LETTER OF NOTIFICATION – 13

EXISTING CERTIFICATE or DEGREE OFFERED via DISTANCE TECHNOLOGY

Institutions with at least one certificate or degree program approved for distance technology by the Arkansas Higher Education Coordinating Board must submit Letter of Notification-13 to request approval to offer additional existing (on-campus) certificates or degrees via distance technology. The institution must submit to ADHE a copy of the e-mail notification to the Higher Learning Commission (HLC) about the proposed distance technology program. If HLC requires a focused visit for the proposed distance technology program, please submit the scheduled review date.

**Definitions**

Distance technology (e-learning) – When technology is the primary mode of instruction for the course (50% of the course content is delivered electronically).

Distance instruction – When a course does not have any significant site attendance, but less than 50% of the course is delivered electronically, e.g., correspondence courses.

Distance program – When at least 50% of the major courses are delivered via distance technology.

1. Institution submitting request: University of Arkansas Fayetteville
2. Contact person/title: Dr. Terry Martin, Vice Provost for Academic Affairs
3. Phone number/e-mail address: (479) 575-2151/tmartin@uark.edu
4. Name of Existing Certificate or Degree: Geospatial Technologies Graduate Certificate
5. Proposed Effective Date for distance technology delivery: Fall 2016
6. CIP Code: 45.0702
7. Degree Code: 1467

# PROGRAM INFORMATION

1. Program summary/justification for offering program by distance technology:

The new graduate certificate responds to the growing need for trained practitioners with demonstrated skills. The Department of Labor has identified this area as one of the three fastest growing job areas over the next decade. The Department of Geosciences offers an undergraduate certificate (100% online) but an extensive employer survey in the proposed program’s off-campus service area has confirmed that there is also a need for a graduate level certification. The graduate certification is particularly sought for management level and technical leadership positions. Employers, especially county and local governments, in rural areas in Arkansas and surrounding states find it difficult to find qualified employees and the lack is holding back economic development.

1. Provide the current certificate/degree plan. Mark\* courses that will be taught by adjunct faculty.

The Department of Geosciences offers an online Geospatial Technologies Graduate Certificate through University of Arkansas Global Campus (<http://globalcampus.uark.edu/>). This certificate is designed for working professionals who wish to develop technical skills in the emerging field of geospatial technologies. The certificate provides the technical instruction needed to be employed in the geosciences and collateral disciplines as one of the American Society of Photogrammetry and Remote Sensing’s “Mapping Scientist” and as a “Certified Geographic Information Systems Professional” (GISP).

Requirements for a Geospatial Technologies Graduate Certificate

Requirements for admission: Graduate status; there are no disciplinary requirements.

A total of 12-18 hours are required for the certificate:

GEOS 5043 Geospatial Technologies Mathematical Toolkit (Sp, Fa) 3

GEOS 5073 Geospatial Technologies Computational Toolkit (Sp, Fa) 3

GEOS 5543 Geospatial Applications and Information Science (Sp, Fa) 3

GEOS 5553 Spatial Analysis Using ArcGIS (Sp, Fa) 3

GEOS 5083 Geospatial Technologies Statistical Toolkit (Sp, Fa) 3

GEOS 5593 Introduction to Geodatabases (Sp, Fa) 3

It is possible to waive 3 to 6 hours of required coursework for GEOS 5043 and GEOS 5073 through successful completion of proficiency exams.

1. Provide the list of courses, include course number/title, for the certificate/degree program currently offered by distance technology.

GEOS 5543 *Geospatial Applications and Information Science* (3 credits)

An introduction to the methods and theory underlying the full range of geographic information science and collateral areas - including GNSS, remote sensing, cadastral, spatial demographics and others.

GEOS 5553 *Spatial Analysis Using ArcGIS* (3 credits)

Applications of analysis of spatial data using ArcGIS tools in map design, on-line mapping, creating geodatabases, accessing geospatial data, geo-processing, digitizing, geocoding, spatial analysis including basic spatial statistics, analysis of spatial distributions and patterning and 3D application using ArcGIS 3D Analyst.

GEOS 5593 *Introduction to Geodatabases* (3 credits)

Fundamental concepts and applications of geospatial databases. Schema development and spatial data models for geodata. Spatial and attribute query and optimization, properties and structures of relational and object-oriented geodatabases. Spatial extensions of SQL, spatial indexing, measurement, and geometry. Course will use PostGIS, ESRI File Geodatabases, and MS-SQL.

1. If 100% of the program will not be offered by distance technology, list courses that **will not** be offered by distance technology.

n/a

1. For existing courses that **will** be offered by distance technology (for the first time), provide the course syllabus for each of these courses for the certificate/degree program and indicate the maximum class size for each distance course.

n/a

1. If new courses will be added, provide the list of new courses (proposed course number/title) and the new course descriptions for the certificate/degree.

