BASIC PROGRAM INFORMATION

Program Review is about documenting the discussions and plans you have for improving student success in your program and sharing that information with the college community. It is also about linking your plans to decisions about resource allocations. With that in mind, please answer the following questions.

Program/Department Name: Geospatial Technology

Division Name: Business and Social Sciences

Please list all team members who participated in this Program Review:

Name	Department	Position
K. Allison Lenkeit Meezan	Geograhy/GIS	Faculty
Michelle Palma	Geography/GIS	Faculty

Number of Full Time Faculty: 2 **Number of Part Time Faculty:** 3

Please list all existing Classified positions: *Example: Administrative Assistant I*

SECTION 1: PROGRAM REFLECTION

1A. Program Update: Based on the program review data, please tell us how your program did last year. We are particularly interested in your proudest moments or achievements related to student success and outcomes.

The Geospatial Technology department has greatly increased its on campus presence with the addition of a second full time faculty member in 2014-15. In addition, the program has added (as of Fall 2015) three new transcriptible certificates and an AS degree. The program has already seen an increase in the number of trancriptible certificates awarded (12), and it is the hope that this will increase further with a targeted effort of faculty advising and engagement with the counseling division to streamline the application process for students.

The program has increased its unduplicated headcount (54%), enrollment (77%) and WSCH (88%). While the program remains small (18 FTES in 2014-15) it has grown (88%) in a year. The role of the Geospatial Technology program as a CTE program training students for the regional job market dictates that it remain small so that supply does not outpace demand. However, the program will continue to emphasize certificate completion (students are often hired or gain sufficient skills to advance in their current job prior to completing the program) and increase success rates, particularly among targeted groups.

The Geospatial Technology program remains highly engaged with the regional professional Geospatial community by actively participating in the BayGeo professional group, networking with employers to secure student internships, and building connections with the regional programs that offer Geospatial Technology education and training: San Jose State, San Francisco State, City College of San Francisco Extended Education program, Stanford and Berkeley. Foothill remains an important piece of the regional GIS education spectrum: we are the only institution in the region to offer a comprehensive GIS training

program at the community college level.

1B. Program Improvement: What areas or activities are you working on this year to improve your program? Please respond to any feedback from the supervising administrator from last year's program review.

The Geospatial Technology program is in its 15th year at Foothill College. In that time, the program has maintained a steady, and robust enrollment. However, one of the major challenges that has faced the program is getting students who have completed the entire program curriculum to apply for their transcriptible certificate. In past years, approximately 70% of the students completing the program have been awarded a certificate. An unofficial survey of students revealed that the roadblocks were primarily in seeing an academic counselor to complete the paperwork associated with applying for the certificate. In 2014-15, the GIST faculty worked with counseling to bring a counselor to the evening GIST core class to meet with students and fill out required paperwork for the transcriptible certificate. The result was an increase of nearly 250% in the number of certificates awarded between 2013 and 2015.

A second challenge faced by the Geospatial Technology program has been that students often would not complete the program and receive their certificates because they gained sufficient skills to advance in their job or were hired prior to completing their coursework. To address this, the faculty has built a series of tiered certificates under the advisement of the program's professional advisory board. The certificates and AS degree were approved by the State Chancellor's office in June 2015. The first certificate can be earned with 22 quarter units and is aimed at students who want to use GIS as a supporting tool in their present career. The third certificate (46 quarter units) is targeted at students who hope to build a career as a GIS technician.

1C. Measures of Success: What data or information will you use to measure your success (e.g. student success rates, changes in student or program learning outcomes)?

The student success rates are the primary metric used to measure program success. The success rates have remained steady at 87-88%.
The Student Learning Outcome data has not provided a consistent or especially meaningful pattern of assessment, primarily because prior to hiring a second full time faculty member for 2014-15, the department was primarily adjunct (76% of course offerings) and adjunct faculty were not active in participating in the SLO process, thus the data collected was not fully representative of department outcomes. With the addition of a second full time faculty member to share department duties and increase the fraction of classes taught by full time faculty, it is the hope of this department to evolve the SLO process into a more meaningful reflection and assessment of teaching and learning.

