 2020 / 2021 that the course instructors provide additional lecture time and emphasis on physical geography of Southwest Asia and Sub-Saharan Africa to their location on a map and the cultural geography of Southeast Asia and Sub-Saharan Africa, as well as additional lecture time and emphasis to help students locate examples of major cultural features of the Earth on a map, particularly with Central America and Sub-Saharan Africa (Outcome 2 – Method 2). We implemented our action plan and were pleased to find a 0.3% increase in average total scores used to measure improvement in student learning for (Outcome 1 - Method 2), a 0.4% increase in average total scores used to measure improvement in student learning for (Outcome 2 - Method 1), and a 1.1% increase in average total scores used to measure improvement in student learning for (Outcome 2 – Method 2) during AY 2020 / 2021 compared to last year. Also, during AY 2019 / 2020 we discovered students were challenged by questions about inferential statistics (Outcome 3 – Method 1). We decided on an action plan for AY 2020 / 2021 that had the course instructors provide additional lecture time on inferential statistics and were pleased to find a 2% increase in average total scores used to measure improvement in student learning for AY 2020 / 2021 compared to last year. Additionally, during AY 2019 / 2020 we discovered that students continued to struggle on the topic of map project/coordinate systems (Outcome 4 – Method 1). We decided on an action plan for AY 2019 / 2020 that had the course instructors provide additional lecture time explaining map project/coordinate systems and were pleased to find a 3.96% increase in average total scores used to measure student learning for AY 2020 / 2021 compared to last year. We've included data from spring course (GEO 4338) that was taught fully online, as a result of Covid19. We recognize that there are many changes when we adapted to online teaching of this course that relies heavily on direct observation and field experiences. We are aware that there may be limitations to these data when compared with data from previous years.

## Action Plan

Because the AY 2020 / 2021 action plan was successful for (Outcome 1 - Method 2) and (Outcome 2 - Method 1), we will continue to have course instructors provide additional lecture time and map work on the physical geography of Southwest Asia and Sub-Saharan Africa and on knowledge of the cultural geography of Southeast Asia and Sub-Saharan Africa to improve student learning for AY 2021 / 2022. We will also have the course instructors provide additional lecture time and emphasis to help students locate examples of major cultural features of the Earth on a map, particularly with Central America and Sub-Saharan Africa (Outcome 2 – Method 2) for AY 2021 / 2022. Also, because the AY 2020 / 2021 action plan was successful for (Outcome 3 - Method 1) we will continue to have course instructors provide additional lecture time on inferential statistics for AY 2021 / 2022. Additionally, because the AY 2020 / 2021 action plan was successful for (Outcome 4 – Method 1) we will continue to have course instructors provide additional lecture time explaining map project/coordinate systems for AY 2021 / 2022. Finally, during AY 2020 / 2021 the course instructor found that when students were evaluated on their knowledge of urban and regional planning (Outcome 5 - Method 1) some had difficulty with questions requiring critical thinking skills. For AY 2021 / 2022 we will have instructor spend more class time discussing how ideas and concepts are translated in urban planning and by providing additional examples and models that demonstrate how planners use their critical thinking skills.

## Outcome 1

Students will demonstrate knowledge of the major physical features of the Earth such as mountains, deserts, rivers and oceans and their ability to locate examples of the Earth's major features on a map.

## Outcome 1 - Method 1

Students taking World Geography (GEO 1310) will be evaluated during and/or at the end of the semester by course instructors on the students' knowledge of the major physical features of the Earth using embedded test questions administered during World Geography (GEO 1310) class

examinations. Students' knowledge will be assessed on the basis of: Exceeding Expectations (10 embedded test questions answered correctly); Meeting Expectations (7 - 9 embedded test questions answered correctly); or Failing to Meet Expectations (6 or fewer embedded test questions answered correctly). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 1 - Method 1 - Result**

During AY 2020 / 2021, 709 undergraduate students were evaluated on their knowledge of the major physical features of the Earth by their course instructors using embedded test questions from the course: World Geography (GEO1310). The course instructors found that 87.7% of the students met (33.5%) or exceeded (55.2%) expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 1 - Method 2**

Students taking World Geography (GEO 1310) will be evaluated during and/or at the end of the semester by course instructors on the students' ability to locate examples of major physical features of the Earth on a map using embedded test questions administered during World Geography (GEO 1310) class examinations. Students' ability will be assessed on the basis of: Exceeding Expectations (10 embedded test questions answered correctly); Meeting Expectations (7 - 9 embedded test questions answered correctly); or Failing to Meet Expectations (6 or fewer embedded test questions answered correctly). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 1 - Method 2 - Result**

During AY 2020 / 2021, 709 undergraduate students were evaluated on their ability to locate examples of major physical features of the Earth on a map by their course instructors using embedded test questions from the course: World Geography (GEO1310). The course instructors found that 84.5% of the students met (50.6%) or exceeded (33.9%) expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 2**

Students will demonstrate knowledge of the major cultural features of the Earth such as political boundaries, major agricultural regions and language groups and their ability to locate examples of Earth's major cultural features on a map.

#### **Outcome 2 - Method 1**

Students taking World Geography (GEO 1310) will be evaluated during and/or at the end of the semester by course instructors on the students' knowledge of the major cultural features of the Earth using embedded test questions administered during World Geography (GEO 1310) class examinations. Students' knowledge will be assessed on the basis of: Exceeding Expectations (10 embedded test questions answered correctly); Meeting Expectations (7 - 9 embedded test questions answered correctly); or Failing to Meet Expectations (6 or fewer embedded test questions answered correctly). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 2 - Method 1 - Result**

During AY 2020 / 2021, 709 undergraduate students were evaluated on their knowledge of the major cultural features of the Earth by their course instructors using embedded test questions from the course: World Geography (GEO 1310). The course instructors found that 88.8% of the undergraduate students met (50.2%) or exceeded (38.6%) expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 2 - Method 2**

Students taking World Geography (GEO 1310) will be evaluated during and/or at the end of the semester by course instructors on the students' ability to locate examples of major cultural features of the Earth on a map using embedded test questions administered during World Geography (GEO 1310) class examinations. Students' ability will be assessed on the basis of: Exceeding Expectations (10 embedded test questions answered correctly); Meeting Expectations (7 - 9 embedded test questions answered correctly); or Failing to Meet Expectations (6 or fewer embedded test questions answered correctly). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 2 - Method 2 - Result**

During AY 2020 / 2021, 709 undergraduate students were evaluated on their ability to locate examples of major cultural features of the Earth on a map by their course instructors using embedded test questions from the course: World Geography (GEO 1310). The course instructors found that 86.1% of the undergraduate students met (45%) or exceeded (41.1%) expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 3**

Students will demonstrate knowledge of quantitative methods used by geographers and their ability to use statistical software to solve geographic problems.

#### **Outcome 3 - Method 1**

Students taking Research Methods in Geography (GEO 3301) will be evaluated during and/or at the end of the semester by course instructors on

the students' knowledge of research methods using embedded test questions administered during Research Methods in Geography (GEO 3301) class examinations. Students' knowledge will be assessed on the basis of: Exceeding Expectations (100% - 90% embedded test questions answered correctly); Meeting Expectations (89% - 70% embedded test questions answered correctly); or Failing to Meet Expectations (69% or fewer embedded test questions answered correctly). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 3 - Method 1 - Result**

During AY 2020 / 2021, 50 undergraduate students were evaluated on their knowledge of research methods by their course instructor using embedded test questions from the course: Research Methods for Geography (GEO 3301). The course instructor found that 80% of the students met or exceeded expectations on embedded knowledge questions about bi-variate relationships, and inferential statistics for this outcome / method. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 3 - Method 2**

Students taking Research Methods in Geography (GEO 3301) will be evaluated during and/or at the end of the semester by course instructors on the students' ability to use statistical software to solve geographic problems using a project graded with rubric. Students' ability will be assessed by the percentage of points received on the grading rubric on the basis of: Exceeding Expectations (100% - 90%); Meeting Expectations (89% - 70%); or Failing to Meet Expectations (69% or less). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 3 - Method 2 - Result**

During AY 2020 / 2021, 50 undergraduate students were evaluated on their ability to use statistical software to solve geographic problems using a project graded with rubric from the course: Research Methods for Geography (GEO 3301). The course instructor found that 84.34% of the students met or exceeded expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 4**

Students will demonstrate knowledge of the foundations and theories of geographic information systems (GIS) and their ability to use the tools and methods of GIS.

#### **Outcome 4 - Method 1**

Students taking Fundamentals of Geographic Information Systems (GEO 2426) will be evaluated during and/or at the end of the semester by course instructors on the students' knowledge of geographic information systems using embedded test questions administered during Fundamentals of Geographic Information Systems (GEO 2426) class examinations. Students' knowledge will be assessed on the basis of: Exceeding Expectations (100% - 90% embedded test questions answered correctly); Meeting Expectations (89% - 70% embedded test questions answered correctly); or Failing to Meet Expectations (69% or fewer embedded test questions answered correctly). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 4 - Method 1 - Result**

During AY 2020 / 2021, 57 undergraduate students were evaluated on their knowledge of geographic information systems by their course instructor using embedded test questions from the course: Fundamentals of Geographic Information Systems (GEO 2426). The course instructor found that 75.95% of the students met or exceeded expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 4 - Method 2**

Students taking Fundamentals of Geographic Information Systems (GEO 2426) will be evaluated during and/or at the end of the semester by course instructors on the students' ability to use the tools and methods of GIS using a project graded with a rubric. Students' ability will be assessed by the percentage of points received on the grading rubric on the basis of: Exceeding Expectations (100% - 90%); Meeting Expectations (89% - 70%); or Failing to Meet Expectations (69% or less). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 4 - Method 2 - Result**

During AY 2020 / 2021, 57 undergraduate students were evaluated on their ability to use the tools and methods of GIS by their course instructor using a rubric-graded GIS Project from the course: Fundamentals of Geographic Information Systems (GEO 2426). The course instructor found that 69.56% of the students met (39.13%) or exceeded (30.43%) expectations. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 5**

Students will demonstrate their knowledge of urban and regional planning and their ability to demonstrate how effective urban planning influences the utility of the land and infrastructure.

#### **Outcome 5 - Method 1**

Students taking Planning Practicum (GEO 4338) Capstone Course will be evaluated during and/or at the end the semester by course instructors on the students' knowledge of urban and regional planning using embedded test administered during Planning Practicum (GEO 4338) class examinations. Specific embedded questions will target areas that need improvement as identified by the previous year's assessment. Students' knowledge will be assessed on the basis of: Exceeding Expectations (10 embedded test questions answered correctly); Meeting Expectations (7 - 9 embedded test questions answered correctly); or Failing to Meet Expectations (6 or fewer embedded test questions answered correctly). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 5 - Method 1 - Result**

During AY 2020 / 2021, 19 undergraduate students were evaluated on their knowledge of urban and regional planning by their course instructors using embedded test questions from the course: Planning Practicum (GEO 4338). The course instructor found that 79 % of the students met (37%) or exceeded (42%) expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 5 - Method 2**

Students taking Planning Practicum (GEO 4338) Capstone Course will be evaluated during and/or at the end of the semester by course instructors on the students' ability to create a land-use plan in order to demonstrate how effective urban planning influences the utility of the land and infrastructure using a project graded with a rubric. Students' ability will be assessed by the number of points received on the grading rubric on the basis of: Exceeding Expectations (10 points); Meeting Expectations (7 – 9 points); or Failing to Meet Expectations (6 or fewer points). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 5 - Method 2 - Result**

During AY 2020 / 2021, 19 undergraduate students were evaluated on their ability to create a land-use plan in order to demonstrate how effective urban planning influences the utility of the land and infrastructure using a project graded with a rubric from the course: Planning Practicum (GEO 4338). The course instructor found that 79 % of the students met (26%) or exceeded (53%) expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 6**

- Goal:** 1. Promote the success of all students.  
**Initiative:** 1.3 Increase student retention and graduation rates.

The academic program will promote and realize gains in student success.

#### **Outcome 6 - Method 1**

Student retention success will be measured by observing one year retention rates of students enrolled in the academic program from their freshman to sophomore year. Data will be obtained from the university's certified enrollment records at the end of the fall semester. Rates of retention success will be expected to be at or above the university average for this level of program.

#### **Outcome 6 - Method 1 - Result**

Student retention success measured by freshman-to-sophomore one-year retention rate (66.67%) for students enrolled in Geography (fall 2019 cohort semester) did not meet the expectation to be at or above the University average (76.7%) for this level of program.

#### **Outcome 6 - Method 2**

Student graduation success will be measured by observing the number of graduates from the academic program in during the fall, spring, and summer semesters and comparing the number of graduates to the number of students enrolled in the program. Data will be obtained from the university's certified enrollment records for the fall, spring, and summer semesters. The number of graduates is expected to be at or above the university rate of graduation for this level of program.

#### **Outcome 6 - Method 2 - Result**

The FY 2020 graduation rate for Geography: Urban and Regional Planning students of 41.3% (26 graduates / 63 students enrolled) met expectations of exceeding the University graduation rate average of 22.8% (7554 graduates / 33,193 students enrolled).

#### **Outcome 7**

- Goal:** 1. Promote the success of all students.  
**Initiative:** 1.2 Manage student enrollment, both at the graduate and undergraduate level.

The academic program will promote and realize efficiency in the delivery and completion of the program.

#### **Outcome 7 - Method 1**

Delivery efficiency will be measured by reviewing the total number students enrolled in the academic program during the fall semester. Data will be obtained from the university's certified enrollment records at the end of the fall semester. Delivery efficiency will be expected to increase from year to year.

**Outcome 7 - Method 1 - Result**

Delivery efficiency measured by the number of students (47 in fall 2020 and 53 in Spring 2021) majoring in Geography: Urban and Regional Planning in the fall of 2020 compared to the number of majors (73) in the fall 2019 did not meet the expectation of an increase in the number of students from year to year.

**Outcome 7 - Method 2**

Completion efficiency will be measured by observing the average time-to-completion for students in the academic program. Data will be obtained from the university's certified enrollment records for the fall semester. The time-to-completion of graduates is expected to be at or below the university average for this level of program.

**Outcome 7 - Method 2 - Result**

Completion efficiency measured by the average time to completion (native students) majoring in Geography: Urban and Regional Planning Studies for FY 2020 (4.3 years) met the expectation to be at or below the University average (3.9 years) for this level of program.

**Approval History**

**Approval History Event**

**Approver**

Outcomes Approved Level 1

Yongmei Lu (yl10)

Outcomes Approved Level 2

Mary Brennan (mb18)

Outcomes Audit Report Submitted

Susan Day (sd01)

Results Approved Level 1

Yongmei Lu (yl10)

Results Audit Report Submitted

Susan Day (sd01)

## General Information

<b>Academic Year:</b>	2020-2021
<b>College:</b>	Liberal Arts
<b>Department:</b>	Geography
<b>Program:</b>	Geography Water Resources (BS/Cert.)
<b>Program Code:</b>	3.02
<b>Outcome Type:</b>	Student Learning (UG)
<b>Degree:</b>	Undergraduate
<b>Coordinator/Contact:</b>	Brian J Cooper
<b>Status:</b>	Result Approvals In Progress

## Mission Statement

The Water Studies program provides students with a focused study of the physical, chemical, social, political, and economic factors of water resources from the geographic perspective in preparation for employment in both the public and private sectors. As water resources become ever more critical to the nation - and in particular Texas - this program addresses the increasing need for professionals in this crucial field. In addition to general and specialized lecture-format courses, the program offers a variety of project-based lab and field-trip experiences, career development through advising, job-shadowing and internships as well as team-building and leadership opportunities available by joining one or more geography department student organizations. The Water Studies program also prepares students for graduate studies. Finally, the Water Studies program provides students with the foundation for a liberal education, preparing graduates to think independently, to choose freely and to base personal and professional decisions on a broad understanding of the Earth's physical and cultural landscapes in order to live full, rewarding lives.

