KENT STATE UNIVERSITY
CERTIFICATION OF CURRICULUM PROPOSAL

Preparation Date **4-Nov-14** Curriculum Bulletin _____
Effective Date **select one** Approved by EPC _____

Department	**Geography**	
College	**AS - Arts and Sciences**	
Degree		
Program Name	**Certificate in Geographic Information Science**	Program Banner Code
Concentration(s)	Concentration(s) Banner Code(s)	
Proposal	**Establish program**	

Description of proposal:

The curriculum meets the needs of students who are interested in professional careers in Geographic Information Science (GISc). Students are exposed to theories, techniques, and applications across GISc, which prepare them for positions that utilize geospatial data and technologies.

The proposed start date is Fall 2015 with admission every fall, spring, and summer semester. The program is fully online and courses run for 7 weeks; up to 30 students will be accepted into the program each semester. The Certificate in GISc (C-GISc) is a 17 hour program with 11 core hours, and then 6 hours of electives. The curriculum is designed to be completed within 1 year. Admission requirements include an undergraduate baccalaureate degree from an accredited institution in a cognate field, a minimum 3.0 GPA. The admission process is the same as current graduate programs. This program is an Everspring Collaboration and Everspring will handle all marketing and will be the initial point of contact for all potential applicants.

Does proposed revision change program's total credit hours? ☐ Yes ☒ No
Current total credit hours: **17** Proposed total credit hours **17**

Describe impact on other programs, policies or procedures (e.g., duplication issues; enrollment and staffing considerations; need; audience; prerequisites; teacher education licensure):

No duplication issues have been identified by the units consulted (please see below). There will be no impact to staffing or enrollments to other KSU units. Everspring has conducted a merket study to identify need and audience; pending approval, they will design the marketing plan accordingly.

Units consulted (other departments, programs or campuses affected by this proposal):

Department of Geology, Department of Biological Sciences, Department of Computer Science, School of Digital Sciences, and the College of Public Health

REQUIRED ENDORSEMENTS

_____ 11/4/14
Department Chair / School Director

_____ __/__/__
Campus Dean (for Regional Campuses proposals)

Mary Ann Haley 12/5/14
College Dean (or designee)

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Mary Beth Kaplan — 2/5/15

Dean of Graduate Studies (for graduate proposals)

___ / ___ / ___

Provost and Senior Vice President for Academic Affairs (or designee)

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Notice of Intent to Offer an Educational Program [Graduate Certificate in Geographic Information Science] Kent State University

Gainful Employment Electronic Announcement #5 dated June 1, 2011 and posted on www.ifap.ed.gov explains the process for institutional notification to the U.S. Department of Education (ED) of new educational programs that prepare students for gainful employment in a recognized occupation (GE Programs). An institution's notification to ED of its intent to offer a new GE Program must include information to support the institution's determination of the need for the program, as required by the regulations at 34 CFR 600.20(d)(2). Descriptions and documentation provided by an institution can cover more than one new GE Program, if the same, or similar, process was used by the institution to determine the need for the program, and should be provided as follows:

1. Institution Name: **Kent State University**

2. OPEID: **00305100**

3. Program name(s) and program CIP code(s) supported by this documentation:

   Graduate Certificate in Geographic Information Science (C-GISc)

   45.0702 Geographic Information Science and Cartography.
   A program that focuses on the systematic study of map-making and the application of mathematical, computer, and other techniques to the analysis of large amounts of geographic data and the science of mapping geographic information. Includes instruction in cartographic theory and map projections, computer-assisted cartography, geographic information systems, map design and layout, photogrammetry, air photo interpretation, remote sensing, spatial analysis, geodesy, cartographic editing, and applications to specific industrial, commercial, research, and governmental mapping problems.

4. Narrative description of how the institution determined the need for the program. For example, describe what need this program will address and how the institution became aware of that need. If the program is replacing a current program(s), identify the current program(s) that is being replaced by the new program(s) and provide details describing the benefits of the new program(s). If the program will be offered in connection with, or in response to, an initiative by a governmental entity, provide details of that initiative. The institution must retain documents that support this description for review or submission to the ED upon request.

