Educational Policies Committee Program Proposal, College of Natural Resources, January 20, 2017 - Geographic Information Science Certificate

Utah State University

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Utah System of Higher Education
New Academic Program Proposal
Cover/Signature Page - Abbreviated Template

Institution Submitting Request: Utah State University

Proposed or Current Program Title: Geographic Information Science Certificate

Sponsoring School, College, or Division: Quinney College of Natural Resources

Sponsoring Academic Department(s) or Unit(s): Logan Campus online

Classification of Instructional Program Code1: 45.0702

Min/Max Credit Hours Required of Full Program: 12 cr / 12 cr

Proposed Beginning Term2: Fall 2017

Institutional Board of Trustees' Approval Date: 01/06/2017

☐ Certificate of Proficiency ☐ Entry-level CTE CP ☐ Mid-level CP
☐ Certificate of Completion
☐ Minor
☒ Graduate Certificate
☐ K-12 Endorsement Program

☐ NEW Emphasis for Regent-Approved Program
☐ Out of Service Area Delivery Program

Chief Academic Officer (or Designee) Signature:
I, the Chief Academic Officer or Designee, certify that all required institutional approvals have been obtained prior to submitting this request to the Office of the Commissioner.

Laurens H. Smith Date: January 4, 2017

☒ I understand that checking this box constitutes my legal signature.

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2 “Proposed Beginning Term” refers to first term after Regent approval that students may declare this program.
Utah State University requests approval to offer the following Graduate Certificate: Geographic Information Science Certificate effective Fall 2017. This program was approved by the institutional Board of Trustees on January 6, 2017.

Section II: Program Proposal/Needs Assessment

Program Description/Rationale

Present a brief program description. Describe the institutional procedures used to arrive at a decision to offer the program. Briefly indicate why such a program should be initiated. State how the institution and the USHE benefit by offering the proposed program. Provide evidence of student interest and demand that supports potential program enrollment.

The Quinney College of Natural Resources at Utah State University requests approval to create a graduate certificate in Geographic Information Science (GIS). This 12-credit online certificate program would provide a credential that students have completed training and education in the use of geographic information sciences for the research and management of natural resources. The four courses required for completion of the certificate focus on use of the ArcGIS software. Students enrolled in the present Master of Natural Resources (MNR) degree program have asked that a certificate be created to demonstrate their qualification in geographic information sciences. In a recent survey of current MNR students, one third of the sixty plus students indicated that they would enroll in such a certificate program. By offering this credential, Utah State University and USHE would benefit through the recruitment of additional professional graduate students for certificate completion, through increased course enrollments by students in the MNR program, and by the provision of additional credentials to a subset of graduate students enrolled in other graduate degree programs at USU. Students would benefit from improved potential for employment in a highly technical field and for those already employed, by improving their capacities in a high-demand skills area.

There are no graduate certificate programs in geographic information sciences offered through the USHE institutions. Approval of the request will provide Utah students with an opportunity to gain a credential useful in their efforts to become professionals in this growing science-support field.

A search for the new faculty member to teach this course is underway in the Department of Environment and Society. Anticipate the new faculty member will begin employment at Utah State University in the Fall of 2017. Once approved, the Geospatial Analysis course will be offered in an online format Spring Semester of 2018. This course will be the fourth in the sequence of classes required for the Certificate. Anticipate enrollment in the three existing courses will increase by 10-20 percent once the Certificate program is initiated. Expect current instructors will be able to accommodate these additional students. Advising for the MNR degree program is carried out by the MNR program coordinator and will be expanded to
include advising students in the GIS Certificate program. If enrollments in the GIS Certificate program exceed expectations, will hire an assistant program coordinator for both the MNR and GIS programs.

Labor Market Demand

Provide local, state, and/or national labor market data that speak to the need for this program. Occupational demand, wage, and number of annual openings information may be found at sources such as Utah DWS Occupation Information Data Viewer (jobs.utah.gov/jsp/wi/utalmis/gotoOccinfo.do) and the Occupation Outlook Handbook (www.bls.gov/oco).

The need for employees of private companies and public agencies to become competent in geographic information sciences is high. National surveys of job placement and income levels indicate that GIS specialists are in high demand, with annual salaries ranging from $38,000 to $70,000 (www.payscale.com). Specific skills associated with use of the ArcGIS software provide a 12% salary increase in the national survey. Demand for cartographers and photogrammetrists, careers for which this Certificate is appropriate, is high for Utah and growing at a 4% annual rate (www.bls.gov/oco). The median salary for these positions was $61,000 in Utah in 2015.

The proposed Geographic Information Sciences Certificate is directed toward graduate students in all natural resource fields. Analysis of geospatial information on climate, the distribution of plants and animals, movement patterns of animals, and the assessment of competing uses of land for agriculture, municipalities, industries and tourism is a growing need. Data from ground-based and remotely-sensed instruments provide a vast amount of information on the state of land use in Utah. The need to produce future employees to interpret and analyze this information is pressing. Envision 20 students per year completing this graduate certificate and entering the workforce beginning in 2019. This GIS Certificate has been requested by many of the graduates of the online Master of Natural Resources (MNR) program. Anticipate additional demand from graduate students in other USU degree programs. Approximately half of students completing the GIS Certificate would be students enrolled in the MNR program. Current enrollment in the MNR program exceeds 60 students. The proposed GIS certificate would be available to any student who has completed an appropriate BS degree. Acceptance of applicants would be approved by a faculty advisory committee.

Consistency with Institutional Mission/Impact on Other USHE Institutions

Explain how the program is consistent with the institution's Regents-approved mission, roles, and goals. Institutional mission and roles may be found at higheredutah.org/policies/policy312/. Indicate if the program will be delivered outside of designated service area; provide justification. Service areas are defined in higheredutah.org/policies/policy315/.

The GIS Certificate program will assist Utah State University in fulfilling its land grant mission of providing educational opportunities for Utah citizens in natural resource fields.

No institution of higher education in Utah offers a certificate in Geographic Information Science directed towards graduate students and delivered in an online format. Three academic programs in Geographic Information Science are offered at Utah institutions. All three are undergraduate programs and none of these are offered in an online format. The University of Utah offers a GIS Certificate which students earn by completing 24 hours of coursework. Salt Lake Community College offers a Geographic Information Systems Certificate as part of an Associates Degree. Thirty-nine credits of coursework in computer science, geography, and GIS technology are required to complete this certificate. Southern Utah University offers a one-year certificate program in Geographic Information Systems that consists of 30 credits of coursework. The SUU certificate program is directed towards undergraduate students. Proposed graduate GIS Certificate can be completed with fewer credit hours because students entering this program have completed undergraduate courses in mathematics, computer science and statistics.

The proposed graduate certificate will be offered in an on-line delivery mode. This approach will make the program more accessible to Utah students but will also be available to students in other states or countries who wish to pursue this certificate.
countries. Approximately 60% of students in the Master of Natural Resources online program are Utah residents. Anticipate a similar percentage of students in the proposed GIS Graduate Certificate will be Utah residents as well.

Finances
What costs or savings are anticipated in implementing the proposed program? If new funds are required, indicate expected sources of funds. Describe any budgetary impact on other programs or units within the institution.

The courses that comprise the GIS certificate program are offered online through the Academic Instructional Service office at Utah State University. Their funding model allows for distribution of tuition dollars to academic units offering online degree programs. Anticipate recruiting some new students to the MNR program through the provision of the GIS Graduate Certificate. The addition of these students will provide income for the Quinney College of Natural Resources. This income can then be used to provide instruction and advising services to students in the program. Anticipate this additional program will be revenue neutral for the College, but offer tremendous opportunities for students to learn highly-sought-after skills in a growing technological field.
### Section III: Curriculum

#### Program Curriculum

List all courses, including new courses, to be offered in the proposed program by prefix, number, title, and credit hours (or credit equivalences). Indicate new courses with an X in the appropriate columns. The total number of credit hours should reflect the number of credits required to receive the award. For NEW Emphases, skip to emphases tables below. For variable credits, please enter the minimum value in the table below for credit hours. To explain variable credit in detail as well as any additional information, use the narrative box below.

<table>
<thead>
<tr>
<th>Course Number</th>
<th>NEW Course</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NR 6910</td>
<td></td>
<td>Geographic Information Systems for Natural Resource Applications</td>
<td>3</td>
</tr>
<tr>
<td>NR 6930</td>
<td></td>
<td>Advanced Geographic Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>NR 6940</td>
<td></td>
<td>Principles of Remote Sensing for Natural Resources</td>
<td>3</td>
</tr>
<tr>
<td>NR 6950</td>
<td>X</td>
<td>Geospatial Analysis</td>
<td>3</td>
</tr>
</tbody>
</table>

**General Education Credit Hour Sub-Total** 12

**Required Course Credit Hour Sub-Total** 12

**Elective Credit Hour Sub-Total**

**Core Curriculum Credit Hour Sub-Total** 12

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**Program Curriculum Narrative**

*Describe any variable credits. You may also include additional curriculum information, as needed.*

Students may take the following on-campus courses to use as substitutes: WATS 6920 Adv. GIS & Spatial Analysis, WILD 6740 Physical Processes in Remote Sensing or WILD 6750 Applied Remote Sensing. Student may transfer up to 6 graduate
credits from another institution to be applied to the Certificate, if the faculty advisory committee approves of the courses. Students will be required to provide a syllabus from the course(s) they wish to transfer.
Degree Map

Degree maps pertain to undergraduate programs ONLY. Provide a degree map for proposed program. Degree Maps were approved by the State Board of Regents on July 17, 2014 as a degree completion measure. Degree maps or graduation plans are a suggested semester-by-semester class schedule that includes prefix, number, title, and semester hours. For more details see http://higheredutah.org/pdf/agendas/201407/TAB%20A%202014-7-18.pdf (Item #3).

Please cut-and-paste the degree map or manually enter the degree map in the table below.