Program Creation Process Check List

Program Title: Associate of Arts in Geographic Information Systems Technology
Division: BSS **Proposing Faculty name(s):** K. Allison Lenkeit Meezan
Type of Program: _____ Transfer or X_____ Workforce
Type of Award:
____ Non-transcriptable certificate
____ Certificate of Achievement
____X AA/AS Degree

Documentation checklists:

Transfer documentation
_____ Catalog Description
_____ List of Courses
_____ Articulation & transfer data
_____ Identification of existing program(s) at CSU/UCs
_____ Completer Projections
_____ Identification of any additional resources needed to establish program (i.e. faculty, equipment, etc.)

Workforce documentation
X___ Catalog Description
X___ List of Courses
X___ Completer Projections
X___ Labor Market information
X___ Identification of any similar program(s) in the area
X___ Identification of any additional resources needed to establish program (i.e. faculty, equipment, etc.

Transfer/Workforce Work Group Comments/Recommendations:
Recommend Approval for PaRC's consideration.

X Work Group Signature: [signature] Date: 12/12/13

Supervising Vice President Comments/Recommendations:
This is a growing workforce need in our area, and we have existing resources.

Vice President Signature: [signature] Date: 12-16-13

Planning & Resource Committee Comments/Recommendations:

PaRC Signature: Date:

Division Curriculum Committee Comments/Recommendations:

Division CC Signature: Date:

Following the review by the listed committees, this form should be forwarded to the Office of Instruction.
12/2/13

11/18/13 cmln

FOOTHILL COLLEGE
Credit Program Narrative
Associate in Art in Geographic Information Systems Technology

Item 1. Program Goals and Objectives

The goals of this program are to graduate students who are competent users and creators of geospatial technology and ready to enter the workforce. The general education coursework required by the associate's degree provides the broad skill set of computational and communications skills necessary to succeed in the workplace. This program will prepare students to apply for professional certification (GISP) through the GIS Certification Institute (administered through the Urban and Regional Information Systems Association).

Following completion of the program, the graduate will be able to

1. Apply cartographic principles of scale, resolution, projection, data management and spatial analysis to a geographic nature using a GIS.
2. Plan, evaluate and execute an original GIS project.
3. Demonstrate the ability to communicate, both orally, in writing, and graphically, the outcome of GIS analysis.
4. Demonstrate an awareness of professional obligations to society, employers and funders and individuals as outlined in the GIS Professional Certification Institute Code of Ethics.

Item 2. Catalog Description

Geospatial technology is the unifying tool with which spatial phenomena is explored. Geospatial technology consists of Geographic Information Systems (GIS), Global Positioning Systems (GPS) and Remote Sensing (RS). The Geographic Information Systems Technology program at Foothill College provides opportunities for career preparation and lifelong learning by providing courses that meet workforce needs. Geographic Information Systems (GIS) are collections of computers, software applications, and personnel used to capture, store, transform, manage, analyze, and display spatial information. GIS skills are highly desirable in agriculture, archaeology, business, cartography, government, law enforcement, marketing, oil and gas, real estate and urban planning. The associate degree provides a solid technical background in GIS concepts and applications including cartographic concepts, database design, programming and interdisciplinary applications of the technology. The outcomes of the associate degree align with the Department of Labor geospatial competency model for geospatial careers. The degree also includes General Education and elective courses, required for graduation. Completion of the degree requires practical work experience in GIS. The Geographic Information Systems Technology degree prepares students for entry level technician jobs.