   The need for the C-GISc was determined based on the following sources: a) federal and state labor statistics; b) a market survey conducted by the company Everspring for Kent State University; and c) the responses to a questionnaire administered to Geography alumni. Though the need for training in Geographic Information Science (GISc) has consistently been growing over the past 20 years, the local and regional markets traditionally served by Kent State University represent a minute population in comparison to the need for this skillset in the national and global marketplace. Indeed, the Geospatial Technology industry has consistently been identified as a "High Growth" industry by the United States Department of Labor[1]. We propose a fully online Certificate in Geographic Information Science (C-GISc) program which has been developed to meet this broader need through leveraging the existing strong GISc

[1] http://www.doleta.gov/brg/indprof/geospatial_profile.cfm

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curriculum and faculty in the Department of Geography at Kent State University. The Department of Geography has a 20 year history of offering courses in Geographic Information Science at both the undergraduate (BA) and graduate (MA and PHD) levels but this Certificate in Geographic Information Science is not replacing these current programs, nor is it being offered in connection with, or in response to, an initiative by a governmental entity. Our current BA has a GISc concentration and is part of the liberal education experience at Kent State; our MA is a research-focused degree with a thesis which has a concentration in GISc; our doctoral degree is the most advanced degree and students focusing in GISc typically are advancing knowledge about GISc. At the undergraduate level, students may also minor in GISc. The minor is targeted at non-Geography majors. In response to the national need, our masters-level certificate is targeted at postgraduates, especially those professionals in business, industry and government who desire some GISc knowledge to advance their current careers in a growing market or to prepare for new careers. The courses in the certificate are designed to work with a professional's busy schedule.

a) The C-GISc will better prepare students to work in a variety of fields that use GISc, which is a main component of the Geospatial Technology industry and is used throughout many employment sectors. Tables 1 and 2 demonstrate the occupational outlooks for positions that commonly use GISc. Table 1 focuses on the three traditional areas that seek personnel with this specific skillset from the U.S. perspective and Table 2 includes this core, but also occupations that regularly make use of GISc for industry-specific applications. The need for GISc has moved well beyond geography and its allied fields. For example, a recent article in TechRepublic noted that, "As more manufacturers and marketers realize the advantages of building geographical data into their operations, GIS specialists - as well as managers and researchers with GIS insight - are becoming increasingly integral parts of their company teams."[2] Specifically, the skills obtained through this certificate program will prepare students to hold the following positions, all in sectors with positive job outlooks through 2022 according to the Bureau of Labor Statistics Occupational Outlook Handbook (http://www.bls.gov/ooh/):

Table 1. U.S. Occupational Outlook for Traditional Positions related to the C-GISc[3]

Position	Job Outlook, 2012-2022
Geographers	29% (Much faster than national average)
Surveying and Mapping Technicians	14% (As fast as national average)
Cartographers and Photogrammetrists	20% (Faster than national average)

In Ohio, the job outlook for 2010-2020 for the same positions also shows high growth (Table 2).

Table 2. Ohio Occupational Outlook for All Positions related to the C-GISc[4]

[2] Tech Republic. 2013. Where are the jobs in the GIS field? Available online: http://www.techrepublic.com/blog/career-management/where-are-the-jobs-in-the-gis-field/ Last accessed: 10/09/2014.

