

**SOUTH DAKOTA BOARD OF REGENTS**

**Academic and Student Affairs**  
**Consent**

**AGENDA ITEM: 3 – J (1)**  
**DATE: December 4-6, 2018**

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**SUBJECT**

**New Site Request: SDSU Certificate in Geographic Information Sciences**

**CONTROLLING STATUTE, RULE, OR POLICY**

[BOR Policy 2:23](#) – Program and Curriculum Approval

[BOR Policy 2:12](#) – Distance Education

**BACKGROUND / DISCUSSION**

South Dakota State University (SDSU) requests authorization to offer the Geographic Information Sciences (GISc) certificate at the University Center – Sioux Falls and through online delivery. This request responds to growing market demands in the geospatial technology industry. The certificate provides introductory skills in utilizing geographic applications and technologies to meet societal challenges. SDSU is simultaneously requesting authorization to offer their GISc undergraduate minor online.

**IMPACT AND RECOMMENDATION**

SDSU currently has 3 undergraduate certificates available online; no institutions currently offer an online GISc certificate. SDSU does not request any new resources.

Board office staff recommends approval.

**ATTACHMENTS**

Attachment I – New Site Request Form: SDSU – Certificate in Geographic Information Sciences (UC-SF & Online)

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**DRAFT MOTION 20181204\_3-J(1):**

I move to authorize SDSU to offer the certificate in Geographic Information Sciences at the University Center – Sioux Falls and online.



**SOUTH DAKOTA BOARD OF REGENTS  
ACADEMIC AFFAIRS FORMS**

**New Site Request**

<b>UNIVERSITY:</b>	<b>SDSU</b>
<b>DEGREE(S) AND PROGRAM:</b>	<b>Geographic Information Sciences Certificate</b>
<b>NEW SITE(S):<sup>1</sup></b>	<b>University Center - Sioux Falls; Online</b>
<b>INTENDED DATE OF IMPLEMENTATION:</b>	<b>2019-2020 Academic Year</b>
<b>CIP CODE:</b>	<b>45.0702</b>
<b>UNIVERSITY DEPARTMENT:</b>	<b>Geography</b>
<b>UNIVERSITY DIVISION:</b>	<b>Natural Sciences</b>

**University Approval**

*To the Board of Regents and the Executive Director: I certify that I have read this proposal, that I believe it to be accurate, and that it has been evaluated and approved as provided by university policy.*

\_\_\_\_\_  
President of the University

10/17/2018

\_\_\_\_\_  
Date

**1. What is the need for offering the program at the new physical site or through distance delivery?**

South Dakota State University (SDSU) requests authorization to offer the Geographic Information Sciences (GISc) Certificate at University Center - Sioux Falls and online. This request is in response to students' needs, market demands, and an ever-changing society. The certificate in Geographic Information Sciences prepares students to utilize their knowledge of geographic applications, and various geospatial technologies to meet the challenges of today's society. The program includes the necessary courses to prepare the graduate to function in geographic information science and allows students to develop their knowledge and skills in one of two technical specialties, either GIS or Remote Sensing/Cartography. The certificate targets people seeking a different level of learning outside of a traditional degree format, although any student can obtain the certificate to bolster his/her resume.

Many projections from government agencies and market research firms alike point toward considerable growth of the geospatial technology industry as well as growth in GIS-related employment sectors and fields. The U.S. Department of Labor Employment and Training Administration (DOLETA), for example, cites an annual growth rate of approximately 35 percent for the geospatial technology industry, with reliable public sector revenue accounting

<sup>1</sup> If the request is for a new physical location, include an address for the location. Delivery methods are defined in [AAC Guideline 5.5](#).

for approximately one third of the industry's total annual receipts.<sup>2</sup> Likewise, P&S Market Research estimates a compound annual growth rate of 10.1 percent from 2017 to 2023 for the global GIS market.<sup>3</sup>

A particular highlight is the field of cartography and photogrammetry. According to the U.S. Department of Labor's Bureau of Labor Statistics (BLS), the field of cartography and photogrammetry is expected to grow much faster than average at 19% or by 2,400 jobs between 2016 and 2026. With a median salary over \$62,750, employment in jobs related to cartography and photogrammetry are excellent opportunities for recent university graduates who have GIS experience and specialization.<sup>4</sup>

In the last five years, many state agencies have incorporated geospatial technologies and have created new positions for GISc analysts, technicians, programmers and managers. Some South Dakota agencies that employ persons with GISc training include the Department of Game, Fish and Parks, Department of Transportation, Department of Environment and Natural Resources, and Department of Public Safety to name a few. In addition, Native American tribal governments, city planning departments, and regional planning agencies have created new positions for GISc specialists. Increasingly, there is a demand for GISc professionals in private industry within South Dakota. Surveying and engineering firms throughout the state routinely hire GISc professionals. EROS Data Center employs persons with remote sensing skills. A certificate in Geographic Information Sciences will provide advanced training for individuals working in public and private industries throughout the state of South Dakota, the region and the United States. The South Dakota Department of Labor & Regulation<sup>5</sup> and Bureau of Labor Statistics (BLS)<sup>6</sup> predict employment growth in many of the anticipated occupations.

