

PROGRAM REVIEW REPORT SUMMARY

1. **Reporting Institution:** Eastern Illinois University
2. **Program Reviewed:** Geographic Information Science Center (CIP 90.4507)
3. **Date:** January 27, 2021
4. **Contact Person:** Dr. Barry J Kronenfeld
 - 4.1. **Telephone** 217-581-7014
 - 4.2. **E-mail** bjcronenfeld@eiu.edu

5. Overview

The **Geographic Information Science Center**¹ acts as a hub for GIS-related teaching, research, student projects and community outreach at Eastern Illinois University. It coordinates campus-wide Geographic Information Systems (GIS) and Remote Sensing curricula for students interested in pursuing an interdisciplinary minor, a graduate degree, and/or Geographic Information Science (GISci) Certification. The Center supports faculty and student scholarship by providing researchers with expert assistance in spatial analysis. It also provides outreach to municipalities, government agencies, and private enterprise. The Geographic Information Science Center functions as the keystone for continued growth in the geographic information sciences at EIU.

6. Major Findings and Recommendations

a. Description and assessment of major changes in the program/disciplinary context

Interdisciplinary interest in graduate programs in GIS continues, with graduate students from at least five other programs (Political Science, Biology, Technology, Economics, MBA) enrolling in GIS courses and/or obtaining GIS-related graduate certificates or degrees. At the same time, diminished faculty resources have led other departments to rely on the GIScience Center to oversee all graduate GIS curricula. Most notably, a GIS-related graduate certificate program formerly housed in the Department of Biology was eliminated and replaced in 2016 by a general Certificate in Geographic Information Science & Technology (GIS&T) housed in the department of Geology and Geography. Partnerships with the Department of Political Science, MBA program and School of Technology continue apace, with GIS options available in the form of a Certificate in Public Planning, MBA with GIS Option and Resource Management Area of Study, respectively.

¹ Geographic Information Science is an interdisciplinary field focused on the theory, methods, data, and technology that, in simple terms, enable us to figure out what's where. It is the science behind the systems that allow us to navigate our roads and fields, map our campus's trees and our cities' infrastructures, locate contaminants that endanger wildlife, track the path of hurricanes and monitor the spread of infectious diseases.

The GIScience Center has also been successful at reaching out to the local and professional community to create opportunities for students to participate in research and community mapping projects. Through the activities of the GIScience Center at least two students have published research in peer-reviewed publications and several more have presented research results at academic and professional meetings. Faculty have supervised student projects to create maps and related spatial products for at least four university and local community organizations, and the center has also organized a regional meeting of ILGISA, the state's primary GIS professional organization.

On the other hand, the long-term trend of decreased funding for state universities as well as for state & local governments that typically engage in GIS-related community projects has led to resource and funding challenges. In 2016 the GIScience Center directorship was transferred from Dr. Karen Gaines (Biology) to Dr. Barry Kronenfeld (Geology and Geography). The center is maintained entirely on a volunteer basis.

b. Description of major findings and recommendations for program improvement

Given the current resource and budgetary constraints, the GIScience Center should focus on its role as a hub for GIS-related curricular development and for student involvement in research and community projects. The GIScience Center is well-positioned to bring together faculty on curricular issues and to match students and faculty with local organizations in matters in which public information and engagement may be enhanced by the university's GIS expertise. The center currently operates with the help of graduate assistants provided to the department, but faculty commitment is voluntary. Some degree of university funding and/or time release could support efforts to organize community events and/or secure external funding in the future.

c. Description of actions taken since the last review

The GIScience Center has primarily engaged in activities on three fronts since the last review: curricular, student research and community mapping.

On the curricular front, the GIScience Center has served as the locus for activity in developing and improving curricular coordination with other departments. It has supported revisions to the Certificate in Public Planning housed in the Political Science Department and the Resource Management Area of Study in the School of Technology; dual degree programs involving the PSM in GIScience and MBA; and transition from a specialized graduate certificate in the Biology Department to the more broadly applicable GIS&T Certificate. The GIScience Center also helped facilitate program revision for PSM in GIScience and the Graduate Certificate in Geographic Information Science & Technology, detailed in separate reports.