[3] http://www.bls.gov/ooh/

[4] http://ohiolmi.com/proj/OhioJobOutlook.htm

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Code	Position	Job Outlook, 2010-2020
11-0000	**Management Occupations**	**2.8%**
11-2021	Marketing Managers	8.8%
11-3021	Computer & Information Systems Managers	14.6%
11-3071	Transportation, Storage, & Distribution Managers	9.0%
11-9121	Natural Sciences Managers	6.4%
11-9161	Emergency Management Directors	10.3%
13-0000	**Business & Financial Operations Occupations**	**12.3%**
13-1161	Market Research Analysts & Marketing Specialists	34.7%
13-2021	Appraisers & Assessors of Real Estate	2.2%
15-0000	**Computer & Mathematical Occupations**	**18.1%**
15-1111	Computer & Information Research Scientists	19.4%
15-1121	Computer Systems Analysts	21.5%
15-1131	Computer Programmers	4.8%
15-1132	Software Developers, Applications	24.6%
15-1133	Software Developers, Systems Software	28.8%
15-1141	Database Administrators	26.6%
15-1179	Information Security Analysts, Web Developers, & Computer Network Architects	15.7%
17-0000	**Architecture and Engineering Occupations**	**5.7%**
17-1012	Landscape Architects	10.0%
17-1021	Cartographers and Photogrammetrists	19.0%
17-1022	Surveyors	16.7%
17-3031	Surveying and Mapping Technicians	10.4%
17-2081	Environmental Engineers	14.0%
19-0000	**Life, Physical, & Social Science Occupations**	**9.8%**
19-1013	Soil & Plant Scientists	6.3%
19-1023	Zoologists & Wildlife Biologists	3.4%
19-1029	Biological Scientists, All Other	2.0%
19-1031	Conservation Scientists	0.0%
19-1032	Foresters	0.0%
19-1042	Medical Scientists, Ex Epidemiologists	31.1%
19-2021	Atmospheric & Space Scientists	5.6%
19-2042	Geoscientists, Ex. Hydrologists & Geographers	29.0%
19-3091	Anthropologists & Archaeologists	15.4%
19-4091	Environmental Science & Protection Tech, Including Health	16.3%
41-0000	**Sales & Related Occupations**	**6.1%**
41-3021	Insurance Sales Agents	17.0%
41-9021	Real Estate Brokers	1.3%
41-9022	Real Estate Sales Agents	7.7%

b) In addition to the general labor market statistics at both a national and state level,

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Everspring[5] conducted a market survey in July 2014 that specifically focused on a potential Kent State University, Department of Geography, fully online GISc graduate degree. Results of this study indicate that the degree is desirable, viable, and feasible for the marketplace (Figure 1). Our proposed certificate is in response to this desirability and is designed for those individuals who do not want to commit to an entire degree (note we are also developing a fully online Masters in GISc).

Figure 1. Results of Everspring Market Survey

everspring

MA Geography

MA Geography

Region	Impressions	Clicks	CTR	Leads	Conv. Rate	Cost Per Click	Cost Per Lead	Avg. Position
State	1,170	19	1.62%	2	10.5%	$ 8	$ 75	2.3
Region	4,723	32	0.68%	5	15.6%	$ 10	$ 61	2.4
Rest of U.S.	24,506	134	0.55%	14	10.4%	$ 6	$ 60	2.8
Total	30,399	185	0.61%	21	11.4%	$ 7	$ 62	2.5
All Programs Avg.	97,884	305	0.31%	28	9.2%	$ 16	$ 173	3.3

Summary Notes

- Attractive, growing online discipline
  - Below average impressions
- Low competition
  - Above average conversion and attractive cost per lead in test

Program Assessment Summary

Desirability	Viability	Feasibility
Y	G	G

2018 Enrollment Potential 100

14 On-Campus Enrollment

5. Narrative description of how the program was designed to meet local market needs, or for an online program, regional or national market needs. For example, indicate if Bureau of Labor Statistics data or state labor data systems information was used, and/or if state, regional, or local workforce agencies were consulted. Include how the course content, program length, academic level, admission requirements, and prerequisites were decided; including information received from potential employers about course content; and information regarding the target students and employers. The institution must retain copies of documents and its analysis for review and submission to the ED upon request.

   The C-GISc is designed to be online-only and to meet market needs in the Geospatial Technology industry as well as allied industries that rely on employees who are highly trained in this technology.