## Evidence of Improvement

During AY 2019 / 2020, we continued to observe that some students were challenged with linking knowledge of the physical geography of Southwest Asia and Sub-Saharan Africa to their location on a map (Outcome 1 - Method 2) and some students were challenged with knowledge of the cultural geography of Southeast Asia and Sub-Saharan Africa (Outcome 2 - Method 1). We decided on an action plan for AY 2020 / 2021 that the course instructors provide additional lecture time and emphasis on physical geography of Southwest Asia and Sub-Saharan Africa to their location on a map and the cultural geography of Southeast Asia and Sub-Saharan Africa, as well as additional lecture time and emphasis to help students locate examples of major cultural features of the Earth on a map, particularly with Central America and Sub-Saharan Africa (Outcome 2 – Method 2). We implemented our action plan and were pleased to find a 0.3% increase in average total scores used to measure improvement in student learning for (Outcome 1 - Method 2), a 0.4% increase in average total scores used to measure improvement in student learning for (Outcome 2 - Method 1), and a 1.1% increase in average total scores used to measure improvement in student learning for (Outcome 2 – Method 2) during AY 2020 / 2021 compared to last year. Also, during AY 2019 / 2020 we discovered students were challenged by questions about inferential statistics (Outcome 3 – Method 1). We decided on an action plan for AY 2020/ 2021 that had the course instructors provide additional lecture time on inferential statistics and were pleased to find a 2% increase in average total scores used to measure improvement in student learning for AY 2019 / 2020 compared to last year. Additionally, during AY 2019 / 2020 we discovered that students continued to struggle on the topic of map project/coordinate systems (Outcome 4 – Method 1). We decided on an action plan for AY 2020 / 2021 that had the course instructors provide additional lecture time explaining map project/coordinate systems and were pleased to find a 2.96% increase in average total scores used to measure student learning for AY 2020 / 2021 compared to last year. Finally, during AY 2019 / 2020 we discovered that some students were challenged by questions about on water law and related concepts (Outcome 5 – Method 1). We decided on an action plan for AY 2020 / 2021 that had course instructors will offer extra credit quizzes a week before the exams to improve student understanding of water law and related concepts and were pleased to find a 13.9% increase in average total scores used to measure student learning for AY 2020 / 2021 this year compared to last year.

## Action Plan

Because the AY 2020 / 2021 action plan was successful for (Outcome 1 - Method 2) and (Outcome 2 - Method 1), we will continue to have course instructors provide additional lecture time and map work on the physical geography of Southwest Asia and Sub-Saharan Africa and on knowledge of the cultural geography of Southeast Asia and Sub-Saharan Africa to improve student learning for AY 2021 / 2022. We will also have the course instructors provide additional lecture time and emphasis to help students locate examples of major cultural features of the Earth on a map, particularly with Central America and Sub-Saharan Africa (Outcome 2 – Method 2) for AY 2021 / 2022. Also, because the AY 2020 / 2021 action plan was successful for (Outcome 3 - Method 1) we will continue to have course instructors provide additional lecture time on inferential statistics for AY 2021 / 2022. Additionally, because the AY 2020 / 2021 action plan was successful for (Outcome 4 – Method 1) we will continue to have course instructors provide additional lecture time explaining map project/coordinate systems for AY 2021 / 2022. Finally, because the AY 2019 / 2020 action plan was successful for (Outcome 5 – Method 1) we will continue to have course instructors offer extra credit quizzes a week before the exams to improve student understanding of water law and related concepts for AY 2021 / 2022.

## Outcome 1

Students will demonstrate knowledge of the major physical features of the Earth such as mountains, deserts, rivers and oceans and their ability to locate examples of the Earth's major features on a map.

## Outcome 1 - Method 1

Students taking World Geography (GEO 1310) will be evaluated during and/or at the end of the semester by course instructors on the students' knowledge of the major physical features of the Earth using embedded test questions administered during World Geography (GEO 1310) class

examinations. Students' knowledge will be assessed on the basis of: Exceeding Expectations (10 embedded test questions answered correctly); Meeting Expectations (7 - 9 embedded test questions answered correctly); or Failing to Meet Expectations (6 or fewer embedded test questions answered correctly). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 1 - Method 1 - Result**

During AY 2020 / 2021, 709 undergraduate students were evaluated on their knowledge of the major physical features of the Earth by their course instructors using embedded test questions from the course: World Geography (GEO1310). The course instructors found that 87.7% of the students met (33.5%) or exceeded (55.2%) expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 1 - Method 2**

Students taking World Geography (GEO 1310) will be evaluated during and/or at the end of the semester by course instructors on the students' ability to locate examples of major physical features of the Earth on a map using embedded test questions administered during World Geography (GEO 1310) class examinations. Students' ability will be assessed on the basis of: Exceeding Expectations (10 embedded test questions answered correctly); Meeting Expectations (7 - 9 embedded test questions answered correctly); or Failing to Meet Expectations (6 or fewer embedded test questions answered correctly). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 1 - Method 2 - Result**

During AY 2020 / 2021, 709 undergraduate students were evaluated on their ability to locate examples of major physical features of the Earth on a map by their course instructors using embedded test questions from the course: World Geography (GEO1310). The course instructors found that 84.5% of the students met (50.6%) or exceeded (33.9%) expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 2**

Students will demonstrate knowledge of the major cultural features of the Earth such as political boundaries, major agricultural regions and language groups and their ability to locate examples of Earth's major cultural features on a map.

#### **Outcome 2 - Method 1**

Students taking World Geography (GEO 1310) will be evaluated during and/or at the end of the semester by course instructors on the students' knowledge of the major cultural features of the Earth using embedded test questions administered during World Geography (GEO 1310) class examinations. Students' knowledge will be assessed on the basis of: Exceeding Expectations (10 embedded test questions answered correctly); Meeting Expectations (7 - 9 embedded test questions answered correctly); or Failing to Meet Expectations (6 or fewer embedded test questions answered correctly). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 2 - Method 1 - Result**

During AY 2020 / 2021, 709 undergraduate students were evaluated on their knowledge of the major cultural features of the Earth by their course instructors using embedded test questions from the course: World Geography (GEO 1310). The course instructors found that 88.8% of the undergraduate students met (50.2%) or exceeded (38.6%) expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 2 - Method 2**

Students taking World Geography (GEO 1310) will be evaluated during and/or at the end of the semester by course instructors on the students' ability to locate examples of major cultural features of the Earth on a map using embedded test questions administered during World Geography (GEO 1310) class examinations. Students' ability will be assessed on the basis of: Exceeding Expectations (10 embedded test questions answered correctly); Meeting Expectations (7 - 9 embedded test questions answered correctly); or Failing to Meet Expectations (6 or fewer embedded test questions answered correctly). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 2 - Method 2 - Result**

During AY 2020 / 2021, 709 undergraduate students were evaluated on their ability to locate examples of major cultural features of the Earth on a map by their course instructors using embedded test questions from the course: World Geography (GEO 1310). The course instructors found that 86.1% of the undergraduate students met (45%) or exceeded (41.1%) expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 3**

Students will demonstrate knowledge of quantitative methods used by geographers and their ability to use statistical software to solve geographic problems.

#### **Outcome 3 - Method 1**

Students taking Research Methods in Geography (GEO 3301) will be evaluated during and/or at the end of the semester by course instructors on the students' knowledge of research methods using embedded test questions administered during Research Methods in Geography (GEO 3301)

class examinations. Students' knowledge will be assessed on the basis of: Exceeding Expectations (100% - 90% embedded test questions answered correctly); Meeting Expectations (89% - 70% embedded test questions answered correctly); or Failing to Meet Expectations (69% or fewer embedded test questions answered correctly). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 3 - Method 1 - Result**

During AY 2020 / 2021, 50 undergraduate students were evaluated on their knowledge of research methods by their course instructor using embedded test questions from the course: Research Methods for Geography (GEO 3301). The course instructor found that 80% of the students met or exceeded expectations on embedded knowledge questions about descriptive statistics, bi-variate relationships, and inferential statistics for this outcome / method. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 3 - Method 2**

Students taking Research Methods in Geography (GEO 3301) will be evaluated during and/or at the end of the semester by course instructors on the students' ability to use statistical software to solve geographic problems using a project graded with rubric. Students' ability will be assessed by the percentage of points received on the grading rubric on the basis of: Exceeding Expectations (100% - 90%); Meeting Expectations (89% - 70%); or Failing to Meet Expectations (69% or less). We expect at least 70% of the students will meet or exceed expectations for this outcome / method

#### **Outcome 3 - Method 2 - Result**

During AY 2019 / 2020, 79 undergraduate students were evaluated on their ability to use statistical software to solve geographic problems using a project graded with rubric from the course: Research Methods for Geography (GEO 3301). The course instructor found that 84.34% of the students met or exceeded expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 4**

Students will demonstrate knowledge of the foundations and theories of geographic information systems (GIS) and their ability to use the tools and methods of GIS.

#### **Outcome 4 - Method 1**

Students taking Fundamentals of Geographic Information Systems (GEO 2426) will be evaluated during and/or at the end of the semester by course instructors on the students' knowledge of geographic information systems using embedded test questions administered during Fundamentals of Geographic Information Systems (GEO 2426) class examinations. Students' knowledge will be assessed on the basis of: Exceeding Expectations (100% - 90% embedded test questions answered correctly); Meeting Expectations (89% - 70% embedded test questions answered correctly); or Failing to Meet Expectations (69% or fewer embedded test questions answered correctly). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 4 - Method 1 - Result**

During AY 2020 / 2021, 57 undergraduate students were evaluated on their knowledge of geographic information systems by their course instructor using embedded test questions from the course: Fundamentals of Geographic Information Systems (GEO 2426). The course instructor found that 75.96% of the students met or exceeded expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations for this outcome / method was barely achieved.

#### **Outcome 4 - Method 2**

Students taking Fundamentals of Geographic Information Systems (GEO 2426) will be evaluated during and/or at the end of the semester by course instructors on the students' ability to use the tools and methods of GIS using a project graded with a rubric. Students' ability will be assessed by the percentage of points received on the grading rubric on the basis of: Exceeding Expectations (100% - 90%); Meeting Expectations (89% - 70%); or Failing to Meet Expectations (69% or less). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 4 - Method 2 - Result**

During AY 2019 / 2020, 57 undergraduate students were evaluated on their ability to use the tools and methods of GIS by their course instructor using a rubric-graded GIS Project from the course: Fundamentals of Geographic Information Systems (GEO 2426). The course instructor found that 69.56% of the students met (39.13%) or exceeded (30.43%) expectations. The target of 70% of the students meeting or exceeding expectations for this outcome / method was achieved.

#### **Outcome 5**

Students will demonstrate their knowledge of the formation, use, conservation and management of water resources including legal, economic, political and societal factors as well as the evaluation of attempts to manage water resources and their ability to show how hydrology, water availability and quality, hazards, use, demand and allocation influence water resource management.

#### **Outcome 5 - Method 1**

Students taking Water Resources (GEO 3434) Capstone Course will be evaluated during and/or at the end of the semester by course instructors on the students' knowledge of water resources using embedded test questions administered during Water Resources (GEO 3434) class examinations. Specific embedded questions will target areas that need improvement as identified by the previous year's assessment. Students' knowledge will be assessed on the basis of: Exceeding Expectations (10 embedded test questions answered correctly); Meeting Expectations (7 - 9 embedded test questions answered correctly); or Failing to Meet Expectations (6 or fewer embedded test questions answered correctly). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 5 - Method 1 - Result**

During AY 2020 / 2021, 38 undergraduate students were evaluated by their course instructor using embedded exam questions from the course: Water Resources (GEO 3434). The course instructor found 86.9% of the students met (52.7%) or exceeded (34.2%) expectations by demonstrating their knowledge of the major concepts in water resources. The target of 70% of the students meeting or exceeding expectations was achieved.

#### **Outcome 5 - Method 2**

Students taking Water Resources (GEO 3434) Capstone Course will be evaluated during and/or at the end of the semester by course instructors on the students' ability to show how hydrology, water availability and quality, hazards, use, demand and allocation influence water resource management using a project graded with a rubric. Students' ability will be assessed by the number of points received on the grading rubric on the basis of: Exceeding Expectations (10 points); Meeting Expectations (7 – 9 points); or Failing to Meet Expectations (6 or fewer points). We expect at least 70% of the students will meet or exceed expectations for this outcome / method.

#### **Outcome 5 - Method 2 - Result**

During AY 2020 / 2021, 38 undergraduate students were evaluated using a rubric-graded project from the course: Water Resources (GEO 3434). The course instructor found that 81.6% of the students met (50%) or exceeded (31.6%) expectations. The target of 70% of the students meeting or exceeding expectations was achieved.

#### **Outcome 6**

**Goal:** 1. Promote the success of all students.  
**Initiative:** 1.3 Increase student retention and graduation rates.

The academic program will promote and realize gains in student success.

#### **Outcome 6 - Method 1**

Student retention success will be measured by observing one year retention rates of students enrolled in the academic program from their freshman to sophomore year. Data will be obtained from the university's certified enrollment records at the end of the fall semester. Rates of retention success will be expected to be at or above the university average for this level of program.

#### **Outcome 6 - Method 1 - Result**

Student retention success measured by freshman-to-sophomore one-year retention rate (50%) for students enrolled in Geography (fall 2019 cohort semester) did not meet the expectation to be at or above the University average (76.7%) for this level of program.

#### **Outcome 6 - Method 2**

Student graduation success will be measured by observing the number of graduates from the academic program in during the fall, spring, and summer semesters and comparing the number of graduates to the number of students enrolled in the program. Data will be obtained from the university's certified enrollment records for the fall, spring, and summer semesters. The number of graduates is expected to be at or above the university rate of graduation for this level of program.

#### **Outcome 6 - Method 2 - Result**

The FY 2020 graduation rate for Geography: Water Resources students of 27% (10 graduates / 37 students enrolled) met expectations of exceeding the University graduation rate average of 22.8% (7554 graduates / 33,193 students enrolled).

#### **Outcome 7**

**Goal:** 1. Promote the success of all students.  
**Initiative:** 1.2 Manage student enrollment, both at the graduate and undergraduate level.

The academic program will promote and realize efficiency in the delivery and completion of the program.

#### **Outcome 7 - Method 1**

Delivery efficiency will be measured by reviewing the total number students enrolled in the academic program during the fall semester. Data will be obtained from the university's certified enrollment records at the end of the fall semester. Delivery efficiency will be expected to increase from year to year.

**Outcome 7 - Method 1 - Result**

Delivery efficiency measured by the number of students (37) majoring in Geography: Water Resources in the fall of 2020 compared to the number of majors (38) in the fall 2019 did not meet the expectation of an increase in the number of students from year to year.

**Outcome 7 - Method 2**

Completion efficiency will be measured by observing the average time-to-completion for students in the academic program. Data will be obtained from the university's certified enrollment records for the fall semester. The time-to-completion of graduates is expected to be at or below the university average for this level of program.

**Outcome 7 - Method 2 - Result**

Completion efficiency measured by the average time to completion (native students) majoring in Geography: Water Resources for FY 2019 (3.5 years) met the expectation to be at or below the University average (3.9 years) for this level of program.

**Approval History**

**Approval History Event**

**Approver**

Outcomes Approved Level 1

Yongmei Lu (yl10)

Outcomes Approved Level 2

Mary Brennan (mb18)

Outcomes Audit Report Submitted

Susan Day (sd01)

Results Approved Level 1

Yongmei Lu (yl10)

Results Audit Report Submitted

Susan Day (sd01)

## General Information

<b>Academic Year:</b>	2020-2021
<b>College:</b>	Liberal Arts
<b>Department:</b>	Geography
<b>Program:</b>	GEOL 1410
<b>Program Code:</b>	3.00
<b>Outcome Type:</b>	General Education
<b>Degree:</b>	Other
<b>Coordinator/Contact:</b>	Dr. Yongmei Lu / Dr. Suzon Jammes
<b>Status:</b>	Results Approvals Complete

## Mission Statement

The mission of the general education core curriculum at Texas State University is to provide students with a broad academic foundation in the component areas of communication; mathematics; life and physical sciences; language, philosophy and culture; creative arts; American history; government/political science; and social and behavioral sciences.

### Life and Physical Sciences Mission:

The mission of the life and physical sciences component is to focus on describing, explaining, and predicting natural phenomena using the scientific method.

## Evidence of Improvement

During AY 2018 / 2019 we discovered that some students had difficulty applying a scientific method to the study of the natural phenomena of physical geology (Outcome 1). We decided on an action plan for AY 2019 / 2020 that had the course instructors provide additional lecture time and exercises and that the recently acquired augmented reality sand box and a seismometer would be used to help improve student learning. After noticing some progress in AY 2019 / 2020, we decided to continue with the same action plan in AY 2020 / 2021. We consequently continued to provide additional lecture time and exercises during lab time to help students to understand some difficult concepts. We were pleased to find a 12% increase in average total scores used to measure student learning for (Outcome 1) this year compared to last year and a 16% increase in average total scores used to measure student learning for (Outcome 2) this year compared to last year. It is important to note that due to COVID19, there are considerable changes to both the lab meetings of the class and the final exam. Some of the changes may be longer time period to be assessed.

## Action Plan

Because the AY 2020 / 2021 action plan was successful for Outcome 1 and 2 we will continue to have course instructors provide additional lecture time and additional exercises during lab time to help them understanding some difficult concepts for AY 2021 / 2022 (Outcome 2). We will also include new exercises using rock samples that will help the students to improve their ability to manipulate and analyze numerical physical geology data and observable physical geology facts using a lab project for AY 2020 / 2021 (Outcome 4).

## Outcome 1

Students will describe interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

### Outcome 1 - Method 1

Students taking Physical Geology (GEOL 1410) will be evaluated during and/or at the end of the semester by course instructors on their knowledge of the natural phenomena of Earth's physical geology using embedded test questions administered during Physical Geology (GEOL 1410) class examinations. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the embedded test questions. (90% - 100% = exceeded expectations, 70% - 89% = met expectations, 69% or below = failed to meet expectations). We expect at least 70% of the students will meet or exceed expectations for this outcome.

### Outcome 1 - Method 1 - Result

During AY 2019 / 2020, 185 undergraduate students were evaluated by their course instructors on their knowledge of the natural phenomena of Earth's physical geology using embedded exam questions. The course instructors found that 95% of the students met (77%) or exceeded (18%) expectations. The target of 70% of the students meeting or exceeding expectations was achieved.

## Outcome 2

**Competency:** Critical Thinking

Students will demonstrate creative thinking innovation, inquiry, and analysis, evaluation and synthesis of information.

### Outcome 2 - Method 1

Students taking Physical Geology (GEOL 1410) will be evaluated during and/or at the end of the semester by course instructors on their ability to apply the scientific method to the study of the natural phenomena of physical geology using embedded test questions administered during Physical Geology (GEOL 1410) class examinations. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the embedded test questions. (90% - 100% = exceeded expectations, 70% - 89% = met expectations, 69% or below = failed to meet expectations). We expect at least 70% of the students will meet or exceed expectations for

this outcome.

#### Outcome 2 - Method 1 - Result

During AY 2019 / 2020, 185 undergraduate students were evaluated by their course instructors on their ability to apply the scientific method to the study of the natural phenomena of physical geology using embedded exam questions. The course instructors found that 86% of the students met (56%) or exceeded (30%) expectations. The target of 70% of the students meeting or exceeding expectations was achieved.

#### Outcome 3

**Competency:** Communication

Students will effectively develop, interpret and express ideas through written, oral and visual communication.

#### Outcome 3 - Method 1

Students taking Physical Geology (GEOL 1410) will be evaluated during and/or at the end of the semester by course instructors on their ability to use writing, speech and visualizations to express ideas about the natural phenomena of physical geology using a lab project / presentation with grading rubric from the course: Physical Geology (GEOL 1410). Students' ability will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the lab project / presentation. (90% - 100% = exceeded expectations, 70% - 89% = met expectations, 69% or below = failed to meet expectations). We expect at least 70% of the students will meet or exceed expectations for this outcome.

#### Outcome 3 - Method 1 - Result

During AY 2019 / 2020, 185 undergraduate students were evaluated by their course instructors on their ability to use writing, speech and visualizations to express ideas about the natural phenomena of physical geology using a lab project / presentation. The course instructors found that 83% of the students met (50%) or exceeded (33%) expectations. The target of 70% of the students meeting or exceeding expectations was achieved.

#### Outcome 4

**Competency:** Empirical and Quantitative Skills

Students will manipulate and analyze numerical data or observable facts resulting in informed conclusions.

#### Outcome 4 - Method 1

Students taking Physical Geology (GEOL 1410) will be evaluated during and/or at the end of the semester by course instructors on their ability to manipulate and analyze numerical physical geology data and observable physical geology facts using a lab project with grading rubric from the course: Physical Geology (GEOL 1410). Students' ability will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the lab project. (90% - 100% = exceeded expectations, 70% - 89% = met expectations, 69% or below = failed to meet expectations). We expect at least 70% of the students will meet or exceed expectations for this outcome.

#### Outcome 4 - Method 1 - Result

During AY 2019 / 2020, 185 undergraduate students were evaluated by their course instructors on their ability to manipulate and analyze numerical physical geology data and observable physical geology facts using a lab project. The course instructors found that 68% of the students met (48%) or exceeded (20%) expectations. The target of 70% of the students meeting or exceeding expectations was not achieved.

#### Outcome 5

**Competency:** Teamwork

Students will recognize different points of view and work effectively with others to support a shared purpose or goal.

#### Outcome 5 - Method 1

Students taking Physical Geology (GEOL 1410) will be evaluated during and/or at the end of the semester by course instructors on their ability to work effectively with others to support a shared purpose and goal using a group lab project with grading rubric from the course: Physical Geology (GEOL 1410). Students' ability will be assessed on the basis of failure to meet, meet, or exceed expectations, which will be determined by the students' total score on a group lab project. (100% = exceeded expectations, 70% - 90% = met expectations, 60% = failed to meet expectations). We expect at least 70% of the students will meet or exceed expectations for this outcome.

#### Outcome 5 - Method 1 - Result

During AY 2019 / 2020, 185 undergraduate students were evaluated by their course instructors on their ability to work effectively with others to support a shared purpose and goal using a group lab project. The course instructors found that 92% of the students met (55%) or exceeded (37%) expectations. The target of 70% of the students meeting or exceeding expectations was achieved.

#### Approval History

Approval History Event

Approver

Outcomes Approved Level 1  
Outcomes Approved Level 2  
Outcomes Audit Report Submitted  
Results Approved Level 1  
Results Approved Level 2  
Results Audit Report Submitted

Yongmei Lu (yl10)  
Mary Cavitt (mc58)  
Quazi Fidia Farah (q\_f4)  
Yongmei Lu (yl10)  
Mary Cavitt (mc58)  
Diego Vacaflares Rivero (dv13)

## General Information

<b>Academic Year:</b>	2020-2021
<b>College:</b>	Liberal Arts
<b>Department:</b>	Geography
<b>Program:</b>	GEOL 1420
<b>Program Code:</b>	3.00
<b>Outcome Type:</b>	General Education
<b>Degree:</b>	Other
<b>Coordinator/Contact:</b>	Dr. Yongmei Lu / Dr. Dolores Van Der Kolk
<b>Status:</b>	Results Approvals Complete

## Mission Statement

The mission of the general education core curriculum at Texas State University is to provide students with a broad academic foundation in the component areas of communication; mathematics; life and physical sciences; language, philosophy and culture; creative arts; American history; government/political science; and social and behavioral sciences.

### Life and Physical Sciences Mission:

The mission of the life and physical sciences component is to focus on describing, explaining, and predicting natural phenomena using the scientific method.

## Evidence of Improvement

During AY 2019 / 2020 we discovered that undergraduate students had difficulty to apply the scientific method to the study of the natural phenomena of historical geology (Outcome 2 – Method 1). We decided on an action plan for AY 2020 / 2021 that had the course instructor provide additional examples to demonstrate the application of the scientific method to the study of the natural phenomena of historical geology. More discussions and Q/A were encouraged during specially designed field trips. We implemented our action plan and were pleased to find that the learning outcomes assessment indicated a 8% increase in average total scores used to measure student learning for this year compared to last year.

## Action Plan

Because the AY 2020 / 2021 action plan was successful for (Outcome 2 - Method 1), during AY 2021 / 2022, we will continue last year's action plan and have instructor provide additional examples to demonstrate the application of the scientific method to the study of the natural phenomena of historical geology to help improve student learning. With the pandemic situation getting better, we also plan to incorporate more field trips to help students apply critical thinking skills to their first-hand learning experience.

## Outcome 1

Students will describe interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

### Outcome 1 - Method 1

Students taking Historical Geology (GEOL 1420) will be evaluated during and/or at the end of the semester by course instructors on their knowledge of the natural phenomena of Earth's historical geology using embedded test questions administered during Historical Geology (GEOL 1420) class examinations. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the embedded test questions. (90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations). We expect at least 70% of the students will meet or exceed expectations for this outcome.

### Outcome 1 - Method 1 - Result

During AY 2019-2020, 54 undergraduate students were evaluated by their course instructors on their knowledge of the of Earth's historical geology and the scientific principles that govern the major theories and concepts of historical geology and the scientific method to describe the interactions between the Earth's various historical systems using 10 embedded exam questions from the course: Historical Geology (GEOL 1420). The course instructors found that 87% of the students met (50%) or exceeded (37%) expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations was achieved.

## Outcome 2

**Competency:** Critical Thinking

Students will demonstrate creative thinking innovation, inquiry, and analysis, evaluation and synthesis of information.

### Outcome 2 - Method 1

Students taking Historical Geology (GEOL 1420) will be evaluated during and/or at the end of the semester by course instructors on their ability to apply the scientific method to the study of the natural phenomena of historical geology using embedded test questions administered during Historical Geology (GEOL 1420) class examinations. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the embedded test questions. (90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations). We expect at least 70% of the students will meet or exceed expectations for

this outcome.

#### **Outcome 2 - Method 1 - Result**

During AY 2019-2020, 54 undergraduate students were evaluated by their course instructor on their ability to apply the scientific method to the study of the natural phenomena of historical geology using embedded exam questions from the course: Historical Geology (GEOL 1420). The course instructors found that 83% of the students met (32%) or exceeded (51%) expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations was achieved.

#### **Outcome 3**

**Competency:** Communication

Students will effectively develop, interpret and express ideas through written, oral and visual communication.

#### **Outcome 3 - Method 1**

Students taking Historical Geology (GEOL 1420) will be evaluated during and/or at the end of the semester by course instructors on their ability to use writing, speech and visualizations to express ideas about the natural phenomena of historical geology using a lab project / presentation with grading rubric from the course: Historical Geology (GEOL 1420). Students' ability will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the lab project / presentation. (90% - 100% = exceeded expectations, 70% - 89% = met expectations, 69% or below = failed to meet expectations). We expect at least 70% of the students will meet or exceed expectations for this outcome.

#### **Outcome 3 - Method 1 - Result**

During AY 2019-2020, 54 undergraduate students were evaluated on their ability to use writing, speech and visualizations to express ideas about the natural phenomena of historical geology their course instructors using a 100-point rubric-graded lab project from the course: Historical Geology (GEOL 1420). The course instructors found that 53% of the students met (30%) or exceeded (23%) expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations was not achieved.

#### **Outcome 4**

**Competency:** Empirical and Quantitative Skills

Students will manipulate and analyze numerical data or observable facts resulting in informed conclusions.

#### **Outcome 4 - Method 1**

Students taking Historical Geology (GEOL 1420) will be evaluated during and/or at the end of the semester by course instructors on their ability to manipulate and analyze numerical historical geology data and observable historical geology facts using a lab project with grading rubric from the course: Historical Geology (GEOL 1420). Students' ability will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the lab project. (90% - 100% = exceeded expectations, 70% - 89% = met expectations, 69% or below = failed to meet expectations). We expect at least 70% of the students will meet or exceed expectations for this outcome.

#### **Outcome 4 - Method 1 - Result**

During the AY 2019-2020, 54 undergraduate students were evaluated by their course instructors on their ability to manipulate and analyze numerical historical geology data and observable historical geology facts using a 100 - Point rubric-graded lab project from the course: Historical Geology (GEOL 1420). The course instructors found that 79% of the students met (11%) or exceeded (68%) expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations was achieved.

#### **Outcome 5**

**Competency:** Teamwork

Students will recognize different points of view and work effectively with others to support a shared purpose or goal.

#### **Outcome 5 - Method 1**

Students taking Historical Geology (GEOL 1420) will be evaluated during and/or at the end of the semester by course instructors on their ability to work effectively with others to support a shared purpose and goal using a group lab project with grading rubric from the course: Historical Geology (GEOL 1420). Students' ability will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the group lab project. (90% - 100% = exceeded expectations, 70% - 89% = met expectations, 69% or below = failed to meet expectations). We expect at least 70% of the students will meet or exceed expectations for this outcome.

#### **Outcome 5 - Method 1 - Result**

During the AY 2019-2020, 54 undergraduate students were evaluated by their course instructors on their ability to work effectively with others to support a shared purpose and goal using a 100-point rubric-graded group lab project from the course: Historical Geology (GEOL 1420). The course instructors found that 49 students, or 90% of the students met or exceeded expectations for this outcome / method. The target of 70% of the students meeting or exceeding expectations was achieved.

**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

**Approver**

Yongmei Lu (yl10)  
Mary Cavitt (mc58)  
Quazi Fidia Farah (q\_f4)  
Yongmei Lu (yl10)  
Mary Cavitt (mc58)  
Diego Vacaflares Rivero (dv13)

## General Information

<b>Academic Year:</b>	2020-2021
<b>College:</b>	Liberal Arts
<b>Department:</b>	Geography
<b>Program:</b>	Location Analysis (certificate)
<b>Program Code:</b>	45.07
<b>Outcome Type:</b>	Student Learning (UG)
<b>Degree:</b>	Certificate - Undergraduate
<b>Coordinator/Contact:</b>	Dr. Yongmei Lu
<b>Status:</b>	Result Approvals In Progress

## Mission Statement

The Texas State Department of Geography Location Analysis Certificate prepares students to work as location analysis professionals in the public and private sectors analyzing spatial data to identify and optimize locations for business and public activities.