1D. EMP Goal: The 2015-2020 Educational Master Plan (EMP) includes the following goal:
"Create a culture of equity that promotes student success, particularly for underserved students."

Based on the program review data, tell us some of the things your program will be doing this year to support this goal. You will be asked to report on any accomplishments on your next comprehensive program review.

The Geospatial Technology program promotes a culture of equity and inclusion. The faculty are keenly aware of student learning differences and barriers to success that reach beyond the classroom and strive to build a classroom environment that emphasizes inclusion, as well as reaching out to all students to make them aware of college support services that can provide them with the foundation tools necessary for success. The program reports a consistent high level of success among nearly all ethnic

groups, though the program numbers are small, making broad generalizations of success among targeted groups challenging. The overall success rate among targeted groups is 81%.

SECTION 2: PROGRAM OBJECTIVES & RESOURCE REQUESTS

2A. New Program Objectives: Please list any new objectives (do not list your resource requests).

Program Objective	Implementation Timeline	Progress Measures
Example: Offer 2 New Courses to Meet Demand	*Winter 2016 Term*	*Course Enrollment*
(1) Provide up-to-date software	2016	165 FTEF

2B. Resource Requests: Using the table below, summarize your program's unfunded resource requests. Refer to the Operations Planning Committee (OPC) website for current guiding principles, rubrics and resource allocation information.

Resource Request	$	Program Objective (Section 2A)	Type of Resource Request			
			Full-Time Faculty/Staff Position	One-Time B-Budget Augmentation	Ongoing B-Budget Augmentation	Facilities and Equipment
Renew site licese to ESRI ArcGIS software through the CCC Foundation office	$3500	1	☐	☐	☒	☐
Purchase updated version of remote sensing software (IDRISI)	$3500 for 30 seats	1	☐	☒	☐	☐
			☐	☐	☐	☐

2C. Unbudgeted Reassigned Time: Please list and provide rationale for requested reassign time.

$9,600 for duties associated with department chair. These include hiring and mentoring adjunct faculty (2 hours per month), curriculum development and revision (1 hours per month), department scheduling (1 hours per month), coordinating department SLOs (1 hour per month), mentoring and advising program students (5 hours per month), participating in professional organizations and outreach to build internship opportunities for students (5 hours per month) and writing the department program review (1 hour per month). This is approximately 170 hours annually, or based on Appendix G of the Agreement $9,600

SECTION 3: LEARNING OUTCOMES ASSESSMENT SUMMARY

3A. Attach 2014-2015 Course-Level Outcomes: Four Column Report for CL-SLO Assessment from TracDat. Please contact the Office of Instruction to assist you with this step if needed.

3B. Attach 2014-2015 Program-Level Outcomes: Four Column Report for PL-SLO Assessment from TracDat. Please contact the Office of Instruction to assist you with this step if needed.

SECTION 4: FEEDBACK AND FOLLOW-UP

This section is for the Dean/Supervising Administrator to provide feedback.

4A. Strengths and successes of the program as evidenced by the data and analysis:

GIST as a program is in a growth mode- they almost doubled enrollment last year. Twelve Certificates of Achievement were awarded in 14/15 which is an increase from previous years. With continued reliance on maps and mapping software, GIST fills a gap in the education market for workers who wish to upskill, learn a new skill and are not degree seekers per se. We are the only community college in the area offering these courses and this program is poised to grow.

4B. Areas of concern, if any:

We need to continuously market and promote this program both to industry and to high school students. That said, I recognize that marketing is a continued effort between the marketing department and faculty and the added workload on faculty is not inconesequential. We need to explore ideas that can be sustained without immense efforts on the part of faculty.

4C. Recommendations for improvement:

* Meeting with both counseling and marketing departments to help develop an understanding for this major.
* Explore the possibility of advising hours by faculty to students to increase student interest in degree attainment.

4D. Recommended Next Steps:

☒ Proceed as Planned on Program Review Schedule
☐ Further Review / Out-of-Cycle In-Depth Review

Upon completion of Section 4, the Program Review document should be returned to department faculty/staff for review, then submitted to the Office of Instruction and Institutional Research for public posting. Please refer to the Program Review timeline.

Unit Course Assessment Report - Four Column

Foothill College

Department - Geospatial Technology (GIST)

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Department - Geospatial Technology (GIST) - GIST 11 - INTRODUCTION TO MAPPING & SPATIAL REASONING - Evaluate cartographic products in terms of their aesthetic design and ability to communicate information. - Evaluate cartographic products in terms of their aesthetic design and ability to communicate information. (Created By Department - Geography (GEOG)) **Course-Level SLO Status:** Active	**Assessment Method:** As a group, collect 6 or more maps that display the same information in different ways. Possible theme ideas include: College campuses Light rail/subway system maps City trash collection days Zoos City tourist maps Regional political maps such as 'Europe' or 'The Middle East' Amusement parks Parks or open space areas under different jurisdictions (eg. national park, state park, county park) Whole earth topography Create a 10 minute presentation that compares the effectiveness of the different maps. Consider the scale, resolution, coordinate systems, data sources, accuracy and the map's purpose/audience. Which maps are most or least effective for their intended purpose? Do any maps employ especially innovative or effective cartography? **Assessment Method Type:** Class/Lab Project **Target for Success:** Students successfully assess maps in terms of the criteria outlined on their assignment		
Department - Geospatial Technology (GIST) - GIST 11 - INTRODUCTION TO MAPPING & SPATIAL REASONING - Describe how to	**Assessment Method:** Students describe how to access different sources of data and describe and discuss	03/12/2015 - Students were asked a critical thinking question regarding creating data with different geographic technologies. The question	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
access different sources of data, describe the process of creating data with different geographic technologies, and discuss the fundamental concepts of data quality - Describe how to access different sources of data, describe the process of creating data with different geographic technologies, and discuss the fundamental concepts of data quality (Created By Department - Geography (GEOG)) **Course-Level SLO Status:** Active	the process of creating data with different GIST. **Assessment Method Type:** Discussion/Participation	specifically addressed the concept of data quality. Of the 16 students who completed the assessment, 12 completed it at an 'Excellent' level indicating that they fully understood the importance of meta data and data documentation, and accurately identified several sources of good quality data. 3 students completed the assessment at a 'Competent' level, which indicated that there were gaps in their understanding of the role of meta data in data documentation and/or they were not successful in accurately identifying sources of high quality data. One student completed the assessment at an 'Adequate' level. This students was able to define 'metadata' but was not able to apply the concept to data quality standards. This student was able to identify sources of accurate data, but was unable to explain why the data was a good source. **Result:** Target Met **Year This Assessment Occurred:** 2014-2015 **Resource Request:** Access to classroom with laptop computers with internet access so that students can engage in active learning with digital data sources. **GE/IL-SLO Reflection:** This assessment is related to 'Critical and Analytical Thinking' because it required students to access multiple data sources and assess their validity.	
Department - Geospatial Technology (GIST) - GIST 12 - INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEMS (GIS) - SLO 1 - Definition - Define a Geographic Information System. (Created By Department - Geography (GEOG)) **Course-Level SLO Status:**	**Assessment Method:** Exam question in which a student is asked to define a GIS **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** Student is able to define a GIS	11/19/2015 - Short answer question was included on midterm exam "Define 'Geographic Information System' (GIS)". A student received a score of 'excellent' if they (1)noted that this was a computerized or computer based system, and (2) used the following terms or synonyms in their answer: 'store data', 'analyze data', 'display data',	11/19/2015 - As the target was met, instructors will continue to teach Geospatial technology with innovative and engaging pedagogy.

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Active		and 'spatial data'. 23 students were assessed. 13 scored 'excellent'. Five students earned a score of 'good' by including 3 of the above elements. One scored 'fair' by including 1-2 of the above elements. One scored 'poor' by attempting an answer that referenced computers and maps. Three students did not answer the question. **Result:** Target Met **Year This Assessment Occurred:** 2014-2015 **Resource Request:** Continue to provide computer labs with up to date desktop computers and a site license to ArcGIS software as well as administrative support to run the computer lab. **Resource Request:** Continue to provide computer labs with up to date desktop computers and a site license to ArcGIS software as well as administrative support to run the computer lab. **GE/IL-SLO Reflection:** This SLO is related to the Computation IL-SLO because it assesses students understanding of computer software tools.	
Department - Geospatial Technology (GIST) - GIST 12 - INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEMS (GIS) - SLO 2 - Vector and raster GIS - Identify, compare and Contrast vector and raster GIS. (Created By Department - Geography (GEOG)) **Course-Level SLO Status:** Active	**Assessment Method:** A critical thinking question in which as student is asked to compare and contrast vector and raster GIS **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** Student is able to successfully compare and contrast vector and raster GIS		
Department - Geospatial Technology (GIST) - GIST 12 - INTRODUCTION TO	**Assessment Method:** Student undertakes a GIS project in which	01/13/2015 - 18 students were administered this	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
GEOGRAPHIC INFORMATION SYSTEMS (GIS) - SLO 3 - Cartographic principles - Apply cartographic principles of scale, resolution, projection, data management and spatial analysis to a geographic nature using a GIS. (Created By Department - Geography (GEOG)) **Course-Level SLO Status:** Active	they are asked to apply cartographic principles of scale, resolution, projections, data management and spatial analysis **Assessment Method Type:** Class/Lab Project **Target for Success:** Student successfully applies cartographic principles of scale, resolution, projections, data management and spatial analysis using a GIS	SLO assessment as their final project. 13 received a score of 5, three received a score of 4 and two received a score of 2. The overall reflection from this assessment is that the outcome was largely successful. The changes that the instructors would make to increase success include more individual check-ins with students in planning their projects. **Result:** Target Met **Year This Assessment Occurred:** 2014-2015	
Department - Geospatial Technology (GIST) - GIST 52 - ADVANCED GEOGRAPHIC INFORMATION SYSTEMS (GIS) - SLO 1 - Data conversion - Demonstrate the process of converting analogue data to digital data for us in GIS. (Created By Department - Geography (GEOG)) **Course-Level SLO Status:** Active	**Assessment Method:** Student is asked to demonstrate how to convert analogue data to digital data using a GIS **Assessment Method Type:** Class/Lab Project **Target for Success:** Student successfully converts analogue data to digital data using a GIS		
Department - Geospatial Technology (GIST) - GIST 52 - ADVANCED GEOGRAPHIC INFORMATION SYSTEMS (GIS) - SLO 3 - GIS databases - Create new GIS databases. (Created By Department - Geography (GEOG)) **Course-Level SLO Status:** Active	**Assessment Method:** Student is asked to create a new GIS database **Assessment Method Type:** Class/Lab Project **Target for Success:** Student creates a new GIS database that functions correctly	07/14/2015 - This class was taught by an adjunct instructor and no SLO assessment was conducted. **Result:** Target Met **Year This Assessment Occurred:** 2014-2015 **GE/IL-SLO Reflection:** SLO is mapped to IL in Tracdat	07/14/2015 - Encourage adjunct instructors to conduct SLOs
Department - Geospatial Technology (GIST) - GIST 54A - SEMINAR IN SPECIALIZED APPLICATIONS OF GEOGRAPHIC INFORMATION SYSTEMS I - SLO 1 - GIS applications - Discuss the diverse applications of Geographic Information Systems. (Created By Department -	**Assessment Method:** Student summarizes the diverse applications of GIS in multiple reaction papers **Assessment Method Type:** Essay/Journal **Target for Success:**	07/14/2015 - This class was taught by an adjunct instructor and no SLO assessment was conducted. **Result:** Target Met **Year This Assessment Occurred:**	07/14/2015 - Encourage adjunct instructors to conduct SLOs