   Course Content: Core + choice (11 hours of core courses and 6 hours of electives) = 17 hours

[5] http://www.everspringpartners.com/

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Core: Introduction to GIS (4), Advanced GIS (3), Cartographic Design (4)
Choice: 2 courses from any of the online GISc courses:
GIS and Hazards, GIS and Health, GIS: Urban and Economic Applications, Web and Mobile GIS, Geodatabases, Social Media & Big Data, Space-Time Analytics, Environmental GIS, Geospatial Analysis, Cyber GIS, Spatial Programming, Remote Sensing

Program Length: 17 credit hours. The program is designed to be completed within one year.
Academic Level: Post-baccalaureate
Admission Requirements: Bachelor's degree from an accredited institution, 3.0 GPA
Pre-requisites: no pre-requisites

Target Students: Based on results of the market study conducted by Everspring, the target students will be college graduates and professionals who are looking to improve their skillset in order to advance in their current field, change fields, and increase their competitiveness for acquiring their desired career. These students will primarily be working parents who had at least a 3.0GPA in undergraduate course work, and are personally motivated to succeed. In addition to the demographic and personal characteristics, the target students are located globally. The fully online structure of this certificate will enable Kent State University to reach these students, regardless of their location.

Target Employers: Based on labor statistics, feedback from our alumni and expert network, and on the faculty's experience in placing students in jobs, the target employers will be private and public sector entities who need to a) manage large systems and big geospatial data, b) map and analyze health data, and c) map and analyze environmental conditions and resources. Examples of such employers include local, state, and federal government agencies, business that focus on logistics, marketing, and engineering, and non-profits in health services and environmental management.

6. Narrative description of any wage analysis the institution may have performed, including any consideration of Bureau of Labor Statistics wage data related to the new program. The institution must retain copies of analysis documents for review and submission to the ED upon request.

In addition to the positive job outlook for students who complete the C-GISc program, the potential salaries for which they would be qualified for range from $19.19 through to $59.78 as of May 2011 in Ohio and from $19.07 to $58.15 for the U.S. as a whole (Table 3).

Code	Position	Average Wage, May 2011 (Ohio)	Median Pay, 2012 (US)
11-0000	**Management Occupations**		
11-2021	Marketing Managers	$59.78	$55.65
11-3021	Computer & Information Systems Managers	$55.41	$58.15
11-3071	Transportation, Storage, & Distribution Managers	$44.17	$34.99 (logisticians)
11-9121	Natural Sciences Managers	$56.39	$55.64
11-9161	Emergency Management Directors	$27.42	$28.73
13-0000	**Business & Financial Operations**		

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	Occupations		
13-1161	Market Research Analysts & Marketing Specialists	$29.43	$28.99
13-2021	Appraisers & Assessors of Real Estate	$22.44	$23.82
15-0000	**Computer & Mathematical Occupations**		
15-1111	Computer & Information Research Scientists	$48.60	$49.13
15-1121	Computer Systems Analysts	$37.86	$38.31
15-1131	Computer Programmers	$32.38	$35.71
15-1132	Software Developers, Applications	$38.51	$44.88
15-1133	Software Developers, Systems Software	$40.85	$44.88
15-1141	Database Administrators	$35.08	$37.06
15-1179	Information Security Analysts, Web Developers, & Computer Network Architects	$36.37	$41.43; $30.05; $43.75
17-0000	**Architecture and Engineering Occupations**		
17-1012	Landscape Architects	$28.47	$30.86
17-1021	Cartographers and Photogrammetrists	$28.69	$27.62
17-1022	Surveyors	$26.90	$27.04
17-2081	Environmental Engineers	$41.95	$38.89
17-3031	Surveying and Mapping Technicians	$19.38	$19.07
19-0000	**Life, Physical, & Social Science Occupations**		
19-1013	Soil & Plant Scientists	$26.90	$28.18
19-1023	Zoologists & Wildlife Biologists	$26.11	$27.74
19-1029	Biological Scientists, All Other	$34.65	$27.74
19-1031	Conservation Scientists	$29.76	$28.40
19-1032	Foresters	$24.42	$28.40
19-1042	Medical Scientists, Ex Epidemiologists	$32.22	$37.01
19-2021	Atmospheric & Space Scientists	$34.00	$42.91
19-2042	Geoscientists, Ex. Hydrologists & Geographers	$33.55	$43.70
19-3091	Anthropologists & Archaeologists	$28.16	$27.61
19-4091	Environmental Science & Protection Tech, Including Health	$19.19	$30.56
41-0000	**Sales & Related Occupations**		
41-3021	Insurance Sales Agents	$29.38	$23.15
41-9021	Real Estate Brokers	$43.40	$20.19
41-9022	Real Estate Sales Agents	$21.37	$20.19

7. Narrative description of how the program was reviewed or approved by, or developed in conjunction with, one or more of the following: business advisory committees; program integrity boards; business that would likely employ graduates of the program; and/or public or private oversight or regulatory agencies (not including the state licensing/authorization agency and accrediting agency).

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For example, describe the steps taken to develop the program, identify when and with whom discussions were held, provide relevant details of any proposals or correspondence generated, and/or describe any process used to evaluate the program. The institution must retain, for review and submission to the ED upon request, copies of meeting minutes, correspondence, proposals, or other documentation to support the development, review, and/or approval of the program.

The C-GISc was developed with the feedback of a network of alumni who are now industry experts, GISc colleagues at other institutions who have experience with professional GISc degree programs, and local industry experts in both the private and public sectors. The discussions have been ongoing now for the past two years and their insights were formative for this certificate design. A subset from this network will be invited to join the GISc Advisory Board who will provide oversight for this certificate and our proposed fully online Masters in GISc.

8. Date of the first day of class. Include both:
   a. The first day the program was or will be offered by the institution.

      31 August 2015

   b. The day you would like to begin disbursing Title IV funds to students enrolled in the program.

      17 August 2015

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PROPOSED PROGRAM – 2015 UNIVERSITY CATALOG

Geographic Information Science (Post-Bachelor's Certificate)

College College of Arts and Sciences

Department Department of Geography
413 McGilvrey Hall
Tel: 330-672-2045
Fax: 330-672-4304
Web: www.kent.edu/cas/geography

Description The post-bachelor's certificate in Geographic Information Science is offered online only and will prepare graduates to work in the geospatial technology industry, as well as allied industries that rely on employees who are highly trained in this technology. Prospective employers are private and public sector entities that need to (a) manage large systems and big geospatial data, (b) map and analyze health data and (c) map and analyze environmental conditions and resources. Examples of such employers are local, state and federal government agencies; business that focus on logistics, marketing and engineering; and non-profit agencies in health services and environmental management.

Admission Requirements Official transcript(s), minimum 3.000 undergraduate GPA; undergraduate degree in geography or a related field*; goal statement and two letters of recommendation. Please refer to the University policy for graduate admissions.

*This requirement may be waived with evidence of professional experience using geospatial technologies or alternative evidence of ability to excel in a Geographic Information Science graduate degree program.

Graduation Requirements Minimum 17 credit hours and minimum 3.000 GPA.

CERTIFICATE REQUIREMENTS (17 credit hours)				
Course		**Title**	**Credits**	**Curriculum Notes**
GEOG	59076	Geographic Information Science	4	existing
GEOG	69082	Advanced Geographic Information Science	3	existing
GEOG	69083	Cartographic Design	4	new
Choose from the following:			6	
GEOG	69004	Quantitative Methods (3)		Name change
GEOG	69007	Spatiotemporal Analytics (3)		new
GEOG	69079	Environmental Geographic Information Science (3)		new
GEOG	69082	CyberGIS (3)		formerly 59082
GEOG	69083	Geodatabases (3)		new
GEOG	69231	Environmental Remote Sensing (3)		new
DSCI	64210	Data Science (3)		existing
CS	61002	Algorithms and Programming 1 (3)		existing
		MINIMUM TOTAL	**17**	

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