In terms of student research, the GIScience Center has engaged in efforts to involve students in cartographic research and visualization. At least two projects have led to

publication. A partnership with the U.S. Geological Survey Center for Excellence in Geographic Information Science (CEGIS) in Rolla, MO supported a student project researching metrics for evaluating the accuracy of cartographic line features, with a focus on stream features that have been simplified to reduce file size and support public dissemination. The project led to a peer-reviewed journal article in which the student was the second author. Another project assessed cartographic techniques used in 39 Covid-19 dashboards produced during the recent pandemic, resulting in a peer-reviewed extended abstract (1500 words) in which the student was lead author as well as a presentation at a major international cartography conference. The same student helped develop the Covid-19 Open Visualization project (COVIZ) that provides unique cartographic animations of the epidemic. In addition to peer-reviewed publications, at least two students have presented GIS-related research at local conferences.

At the community level, ties with the Coles County Regional Planning and Development Commission and the City of Charleston have led to several GIS-related projects and internships that serve the local community. One student created what has become the official trails map for the trails network development activities surrounding Lake Charleston, which recently received the Governor's Hometown Award. Another student identified and recorded the species of thousands of trees on EIU's campus to create the online EIU Tree Map, which has been used to support educational activities on campus. The GIScience Center has also supported student involvement with the Illinois GIS Association, including a workshop on the open source QGIS software led by a faculty member and two students in 2017. The GIScience Center also has developed ties with the Illinois Geographic Information Systems Association (ILGISA) and hosted a regional ILGISA meeting in 2017. Currently, GIScience Center affiliated faculty are working with Grand Prairie Friends and the EIU Rural School Initiative to create maps and web mapping services to facilitate the missions of these organizations.

d. Description of actions to be taken as a result of this review

The GIScience Center will continue to focus on its core missions of (a) facilitating coordination of GIS-related curricula at EIU, and (b) engaging students in GIS-related research and community projects. To further this goal, efforts are being made to review and streamline GIS-related degree programs and to bring the flagship graduate PSM in GIScience program online in order to serve a broader student base. This effort is made possible by, and depends on, critical virtual desktop technology provided by the university which allows GIS course delivery at a distance. The GIScience Center is also working to organize web content to better communicate the mission of the GIScience Center, showcase research and community projects and facilitate connections between students, faculty and the community at large.

7. Responses to Institution-Assigned Issues – N/A

8. Outcome

Dean's Comment:

The GIScience Center at EIU remains a valuable asset to the campus community. The Center has been active in the development of GISci-related curriculum across programs and colleges and has also supported student research and community outreach. The costs of the Center are minimal: aside from release time provided to the director, faculty, student and community involvement are mostly voluntary in nature and/or overlap with other existing programs (such as the Professional Science Master's [PSM] in GISci). The Center has also played a role in facilitating curricular change to the PSM in GISci and the Graduate Certificate in GIS programs. The Center's efforts in facilitating GISci-related student research along with projects focused on community engagement have led to tangible outcomes.

We recommend a decision of **Program in Good Standing**.

8.1 Academic Affairs Decision:

Program in Good Standing

Program flagged for Priority Review

Program Enrollment Suspended

8.2 Explanation

The Center is in good standing and has become a hub for inter-disciplinary work and collaborations. Additionally, the Center served as the incubator for the PSM program and provides support to the planning certificate. The University appreciates the work of the Center, it's director, and contributing faculty. While not noted in this narrative, I also am aware of efforts to partner with The Keep in Booth Library to enhance visibility and community outreach. These efforts are appreciated, and the Office of Academic Affairs looks for to continued and expanded activity.

Jay D. Gatrell
Provost & VPAA