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Geography (GEOG)) **Course-Level SLO Status:** Active	Student demonstrates awareness of the diverse applications of GIS	2014-2015 **GE/IL-SLO Reflection:** SLO is mapped to IL in Tracdat	
Department - Geospatial Technology (GIST) - GIST 58 - REMOTE SENSING & DIGITAL IMAGE PROCESSING - SLO 1 - Definition - Define remote sensing. (Created By Department - Geography (GEOG)) **Course-Level SLO Status:** Active	**Assessment Method:** Student is asked to define remote sensing **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** Student successfully defines remote sensing		
Department - Geospatial Technology (GIST) - GIST 58 - REMOTE SENSING & DIGITAL IMAGE PROCESSING - SLO 2 - Remote sensing applications - Discuss the applications of remote sensing with Geographic Information Systems (GIS) (Created By Department - Geography (GEOG)) **Course-Level SLO Status:** Active	**Assessment Method:** Student is asked to discuss how remote sensing is used in the context of GIS **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** Student is able to successfully discuss how remote sensing is used in the context of a GIS	07/14/2015 - This class was taught by an adjunct instructor and no SLO assessment was conducted. **Result:** Target Met **Year This Assessment Occurred:** 2014-2015 **GE/IL-SLO Reflection:** SLO is mapped to IL in Tracdat	07/14/2015 - Encourage adjunct faculty to conduct SLOs
Department - Geospatial Technology (GIST) - GIST 58 - REMOTE SENSING & DIGITAL IMAGE PROCESSING - SLO 3 - Electromagnetic spectrum and remote sensing - Discuss the physical basis for remote sensing in terms of the electromagnetic spectrum. (Created By Department - Geography (GEOG)) **Course-Level SLO Status:** Active	**Assessment Method:** Student is asked to discuss the physical basis for remote sensing in terms of the electromagnetic spectrum **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** Student is able to discuss the physical basis for remote sensing in terms of the electromagnetic spectrum		
Department - Geospatial Technology (GIST) - GIST 59 - CARTOGRAPHY, MAP PRESENTATION & DESIGN - SLO 1 - Map creation - Create maps that demonstrate an understanding of the fundamentals of composition, color, and symbol selection at	**Assessment Method:** Student is asked to create a map that applies the fundamentals of composition, color, and symbol selection at different scales, as discussed in the class	07/14/2015 - This class was taught by an adjunct instructor and no SLO assessment was conducted. **Result:** Target Met	07/14/2015 - Encourage adjunct instructors to conduct SLOs

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
different scales. (Created By Department - Geography (GEOG)) **Course-Level SLO Status:** Active	**Assessment Method Type:** Class/Lab Project **Target for Success:** Student is able to successfully create a map that applies the fundamentals of composition, color, and symbol selection at different scales, as discussed in the class	**Year This Assessment Occurred:** 2014-2015 **GE/IL-SLO Reflection:** SLO is mapped to IL in Tracdat	

Unit Assessment Report - Four Column

Foothill College

Program (BSS-GIST) - Geographic Information Systems Analyst CA

PL-SLOs	Means of Assessment & Target / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Program (BSS-GIST) - Geographic Information Systems Analyst CA - 1 - Interpret spatially distributed data and draw valid conclusions by using maps, graphs and/or Geographic Information Systems (GIS) **SLO Status:** Active			
Program (BSS-GIST) - Geographic Information Systems Analyst CA - 2 - Apply cartographic principles of scale, resolution, projection, data management and spatial analysis to a problem of a geographic nature using a GIS **SLO Status:** Active	**Assessment Method:** Student will be placed in 6 hour per week internship after consultation with instructor. Student must have successfully completed GIST 12 and 52 and have completed or be concurrently enrolled in GIST 53, 58 or 59. Successful completion of the internship will indicate that students **Assessment Method Type:** Field Placement/Internship **Target:** At least 80% of students should be successful. Successful (equivalent to an A, B, or C score) = Student successfully demonstrated the skills in this PLO by meeting targets as outlined by internship host. Unsuccessful (equivalent to a D or F) = Student did not have the skills required to meet targets outlined by internship host.	12/02/2015 - Successful: 16 students (100%). Unsuccessful: 0 students (0%). Total sample size: 16 students. **Result:** Target Met **Year This Assessment Occurred:** 2014-2015 **Resource Request:** To maintain the high quality of this program, the department requests $3500 to renew the site licese to ESRI ArcGIS software through the CCC Foundation office AND $3500 to purchase updated version of remote sensing software (IDRISI).	12/02/2015 - The internship is a successful tool to measure this PLO and will be used again in the future.