Item 3. Program Requirements

SAMPLE A.A. Administration of Justice

Requirements	Dept. Name/#	Name	Units	CSU-GE	IGETC	Sequence
Required Core (6 units)	ADMJ 50	Introduction to Justice	3	A1	Area 1	Yr 1, Fall
	ADMJ 60	Criminal Law	3	B2	Area 4	Yr 2, Spring
Two courses (6 units)	ADMJ 40	Juvenile Justice	3			Yr 1, Fall
	ADMJ 55	Procedures	3		Area 2	Yr 2, Spring
	ADMJ 61	Introduction to	3			Yr 2, Spring
	ADMJ 63	Correctional Science	3	A1		Yr 1, Summer
	ADMJ 70	Evidence	3			Yr 1, Fall/Spring
	ADMJ 80	Criminal Investigation	3			Yr 2, Fall/Spring
	ADMJ 85	Community Relations	3			Yr 1, Spring/Summer
		Criminal Trial Process				Yr 2, Fall
		Introduction to Forensics				

Two courses (6 units)	SOC 1 PSY 1 PSY 5	Principles of Sociology General Psychology Behavioral Sciences	3 3 4	D6 A1	Area 1	Yr 2, Spring Yr 1, Summer Yr 1, Fall

Requirement	Crse #	Title	Units	CSU-GE	IGETC	Sequence
Required Core	GIST 11	Introduction to Mapping & Spatial Reasoning	4			Yr 1, Winter
	GIST 12	Introduction to Geospatial Technology	4			Yr 2, Fall
	GIST 52	Geospatial Data Acquisition & Management	4			Yr 2, Winter
	GIST 53	Advanced Geospatial Technology & Spatial Analysis	4			Yr 2, Spring
	GIST 54A	Seminar in Specialized Applications of Geographic Information Systems I	2			Yr 2, Winter
	GIST 58	Remote Sensing & Digital Image Processing	3			Yr 1, Winter
	GIST 59	Cartography, Map Presentation & Design	2			Yr 1, Spring
	ITRN 50	Internship	3			Yr 2, Spring
	C S 1A	Object-Oriented Programming Methodologies in Java	5			Yr 1, Fall
Restricted Electives (select two)	C S 21A	Programming in Python	5			Yr 1, Winter
	C S 22A	Javascript for Programmers	5			
	HORT 45	Landscape Design: Computer Applications	3			
Other Electives (select one)	GEOG 1	Physical Geography	5			Yr 1, Fall
	GEOG 2	Human Geography	4			
	GEOG 10	World Regional Geography	4			

Required Major Total **43-46 units**
Completion of Foothill GE pattern 30-35 units
Electives (as needed to reach 90 units) 9-17 units
TOTAL UNITS **90 units**

Proposed Sequence:
Year 1, Fall = 9-10 units
Year 1, Winter = 10-12 units
Year 1, Spring = 2 units
Year 2, Fall = 4 units
Year 2, Winter = 6 units
Year 2, Spring = 6 units
TOTAL UNITS: 90 units

Item 4. Master Planning

11/18/13 cmln

Geographic Information Systems (GIS) and its associated 'GeoSpatial Technology' disciplines Global Positioning Systems (GPS) and Remote Sensing (RS) have been around for over 40 years, but have risen to prominence in the last 15 years with the advent of cheap and compact desktop computing and graphics capabilities and the declassification of many military supported data and hardware sources. Geospatial technologies are now widely integrated in information technology and asset management in a wide variety of disciplines. Geospatial Technology has moved from a subject of elite academic research to a technical skill required in a wide variety of fields.
Community colleges began offering GIS, GPS and RS coursework beginning about 15 years ago in response to this emergence of the technology as an in-demand CTE technology and job area. In 2008 the US Department of Labor listed Geospatial Technology as one of the three fastest growing technical fields, along with Biotechology and Nanotechnology. By 2016, the US Department of Labor estimates that the US will need 500,000 professionals trained in Geospatial Technology.
Foothill College established a GIS certificate program in 2000, and has maintained a robust offering of courses and certificates. The program annually enrolls around 60 FTE students, and currently offers a series of courses culminating in a transcriptable Certificate of Achievement in Geography with a focus on GIS. The program has been updated to reflect current industry model curriculum. The additional certificates that are being applied for are shifted to the Geographic Information Systems Technology (GIST) department, based on feedback from the program's professional advisory board. These new certificates and associates degree will replace the existing Certificate of Achievement in GIS that is presently housed in the Geography department.

Item 5. Enrollment and Completer Projections

Each course has 20-35 students per course. The number of projected completers per year is 30 graduates. These figures are based on the number of students completing certificates between the years 2006 through 2012. The economy and job availability has a direct affect on enrollment. Many local employers hiring in Geospatial Technology are in the public sector which has been greatly affected by the recent economic downturn. However, many program graduates are interested in using their skills as a vehicle to move to other regions of the state and country where even in the current economy, there is a very high demand for professionals with Geospatial Technology skills.
Current employment and projections show that "green technology" trades such as Geospatial Technology are recovering faster than the local economy as a whole. According to EMSI, between 2012 and 2015 there are projected to be 511 jobs that require Geospatial Technology skills locally, and 1490 state-wide.

		Year 1		Year 2	
Course #	Course Title	Annual Sections	Annual Enrollment	Annual Sections	Annual Enrollment
GIST 11	Introduction to Mapping & Spatial Reasoning	new for 2013	N/A	N/A	N/A
GIST 12	Introduction to Geospatial Technology	2	46	2	48
GIST 52	Geospatial Data Acquisition & Management	1	24	1	25
GIST 53	Advanced Geospatial Technology & Spatial Analysis	new for 2014	N/A	N/A	N/A
GIST 54A	Seminar in Specialized Applications of Geographic Information Systems I				
GIST 58	Remote Sensing & Digital Image Processing	1	28	1	25
GIST 59	Cartography, Map Presentation & Design	1	30	1	27
ITRN 50	Internship	new for 2013	N/A	N/A	N/A
C S 1A	Object-Oriented Programming Methodologies in Java				
C S 21A	Programming in Python				
C S 22A	Javascript for Programmers				
HORT 45	Landscape Design: Computer				

	Applications				
GEOG 1	Physical Geography				
GEOG 2	Human Geography				
GEOG 10	World Regional Geography				

Item 6. Place of Program in Curriculum/Similar Programs

There are currently no similar programs at Foothill College. This program fulfills a need expressed by the industry advisory board. This program is aligned with national standards and as such will allow students to move between it and other statewide programs that also follow the national model curriculum standards.

The program will use college computer teaching labs and open computer labs for students to work in lab time and outside of class. This program builds upon the existing GIS certificate program with updated, industry modeled curriculum and will make more productive use of existing computer laboratory facilities in the college.

Item 7. Similar Programs at Other Colleges in Service Area

There are no other colleges within reasonable commuting distance that offer a similar program. Diablo Valley College (65 miles away) is the only other regional college that offers an associate degree in GeoSpatial Technology. Statewide, Geospatial Technology associate degrees are offered at American River College, Columbia College, Diablo Valley College, Los Angeles Trade Technical College, Mt. San Jacinto College, San Diego Mesa College and Santa Rosa Junior College. The Geospatial Technology program at Foothill has worked closely with the GIS programs at Diablo Valley College and City College of San Francisco (the only two regional colleges with similar programs) through the Bay Area Automated Mapping Association (BAAMA), the regional professional body, to insure that the programs complement each other.

Summary of the Foothill College GIS Program Advisory Board recommendations for curriculum updates

The advisory board is comprised of members of local public agencies and private companies that do Geospatial –related work. The advisory board has representatives from the Bay Area Automated Mapping Association (BAAMA), the regional professional association.

List of Members of Advisory Committee

The advisory committee for the Foothill Geospatial Technology program is as follows:

Casey Cleve – GIS Specialist : Mid Peninsula Regional Open Space District
Garrett Dunwoody – Geospatial Program Manager: San Mateo County
John Falkowski – GIS Analyst: Santa Clara County Parks
Christine Frost – GIS Manager: City of Fremont
Jeff Hobbs – IT Manager, GIS & Web Technologies: San Jose Water Company
Bruce Joffe – President, GIS Consultants
Wei Luo – Chief GIS Strategist: Google
Alan Rich – GIS Manager: City of Milpitas
John Thayer – GIS Manager: City of Palo Alto
Maegen Leslie Torres – GIS Consultant: Green Info Network
Allison Lenkeit Meezan – Foothill College GIS Program Advisor, Foothill College

Recommendations of Advisory Committee

The proposed AA curriculum was reviewed by the advisory board in draft form at their April 2012 meeting. Comments were made, and a revised version (submitted here) was approved on January 31, 2013. The AA degree proposal was first reviewed by the advisory committee at their April 2012 meeting. Primary suggestions included the addition of an introduction to map reading class. This suggestion resulted in the class GIST11: Introduction to Mapping and Spatial Reasoning. A second suggestion was made to incorporate more computer programming and basic web/html skills. However the college recently dissolved its computers department. Some classes have been brought back, specifically Java and Python. Both of these programming classes have been included in the AA.

The final draft of the application was sent to the advisory board in January 2013. Due to college funding shortfalls, a full meeting of the board was not able to be held. The committee responded its approval.

COUNTY OF LOS ANGELES
CHIEF INFORMATION OFFICE
Los Angeles World Trade Center
350 South Figueroa Street, Suite 188
Los Angeles, CA 90071

RICHARD SANCHEZ
CHIEF INFORMATION OFFICER

Telephone: (213) 253-5600
Facsimile: (213) 633-4733

February 20, 2013

To: Whom it may Concern

From: Mark Greninger
Geographic Information Officer

Subject: **Support for New Credit Program: AA in Geographic Information Systems Technology (GIST)**

This letter supports the *Application for Approval for the New Credit Program for an AA in Geographic Information Systems Technology (GIST).*

A recent analysis by Google of the global geo services industry has determined that geo services employ more than 500,000 people and is worth over $73 billion in the United States.

For the full Google article see this link:
http://googleblog.blogspot.com/2013/01/mapping-creates-jobs-and-drives-global.html

The County of Los Angeles is a good example of the growth of GIS usage within government. A 2010 analysis found over 200 staff and a budget of over $30 million dedicated to GIS technologies, a growth of over 20% since 1995.

A key factor in success of the County's GIS programs is recruiting and retaining talented GIS personnel. To that end, the County recently approved the creation of a brand new GIS classification series that recognized GIS as a dedicated field, and requires knowledge, skills, and abilities specific to GIS technologies. These classifications are being used by other government jurisdictions as models for developing their own GIS series.

To see information about the County classifications, click this link:
http://egis3.lacounty.gov/eGIS/2012/08/02/los-angeles-county-releases-gis-classifications-and-specifications-job-descriptions/

The creation of educational opportunities for students to learn skills required to become a GIS professional will enhance the ability of the County to hire qualified staff to support the County's mission to serve the residents of Los Angeles County. The coursework that is included in the *AA in Geographic Information Systems Technology (GIST)* will provide the skills and experience that will enable the County to hire and benefit from the rapidly growing field of geospatial technologies.

Sincerely,

Mark Greninger
Geographic Information Officer
County of Los Angeles

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Feel the Energy!

432.685.7203
Fax 432.686.1600

300 N. Loraine
P.O. Box 1152
Midland, TX 79702

February 20, 2013

K. Allison Meezan GISP
Geography & Geographic Information Systems
Foothill College
12345 El Monte Road
Los Altos Hills, CA 94022

Subject: Support for New Credit Program: AA in Geographic Information Systems Technology (GIST)

Dear Allison,

I am writing this letter of recommendation and support for your application for the *New Credit Program: AA in Geographic Information Systems Technology (GIST)* for Foothill College, and it is a pleasure for me to do so.

As a GIS Manager of a 100, 000+ Texas municipality, I have reason to carefully evaluate the people applying for employment with my Enterprise GIS, and I have special reason to examine their geospatial education. This position, as well as an intimate relationship with the GeoTech Center over the last five years as a member of their Advisory Committee, and being a member of the Board of Directors of the GIS Certificate Institute, has given me the opportunity to become very familiar with a variety of geospatial curricula around the US.

I am particularly impressed with your proposed program for several reasons. Among them is the fact that you have centered your curriculum on the geospatial model produced by the GeoTech Center, the premier Advocate for high-quality geospatial education at the community college level. You have also recognized the importance of and have incorporated into your program GIS, GPS, and Remote Sensing instruction, all important and growing factors in today's geospatial industry.

However good the above reasons are, my real excitement and endorsement come from the threefold goal you have set for this Program. You intend to produce students who are competent in the use of geospatial technology, who are prepared to enter the workforce, and who are prepared to pursue professional certification (GISP). In short, you are creating students who will be employable and pursuing a career, not 'just' a job in a growing industry. The difference between a job and a career is the difference between a person simply getting a paycheck and one who is excited about his or her career, motivated, and happy. That is the

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300 N. Loraine
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Midland, TX 79702

kind of employee I seek, and your program is one of those which can produce that person who is an asset to me or any other organization with whom they find employment. That focus will be the key to your success with this program!

Allison, I wish you the best with your program and its implementation.

Sincerely,

Bill Hodge GISP
GIS Division Manager, City of Midland, TX

Exelis Visual Information Solutions
4990 Pearl East Circle
Boulder, CO 80301

303 786 9900
303 786 9909 Fax
www.exelisvis.com

EXELIS

Visual Information Solutions

February 21, 2013

Ms. Allison Meezan
Foothill College
12345 El Monte Road
Los Altos Hills, CA 94022

Dear Ms. Meezan,

As a leading Geospatial Solutions provider in the US and throughout the world, Exelis Visual Information Solutions has insight into the value that a well trained geospatial workforce can offer to the public and private marketplace.

Programs such as the one proposed by Foothill College, serve a critical need for training and informing geospatial professionals, who are essential to the continued health of the geospatial industry. We hope to see your GIST program training future geospatial analysts to solve defense, intelligence and environmental monitoring challenges facing our nation, and we support you in this endeavor.

Sincerely,

Brian Farr

Exelis Visual Information Solutions
Academic Programs Manager

K. Allison Lenkeit Meezan, GISP

Geography & Geographic Information Systems

Foothill College

12345 El Monte Road

Los Altos Hills, CA 94022

Dear Ms. Meezan:

It is my distinct pleasure to provide a strong letter of support for your GIS Technician AA degree application to the California Postsecondary Education Commission. I have been involved with you in this effort for the past two years and can testify first-hand to the careful due-diligence you have performed to meticulously align your proposed GIS courses with real-world industry standards, both in California specifically, and the US in general. As one of the few GISP certified professional, who is also a faculty member, you especially know the importance of aligning the curriculum with the industry-defined needs for their workforce.

I have reviewed your proposed course syllabi and supporting document in detail. I find it reflects the latest in the Geospatial Technology Industry, as defined by the Department of Labor Geospatial Technology Competency Model (GTCM). You are certainly aware of these standards since you participated in several of our national workshops whereby we met with geospatial technology faculty from colleges and universities nationwide to develop a consensus on which of the Knowledge, Skills, and Abilities (KSA) identified in the GTCM belong in which courses and the depth to which they should be covered. You have always been one of the most serious students of the art of deep-dive into the curriculum—industry alignment movement. I have all confidence these proposed course descriptions will become the de-facto standard in California. They are so good; in fact, we plan to use them on our own curriculum resource clearinghouse for dissemination nationwide.

Cordially,

Dr. Phillip Davis

Principle Investigator and Director

National Geospatial Technology Center of Excellence (GeoTech Center)

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