Delivery of the Geographic Information Sciences Certificate at UC-SF and online will support SDSU's *Imagine 2023* strategic plan.<sup>7</sup> The certificate helps to "Attain academic excellence" (Goal: Achieve Excellence Through Transformative Education). Specifically, it will:

1b. Develop and grow high-quality and distinct academic programs designed to meet the needs of diverse students and market demands;

1c. Increase programs offered which use a diversity of delivery methods, times, (or scheduling) and locations.

SDSU will not require additional resources.

**2. Are any other Regental universities authorized to offer a similar program at the proposed site(s) or through distance delivery? If "yes," identify the institutions and programs and explain why authorization is requested.**

No. Along with SDSU, Northern State University is currently authorized to offer a Geographic Information Sciences minor and certificate. South Dakota School of Mines and Technology is

<sup>2</sup>Employment and Training Administration, U.S. Department of Labor, *High Growth Industry Profile: Geospatial Technology*, on the internet [https://www.doleta.gov/brg/indprof/geospatial\\_profile.cfm](https://www.doleta.gov/brg/indprof/geospatial_profile.cfm) (visited February 2, 2018).

<sup>3</sup> P&S Marketing Research, on the internet at <https://www.psmarketresearch.com/press-release/global-geographic-information-system-market> (visited February 2, 2018).

<sup>4</sup> Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2017-18 Edition*, on the Internet at <https://www.bls.gov/ooh/architecture-and-engineering/cartographers-and-photogrammetrists.htm> (visited February 2, 2018).

<sup>5</sup> South Dakota Department of Labor and Regulations, *Employment Projections by Occupation*, on the internet at <https://www.southdakotaworks.org> (visited February 2, 2018).

<sup>6</sup> Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2017-18 Edition*, on the Internet at <https://www.bls.gov/ooh> (visited February 2, 2018).

<sup>7</sup> <https://www.sdstate.edu/imagine-2023-aspirer-discover-achieve>

authorized to offer a minor and certificate in Geospatial Technology. They are not authorized to offer their programs at UC-SF or online.

**3. Are students enrolling in the program expected to be new to the university or redirected from other existing programs at the university? Complete the table below and explain the methodology used in developing the estimates.**

SDSU expects most of the students to be new to the university. Students like the flexibility of programs offered online or through the University Center which allow them to continue to live and work anywhere in the state while they’re completing their degree. It is not expected that delivery online or at University Center - Sioux Falls will have much impact on the enrollments in SDSU’s face-to-face, on-campus courses. As seen in the table below, the certificate is expected to attract seven students per year through delivery online and at University Center – Sioux Falls. Students are already enrolling in the available courses. Over the past five years, three students have received the certificate in Geographic Information Sciences. The certificate was originally intended for individuals already in the workforce to receive new or updated training. The addition of these new sites will make this certificate more available to workers who want to obtain these skills.

<i>Estimates</i>	Fiscal Years*							
	1 <sup>st</sup>		2 <sup>nd</sup>		3 <sup>rd</sup>		4 <sup>th</sup>	
	FY 20		FY 21		FY 22		FY 23	
	Online	UC-SF	Online	UC-SF	Online	UC-SF	Online	UC-SF
Students new to the university	5	5	5	5	7	7	7	7
Students from other university programs	1	0	1	0	1	0	2	0
=Total students in the program at the site	6	5	10	9	12	12	13	13
Program credit hours (major courses)**	36	30	60	54	72	72	78	78
Graduates	2	0	6	4	8	6	8	8

\*Do not include current fiscal year.

\*\*This is the total number of credit hours generated by students in the program in the required or elective program courses. Use the same numbers in Appendix B – Budget.

**4. What is the perceived impact of this request on existing programs in the Regental system?**

Delivering the Geographic Information Sciences Certificate at the University Center – Sioux Falls and online is not expected to negatively impact enrollment in SDSU’s face-to-face, on-campus courses or enrollment in other regental institutions. The additional sites will increase the number of non-degree seeking students at SDSU as well as provide a pathway for working professionals to obtain critical need skills.

**5. Complete the table and explain any special circumstances. Attach a copy of the program as it appears in the current catalog. If there are corresponding program modifications requested, please attach the associated form. Explain the delivery of the new courses and attach any associated new course request forms.**

The curriculum for the Geographic Information Sciences Certificate is provided in Appendix A. Students are currently registering for the courses that are delivered online. SDSU is also working with the University Center – Sioux Falls to implement sections of GEOG 372-372L, GEOG 383-383L and GIS Technical Electives over the next two academic years.

Certificate in Geographic Information Sciences	Credit hours	Credit hours currently available from this university at UC-SF	Credit hours currently available from other universities available at UC-SF	Credit hours currently available via online delivery	Credit hours new to this university
Required Coursework	6	0	0	6	0
Technical Electives	6	0	0	6	0
<i>Total, Requirements of the Certificate</i>	12				

\*If the major will be available in more than one degree (e.g., BA, BS, BS Ed) at the new site(s) and the number or distribution of credits will vary with the degree, provide a separate table for each degree.

**6. How will the university provide student services comparable to those available for students on the main campus?**

Students engaged in the Geographic Information Sciences Certificate at University Center – Sioux Falls or online will have access to various support services and facilities throughout the academic program. The student’s academic advisor will be available to assist them in pursuing the certificate. Students are referred to the department head or certificate coordinator, if one exists, for questions regarding the certificate. Students will also have access to the support staff at the University Center or through Continuing and Distance Education at SDSU.

The South Dakota State University Hilton M. Briggs library has long served students engaged in coursework away from campus. This includes students enrolled at University Center and online. Library support services will be available to students through a variety of means:

- Students can contact librarians for research assistance. The librarian provides on-line research guides and is available for consultations with faculty and students.
- Distance Library Services include book and article delivery for materials owned by the library. Students may request materials not held by the library through interlibrary loan.
- SDSU students have on-line access to research databases such as Web of Science, EBSCOhost MegaFILE, and JSTOR.

Students will have access to technical support provided by SDSU’s Information Technology Services or onsite University Center Help Desk services.

Other student services such as disability services accommodations will be available to students upon request.

**7. Is this program accredited by a specialized accrediting body? If so, address any program accreditation issues and costs related to offering the program at the new site(s).**

No.

**8. Does the university request any exceptions to Board policy for delivery at the new site(s)? Explain requests for exceptions to Board policy.**

No.

**9. Cost, Budget, and Resources related to new courses at the site: Explain the amount and source(s) of any one-time and continuing investments in personnel, professional development, release time, time redirected from other assignments, instructional technology & software, other operations and maintenance, facilities, etc., needed to implement the proposed minor. Complete Appendix B – Budget using the system form.**

The Department of Geography is not requesting additional faculty or equipment to offer the certificate in Geographic Information Sciences. The program will be funded by off-campus tuition revenue. No additional resources are needed. Any addition of courses to meet growth will be met by off-campus tuition. It is anticipated that additional revenue will result from more students completing the online courses and may average \$30,000 per year once the program is established.

**Appendix A****Geographic Information Sciences Certificate**

Requirements for the Geographic Information Sciences Certificate: 12 Credits

Required Courses

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- GEOG 372-372L - Introduction to GIS and Lab (COM) Credits: 3 \*
- GEOG 383-383L - Cartography and Lab Credits: 3 \*  
or GEOG 483-483L - Aerial Remote Sensing and Lab Credits: 3

Technical Electives

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Select six credits from GIS Technical Electives or Remote Sensing/Cartography Technical Electives.

GIS Technical Electives

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Select two from the following. Credits: 6

- GEOG 473-473L - GIS: Data Creation and Integration and Lab Credits: 3 \*
- GEOG 474-474L - GIS: Vector and Raster Modeling and Lab Credits: 3 \*
- GEOG 475-475L - GIS Applications and Lab Credits: 3 \*

Remote Sensing/Cartography Technical Electives

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Select two from the following. Credits: 6

- GEOG 384-384L - Advanced Cartography and Lab Credits: 3
- GEOG 484-484L - Remote Sensing and Lab Credits: 3
- GEOG 485-485L - Quantitative Remote Sensing and Lab Credits: 3

\*Courses offered online by SDSU.

Academic Requirements

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Students must earn at least a "C" in each course used to meet the certificate requirements.