## Evidence of Improvement

During AY 2019 / 2020 we discovered that some students lacked knowledge of the major concepts and theoretical framework of urban geography (Outcome 1 - Method 1). We decided on an action plan for AY 2020 / 2021 that has course instructor spend additional class time and provide assignments to help students improve their knowledge of the major concepts and theoretical framework of urban geography. We implemented our action plan and were pleased to find a 25% increase in average total scores used to measure student knowledge for (Outcome 1 - Method 1) this year compared to last year.

During AY 2019 / 2020 we also discovered that some students lacked knowledge of the basic historical, social, political, and economic processes that shape the urban environment (Outcome 1 - Method 2). We decided on an action plan for AY 2020 / 2021 that had the course instructor provide additional examples, explanations and readings to help students improve their knowledge. We implemented our action plan and were pleased to find a 25% increase in average total scores used to measure student knowledge for (Outcome 1 - Method 2) this year compared to last year.

## Action Plan

During AY 2020 / 2021 we discovered that some students lacked knowledge of the fundamentals of location analysis used to identify potential sites for industry, business, housing and community facilities (Outcome 2 - Method 1). We decided on an action plan for AY 2021 / 2022 that has course instructor spend additional class time and provide assignments to help students improve their knowledge of the fundamentals of location analysis used to identify potential sites for industry, business, housing and community facilities.

During AY 2020 / 2021 we also discovered that some students lacked knowledge of the spatial techniques that location analysis professionals use as part of an informed decision-making process to determine the best location for various types of land uses (Outcome 2 - Method 2). We decided on an action plan for AY 2021 / 2022 that has course instructor spend additional class time and provide assignments to help students improve their knowledge of the spatial techniques that location analysis professionals use as part of an informed decision-making process.

## Outcome 1

Students will demonstrate their knowledge of the major concepts and theoretical framework of urban geography as well as their knowledge of the basic historical, social, political and economic processes that shape the urban environment.

### Outcome 1 - Method 1

Students will be evaluated on their knowledge of the major concepts and theoretical framework of urban geography using an exit examination administered by the learning outcomes coordinator at the completion of all courses required for the certificate. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the exit examination. 90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations. We expect at least 70% of the students will meet or exceed expectations for this outcome.

### Outcome 1 - Method 1 - Result

During AY 2019 / 2020, 4 undergraduate students who completed requirements for the Location Analysis Certificate were evaluated on their knowledge of the major concepts and theoretical framework of urban geography using an exit examination created from questions provided by the course instructors and administered by the Geography Department's Learning Outcomes Coordinator via an on-line survey website. The Geography Department's Learning Outcomes Coordinator found that 100% of the students met or exceeded expectations for this learning outcome / method. The target of 70% of the students meeting or exceeding expectations was achieved.

### Outcome 1 - Method 2

Students will be evaluated on their knowledge of the basic historical, social, political and economic processes that shape the urban environment using an exit examination administered by the learning outcomes coordinator at the completion of all courses required for the certificate. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the exit examination. 90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations. We expect at least 70% of the students will meet or exceed expectations for this outcome.

### Outcome 1 - Method 2 - Result

During 2019 / 2020, 4 undergraduate students who completed requirements for the Location Analysis Certificate were evaluated on their knowledge of the basic historical, social, political and economic processes that shape the urban environment using an exit examination created from questions provided by the course instructors and administered by the Geography Department's Learning Outcomes Coordinator via an on-line survey website. The Geography Department's Learning Outcomes Coordinator found that 100% of the students met or exceeded expectations for this learning outcome / method. The target of 70% of the students meeting or exceeding expectations was achieved.

## **Outcome 2**

Students will demonstrate their knowledge of the fundamentals of location analysis used to identify potential sites for industry, business, housing and community facilities as well as their knowledge of the spatial techniques that location analysis professionals use as part of an informed decision-making process to determine the best location for various types of land uses.

### **Outcome 2 - Method 1**

Students will be evaluated on their knowledge the fundamentals of location analysis used to identify potential sites for industry, business, housing and community facilities using an exit examination administered by the learning outcomes coordinator at the completion of all courses required for the certificate. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the exit examination. 90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations. We expect at least 70% of the students will meet or exceed expectations for this outcome.

### **Outcome 2 - Method 1 - Result**

During AY 2019 / 2020, 4 undergraduate students who completed requirements for the Location Analysis Certificate were evaluated on their knowledge the fundamentals of location analysis used to identify potential sites for industry, business, housing and community facilities using an exit examination created from questions provided by the course instructors and administered by the Geography Department's Learning Outcomes Coordinator via an on-line survey website. The Geography Department's Learning Outcomes Coordinator found that 75% of the students met or exceeded expectations for this learning outcome / method. The target of 70% of the students meeting or exceeding expectations was achieved.

### **Outcome 2 - Method 2**

Students will be evaluated on their knowledge the spatial techniques that location analysis professionals use as part of an informed decision-making process to determine the best location for various types of land uses using an exit examination administered by the learning outcomes coordinator at the completion of all courses required for the certificate. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the exit examination. 90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations. We expect at least 70% of the students will meet or exceed expectations for this outcome.

### **Outcome 2 - Method 2 - Result**

During 2019 / 2020, 4 undergraduate students who completed requirements for the Location Analysis Certificate were evaluated on their knowledge the spatial techniques that location analysis professionals use as part of an informed decision-making process to determine the best location for various types of land uses using an exit examination created from questions provided by the course instructors and administered by the Geography Department's Learning Outcomes Coordinator via an on-line survey website. The Geography Department's Learning Outcomes Coordinator found that 75% of the students met or exceeded expectations for this learning outcome / method. The target of 70% of the students meeting or exceeding expectations was achieved.

## **Outcome 3**

Students will demonstrate their knowledge of the basics of Geographic Information Systems (GIS) including types of spatial data, data acquisition, data structure, data quality and data interpretation as well as their knowledge of GIS applications, GIS visualization and GIS modeling.

### **Outcome 3 - Method 1**

Students will be evaluated on their knowledge of the basics of GIS including types of spatial data, data acquisition, data structure, data quality and data interpretation using an exit examination administered by the learning outcomes coordinator at the completion of all courses required for the certificate. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the exit examination. 90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations. We expect at least 70% of the students will meet or exceed expectations for this outcome.

### **Outcome 3 - Method 1 - Result**

During AY 2019 / 2020, 4 undergraduate students who completed requirements for the Location Analysis Certificate were evaluated on their knowledge of the basics of GIS including types of spatial data, data acquisition, data structure, data quality and data interpretation using an exit examination created from questions provided by the course instructors and administered by the Geography Department's Learning Outcomes Coordinator via an on-line survey website. The Geography Department's Learning Outcomes Coordinator found that 100% of the students met or exceeded expectations for this learning outcome / method. The target of 70% of the students meeting or exceeding expectations was not achieved.

### Outcome 3 - Method 2

Students will be evaluated on their knowledge of the basics of GIS applications, GIS visualization and GIS modeling using an exit examination administered by the learning outcomes coordinator at the completion of all courses required for the certificate. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the exit examination. 90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations. We expect at least 70% of the students will meet or exceed expectations for this outcome.

### Outcome 3 - Method 2 - Result

During AY 2019 / 2020, 4 undergraduate students who completed requirements for the Location Analysis Certificate were evaluated on their knowledge of the basics of GIS applications, GIS visualization and GIS modeling using an exit examination created from questions provided by the course instructors and administered by the Geography Department's Learning Outcomes Coordinator via an on-line survey website. The Geography Department's Learning Outcomes Coordinator found that 100% of the students met or exceeded expectations for this learning outcome / method. The target of 70% of the students meeting or exceeding expectations was achieved.