GEOS 5043 *Geospatial Technologies Mathematical Toolkit* (3 credits)

Basic mathematical tools applied in geospatial technology, including trigonometry in mapping, linear algebra in remote sensing, optimization in spatial decision support, and graph theory in routing. Course develops the framework for spatial data analysis and decision support.

GEOS 5073 *Geospatial Technologies Computational Toolkit* (3 credits)

Basic computational tools and processes applied in geospatial software, related computer hardware components, systems and applications software, and spatial database fundamentals. Python, including SciPy and NumPy, geospatial implementations will be emphasized. No programming experience is required.

GEOS 5083 *Geospatial Technologies Statistical Toolkit* (3 credits)

Basic statistical tools for geospatial technologies. Exploratory spatial data analysis, single and multivariate spatial analysis and hypothesis testing, Bayesian analysis, and spatial smoothing and interpolation. Emphasis will be on problem solving in geospatial settings using the R statistical language.

1. Provide the course syllabus for each distance technology course for the program listed above and indicate the maximum class size for each distance course. Indicate the course delivery mode(s) and class interaction mode(s) for each distance technology course.

Attached please find the syllabi for each of the six online courses in the certificate. The maximum class size for each course is 40. The delivery modes indicated below apply equally to all of these courses:

Course delivery mode (check all that apply):

Online

Compressed-video (CIV)

Audio Conference

Video Conference

Web Conference

Blended delivery (identify components)

Class interaction mode (check all that apply):

Electronic bulletin boards

E-mail

Telephone

Fax

Chat

Blog

Other (specify)

1. Provide the percentage of the program that is offered via distance (50%, 75%, etc.).

100%

1. Discuss the provisions for instructor-student and student-student interaction that are included in the program design and the course syllabus.

Each student receives extra credit for completion of a weekly “satisfaction” survey. They are anonymous - we know that they have been completed but do not know which student provided which answer. The student is requested to respond along a Likert scale for topics such as “lectures were clear and provided valuable information,” or “labs were well structured and useful.” In addition, each student is invited to provide a free form text response. These are frequently reviewed by the instructor to identify (early on) any problems. All students are encouraged to use e-mail, chat and telephone to contact the instructors and the goal is to respond to any inquiry on the same day. Instructors also provide frequent announcements and updates to content, and offer open help sessions via Google Hangouts/Skype/Collaborate sessions.

1. Provide a semester-by-semester degree plan/course schedule for student access to all courses necessary to complete the program.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **COURSE** | | **DELIVERY** | **INSTRUCTORS** | | | |
| **FALL 2016** | **SPRING 2017** | **FALL 2017** | **SPRING 2018** |
| **Geospatial Technologies Mathematical Toolkit** | GEOS 5043 | online | Cothren | Cothren | Cothren | Cothren |
| **Geospatial Technologies Computational Toolkit** | GEOS 5073 | online | Shi | Shi | Shi | Shi |
| **Geospatial Applications and Information Science** | GEOS 5543 | online | Limp/Shi | Limp/Shi | Limp/Shi | Limp/Shi |
| **Spatial Analysis Using ArcGIS** | GEOS 5553 | online | Limp | Limp | Limp | Limp |
| **Geospatial Technologies Statistical Toolkit** | GEOS 5083 | online | Cothren | Cothren | Cothren | Cothren |
| **Introduction to Geodatabases** | GEOS 5593 | online | Limp/Shi | Limp/Shi | Limp/Shi | Limp/Shi |

1. Provide a list of services that will be supplied by consortia partners or outsourced to another organization (faculty/instructional support, course materials, course management and delivery, library-related services, bookstore services, services providing information to students, technical services, administrative services, online payment arrangements, student privacy consideration, services related to orientation, advising, counseling or tutoring, etc.) Include the draft contract/Memorandum of Understanding (MOU) for each partner/organization offering faculty/instructional support for the program. Submit final contract/MOU signed by partner institutions or organizations upon completion of ADHE proposal review.

n/a

1. Estimate costs for the proposed distance technology program for the first 3 years. Include faculty release time costs for course/program planning and delivery.

With the Certificate of Proficiency in Geospatial Technologies (GISTCP) already in place, and with the proposed certificate incorporating graduate versions of GISTCP curriculum already established, no additional financial commitments at the University are required.

1. Provide institutional curriculum committee review/approval date for proposed distance technology program.

January 13, 2016

1. Provide documentation that proposed program has been reviewed/approved for distance technology delivery by licensure/certification board/agency, if required. [HLC review must follow ADHE review and AHECB program approval.]

n/a

1. Provide additional program information if requested by ADHE staff.

President/Chancellor Approval Date:

Board of Trustees Notification Date:

Chief Academic Officer: Date: