

Program-Level Assessment: Annual Report

Program Name (no acronyms): Undergraduate Certificate in Geographic Information Systems	Department: EAS
Degree or Certificate Level: Undergraduate	College/School: Arts and Sciences
Date (Month/Year): 08/2021	Assessment Contact: Zachary Phillips, Vasit Sagan
In what year was the data upon which this report is based collected?	
2020-21	
In what year was the program’s assessment plan most recently reviewed/updated?	
2019	

1. Student Learning Outcomes

Which of the program’s student learning outcomes were assessed in this annual assessment cycle? (Please list the full, complete learning outcome statements and not just numbers, e.g., Outcomes 1 and 2.)

1. *Have a systematic view of GIScience, and be familiar with geospatial technology and the methods used to derive information from spatial data.*
2. *Be able to solve a variety of spatial and temporal environmental problems with integrated methods of GIS, remote sensing and GPS; Understand how to integrate remote sensing and GPS into GIS for data mining, and become effective at maintaining and updating organizational databases.*
3. *Be able to apply concepts and skills learned to a new project; Be able to develop new methods and applications of remote sensing and GIS for various disciplines. In these project scenarios, students work with their peers or community leaders on issues that matters the most in our neighborhoods. For example, water pollution, air pollution, measures and action plans to build a sustainable environment, etc.*

2. Assessment Methods: Artifacts of Student Learning

Which artifacts of student learning were used to determine if students achieved the outcome(s)? Please describe and identify the course(s) in which these artifacts were collected. Clarify if any such courses were offered a) online, b) at the Madrid campus, or c) at any other off-campus location.

1. *Embedded in the Quizzes, mid-term and final exams in certain required courses (GIS 5010 – Introduction to GIS, GIS 5040 – Introduction to Remote Sensing, GIS 5050 – Digital Image Processing) there will be questions designed specifically to provide data enabling faculty and program administrators to evaluate student progress toward this SLO.*
2. *Embedded in the Quizzes, mid-term and final exams in certain required courses (GIS 5010 – Introduction to GIS, GIS 5030 – Geospatial Data Management, GIS 5040 – Introduction to Remote Sensing, GIS 5050 – Digital Image Processing) there will be questions designed specifically to provide data enabling faculty and program administrators to evaluate student progress toward this SLO.*
3. *Embedded in the Quizzes, mid-term and final exams in certain required courses (GIS 5010 – Introduction to GIS, GIS 5040 – Introduction to Remote Sensing, GIS 5050 – Digital Image Processing) there will be questions designed specifically to provide data enabling faculty and program administrators to evaluate student progress toward this SLO.*

3. Assessment Methods: Evaluation Process

What process was used to evaluate the artifacts of student learning, and by whom? Please identify the tools(s) (e.g., a rubric) used in the process and **include them in/with this report document** (do not just refer to the assessment plan).

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| 1. <i>Assessment results will be analyzed annually by the program director and a small number team of faculty; recommendations for curriculum, pedagogy and/or assessment revisions will be made to the department faculty on an annual cycle that allows for appropriate implementation. Review of the impact of any such program changes will be conducted annually.</i> |
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4. Data/Results

What were the results of the assessment of the learning outcome(s)? Please be specific. Does achievement differ by teaching modality (e.g., online vs. face-to-face) or on-ground location (e.g., STL campus, Madrid campus, other off-campus site)?

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| 1. Of 12 students assessed over three artifacts, the percentage of failures in the learning artifacts for SLO 1 was 2.8% (1 of 36 artifacts were failed). Failing grades were evenly dispersed between online asynchronous and in-person classes and are sometimes because of failure to submit work and not bad quality. Failing of artifacts is typically repeated by the same student and not dispersed amongst students. Courses were not taught at Madrid Campus. |
| 2. Of 10 students assessed over three artifacts, the percentage of failures across the artifacts for SLO 2 was 6.6% (2 of 30 artifacts failed). Failing grades were evenly dispersed between online asynchronous and in-person classes. Failing grades were evenly dispersed between online asynchronous and in-person classes. Courses were not taught at Madrid Campus. |
| 3. Of 12 students assessed over three artifacts, the percentage of failures across the artifacts for SLO 3 was 5.6% (2 of 36 artifacts failed). Failing grades were evenly dispersed between online asynchronous and in-person classes. Failing grades were evenly dispersed between online asynchronous and in-person classes and are sometimes because of failure to submit work and not bad quality. Courses were not taught at Madrid Campus. |

5. Findings: Interpretations & Conclusions

What have you learned from these results? What does the data tell you?

These results show that student performance fulfills the learning outcomes outlined for each measured course. They point to basic levels of understanding in GIS and Remote sensing. Data show that students in the certificate program are performing well and attaining an understanding of the curriculum.

6. Closing the Loop: Dissemination and Use of Current Assessment Findings

A. When and how did your program faculty share and discuss these results and findings from this cycle of assessment?

Dr. Sagan and Dr. Phillips shared the results of this year's assessment over Summer 2021, and discussed them face to face in the office.

B. How specifically have you decided to use these findings to improve teaching and learning in your program? For example, perhaps you've initiated one or more of the following:

Changes to the Curriculum or Pedagogies

- Course content
- Teaching techniques
- Improvements in technology
- Prerequisites

- Course sequence
- New courses
- Deletion of courses
- Changes in frequency or scheduling of course offerings

Changes to the Assessment Plan

- Student learning outcomes
- Artifacts of student learning
- Evaluation process

- Evaluation tools (e.g., rubrics)
- Data collection methods
- Frequency of data collection

Please describe the actions you are taking as a result of these findings.

Continuing to expand our course offerings due to positive results with current offerings.

If no changes are being made, please explain why.

Because we have recently reformed the required course work for the GIS Degree as of 2020, these results show that the newly designed courses and requirements are fulfilling our goals of training to industry standards. We are moving on to focus on the development of new courses as the Geospatial Institute continues to grow.

7. Closing the Loop: Review of Previous Assessment Findings and Changes

A. What is at least one change your program has implemented in recent years as a result of assessment data?

In 2020, GIS 5020 (Intermediate GIS) and GIS 5060 (Geospatial Methods) were closed and replaced by GIS 5030 (Geospatial Data Management) and GIS 5050 (Digital Image Processing).

B. How has this change/have these changes been assessed?

This is the first year of assessment data collected on these changes, and on new assessment criteria.

C. What were the findings of the assessment?

This year's assessment shows initial positive results for course changes made in 2020.

D. How do you plan to (continue to) use this information moving forward?

This first year of assessments will be compared to further years for monitoring of student learning. Constant input is sought from Industry Professionals in GIS and Remote Sensing.

IMPORTANT: Please submit any assessment tools (e.g., rubrics) with this report as separate attachments or copied and pasted into this Word document. Please do not just refer to the assessment plan; the report should serve as a stand-alone document.