### Approval History

Approval History Event	Approver
Outcomes Approved Level 1	Yongmei Lu (yl10)
Outcomes Approved Level 2	Mary Brennan (mb18)
Outcomes Audit Report Submitted	Susan Day (sd01)
Results Approved Level 1	Yongmei Lu (yl10)
Results Audit Report Submitted	Susan Day (sd01)

## General Information

<b>Academic Year:</b>	2020-2021
<b>College:</b>	Liberal Arts
<b>Department:</b>	Geography
<b>Program:</b>	Water Resources Policy (certificate)
<b>Program Code:</b>	3.02
<b>Outcome Type:</b>	Student Learning (UG)
<b>Degree:</b>	Certificate - Undergraduate
<b>Coordinator/Contact:</b>	Dr. Yongmei Lu
<b>Status:</b>	Result Approvals In Progress

## Mission Statement

The Texas State Department of Geography Water Resources Policy Certificate prepares students for professional water resources management and policy career positions.

## Evidence of Improvement

During AY 2019 / 2020 we discovered that some students lacked knowledge the institutional and legal frameworks within which water policy issues are debated and decided (Outcome 3 - Method 1). We decided on an action plan for AY 2020 / 2021 that had the course instructor provide additional examples, explanations and readings to help students improve their knowledge in this respect. We implemented our action plan and found a 25% increase in average total scores used to measure student knowledge for (Outcome 3 - Method 1) this year compared to last year. Only a small number of students (2) completed this certificate program this year. The data we reported must be interpreted with caution.

## Action Plan

During AY 2020 / 2021 we discovered that some students lacked knowledge of the major natural, legal, social and economic concepts of water resources (Outcome 1 - Method 1). We decided on an action plan for AY 2020 / 2021 that has course instructor spend additional class time and provide assignments to help students improve their knowledge of the major natural, legal, social and economic concepts of water resources within which water policy issues are debated and decided

## Outcome 1

Students will demonstrate their knowledge of the major natural, legal, social and economic concepts of water resources as well as their knowledge of the environmental aspects of water issues.

### Outcome 1 - Method 1

Students will be evaluated on their knowledge of the major natural, legal, social and economic concepts of water resources using an exit examination administered by the learning outcomes coordinator at the completion of all courses required for the certificate. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the exit examination. 90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations. We expect at least 70% of the students will meet or exceed expectations for this outcome.

### Outcome 1 - Method 1 - Result

During AY 2019 / 2020, 4 undergraduate students who completed requirements for the Water Policy Certificate were evaluated on their knowledge of the major natural, legal, social and economic concepts of water resources using an exit examination created from questions provided by the course instructors and administered by the Geography Department's Learning Outcomes Coordinator via an on-line survey website. The Geography Department's Learning Outcomes Coordinator found that 50% of the students met or exceeded expectations for this learning outcome / method. The target of 70% of the students meeting or exceeding expectations was not achieved.

### Outcome 1 - Method 2

Students will be evaluated on their knowledge of the environmental aspects of water issues using an exit examination administered by the learning outcomes coordinator at the completion of all courses required for the certificate. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the exit examination. 90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations. We expect at least 70% of the students will meet or exceed expectations for this outcome.

### Outcome 1 - Method 2 - Result

During AY 2019 / 2020, 4 undergraduate students who completed requirements for the Water Policy Certificate were evaluated on their knowledge of the environmental aspects of water issues of water resources using an exit examination created from questions provided by the course instructors and administered by the Geography Department's Learning Outcomes Coordinator via an on-line survey website. The Geography Department's Learning Outcomes Coordinator found that 100% of the students met or exceeded expectations for this learning outcome / method. The target of 70% of the students meeting or exceeding expectations was achieved.

## Outcome 2

Students will demonstrate their knowledge of the natural / physical, technical, institutional and economic issues that influence river basin management as well as their knowledge of specific examples of river basin management issues in Texas, U.S. and internationally.

#### **Outcome 2 - Method 1**

Students will be evaluated on their knowledge of the natural/physical, technical, institutional and economic issues that influence river basin management using an exit examination administered by the learning outcomes coordinator at the completion of all courses required for the certificate. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the exit examination. 90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations. We expect at least 70% of the students will meet or exceed expectations for this outcome.

#### **Outcome 2 - Method 1 - Result**

During AY 2019 / 2020, 4 undergraduate students who completed requirements for the Water Policy Certificate were evaluated on their knowledge of the natural/physical, technical, institutional and economic issues that influence river basin management as well as specific examples of river basin management issues in Texas, U.S. and internationally using an exit examination created from questions provided by the course instructors and administered by the Geography Department's Learning Outcomes Coordinator via an on-line survey website. The Geography Department's Learning Outcomes Coordinator found that 100% of the students met or exceeded expectations for this learning outcome / method. The target of 70% of the students meeting or exceeding expectations was achieved.

#### **Outcome 2 - Method 2**

Students will be evaluated on their knowledge of specific examples of river basin management issues in Texas, U.S. and internationally using an exit examination administered by the learning outcomes coordinator at the completion of all courses required for the certificate. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the exit examination. 90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations. We expect at least 70% of the students will meet or exceed expectations for this outcome.

#### **Outcome 2 - Method 2 - Result**

During AY 2019 / 2020, 4 undergraduate students who completed requirements for the Water Policy Certificate were evaluated on their knowledge of specific examples of river basin management issues in Texas, U.S. and internationally using an exit examination created from questions provided by the course instructors and administered by the Geography Department's Learning Outcomes Coordinator via an on-line survey website. The Geography Department's Learning Outcomes Coordinator found that 100% of the students met or exceeded expectations for this learning outcome / method. The target of 70% of the students meeting or exceeding expectations was achieved.

#### **Outcome 3**

Students will demonstrate their knowledge of the institutional and legal frameworks within which water policy issues are debated and decided as well as their knowledge of the roles the executive, legislative and judicial branches of government play in determining water policy.

#### **Outcome 3 - Method 1**

Students will be evaluated on their knowledge of the institutional and legal frameworks within which water policy issues are debated and decided using an exit examination administered by the learning outcomes coordinator at the completion of all courses required for the certificate. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the exit examination. 90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations. We expect at least 70% of the students will meet or exceed expectations for this outcome.

#### **Outcome 3 - Method 1 - Result**

During AY 2019 / 2020, 4 undergraduate students who completed requirements for the Water Policy Certificate were evaluated on their knowledge of the institutional and legal frameworks within which water policy issues are debated and decided using an exit examination created from questions provided by the course instructors and administered by the Geography Department's Learning Outcomes Coordinator via an on-line survey website. The Geography Department's Learning Outcomes Coordinator found that 100% of the students met or exceeded expectations for this learning outcome / method. The target of 70% of the students meeting or exceeding expectations was achieved.

#### **Outcome 3 - Method 2**

Students will be evaluated on their knowledge of the roles the executive, legislative and judicial branches of government play in determining water policy using an exit examination administered by the learning outcomes coordinator at the completion of all courses required for the certificate. Students' knowledge will be assessed on the basis of exceeding, meeting or failing to meet expectations, which will be determined by the students' total score on the exit examination. 90% - 100% = exceeded expectations, 70% – 89% = met expectations, 69% or below = failed to meet expectations. We expect at least 70% of the students will meet or exceed expectations for this outcome.

**Outcome 3 - Method 2 - Result**

During AY 2019 / 2020, 4 undergraduate students who completed requirements for the Water Policy Certificate were evaluated on their knowledge of the roles the executive, legislative and judicial branches of government play in determining water policy using an exit examination created from questions provided by the course instructors and administered by the Geography Department's Learning Outcomes Coordinator via an on-line survey website. The Geography Department's Learning Outcomes Coordinator found that 100% of the students met or exceeded expectations for this learning outcome / method. The target of 70% of the students meeting or exceeding expectations was achieved.

**Approval History****Approval History Event**

Outcomes Approved Level 1  
Outcomes Approved Level 2  
Outcomes Audit Report Submitted  
Results Approved Level 1  
Results Audit Report Submitted

**Approver**

Yongmei Lu (yl10)  
Mary Brennan (mb18)  
Susan Day (sd01)  
Yongmei Lu (yl10)  
Susan Day (sd01)