Foothill has amazing faculty, staff, administrators, and programs. Program Review is about documenting the discussions and plans you have for sustaining and improving student success in your program. It is also about linking your plans to decisions about resource allocations. Thank you for taking the time to review your program and sharing your findings with the college community!

Program Review Committee Members for 2017-18:

Administrators	Andrew LaManque	
	Paul Starer	
	Teresa Ong	
Faculty	Carolyn Holcroft	
	Bruce Mc Leod	
	K Allison Meezan;	
Classified Staff	Craig Gawlick	
	Vacant	
	Vacant	
	Elaine Kuo (Ex Officio)	

Let us know how we can help you!
https://foothill.edu/staff/irs/programplans/index.php

BASIC PROGRAM INFORMATION

Department Name: Geospatial Technology (GIST)

Division Name: Business and Social Sciences

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

Name	Department	Position
K. Allison Lenkeit Meezan	GEOG/GIST	Faculty

Number of Full Time Faculty: 1 **Number of Part Time Faculty:** 5

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

none

List all programs covered by this review* and indicate the program type:

Geospatial Technology	☒ Certificate	☒ AA / AS	☐ AD-T	☐ Pathway
	☐ Certificate	☐ AA / AS	☐ AD-T	☐ Pathway
	☐ Certificate	☐ AA / AS	☐ AD-T	☐ Pathway
	☐ Certificate	☐ AA / AS	☐ AD-T	☐ Pathway
	☐ Certificate	☐ AA / AS	☐ AD-T	☐ Pathway

*Not sure? Check: https://foothill.edu/programs/ and click to sort using the "Areas of study/Divisions" button Current pathways at Foothill College include: ESLL, NCEL, ENGL pathways (ENGL 209-110-1A; ENGL 209-1A; ENGL 1S/1T); MATH pathways (NCBS 401A/B; MATH 235-230-220-105; MATH 217-57).

SECTION 1: PROGRAM ENROLLMENT, PRODUCTIVITY, AND COMPLETION

Data will be posted on Institutional Research's website for all measures except non-transcriptable completion.

1A. Analysis of Transcriptable Program Completion Data: Please use your data to complete the following table.

Transcriptable Program	Five-year trend in degrees/certificates awarded	Comments
GIST AS	The AS degree in GIST is new. In 2016-17, five degrees were awarded.	These are the first AS degrees ever awarded in this discipline. The program had fourteen students complete the sequence of courses to earn degrees or transcriptable certificates. However, many of the students who were eligible to earn a degree or certificate did not take the additional steps to visit counseling and apply for their degree or certificate. The program has attempted to combat this by having a counselor visit the capstone class in the program to meet with students and fill out the required paperwork, however many students still had one or more pieces of documentation to supply to counseling (as they were transferring in coursework from other institutions) and they did not follow up on the process.
GIST Certificates (3)	There are three transcriptible certificates in GIST. The total number of awards for 2016-17 is eight according to the numbers provided by college institutional research. However, according to EMSI workforce data, Foothill awarded 10 certificates in 2016.	The Geospatial Technology program is in its 17th 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 the 2016-17 year, fourteen students completed all the requirements for the Certificate of Achievement III, and more completed the requirements for Certificates I and II. Anecdotal evidence for the disparity between the number of completers and the number of certificates awarded lies in the additional hurdle that students must go through to apply for their transcriptible award. As noted above, the program advisor began working with Counseling in 2014-15 to bring in a counselor to the GIST53 capstone

		class to help students fill out their paperwork. This more than doubled the number of certificates awarded. However, there are still fewer certificates awarded than eligible students.

*according to CCCApply data

1B. Non-Transcriptable Program Data: If your program offers any non-transcriptable programs, please complete the following table. Institutional Research does not track this data; each program is responsible for tracking its own data.

Non-Transcriptable Program	Comments	Five-year trend	Rationale for program
No non-transcriptible certificates			

The 2017-18 College Strategic Objectives (E^2SG) operationalize the college's 3 EMP goals and include:

> **Equity**– Develop an integrated plan; identify goals for alignment with equity, student success, and basic skills; and focus on efforts to integrate with enrollment strategies (access, retention, and persistence) to close equity gaps while increasing enrollments at the same.
> **Enrollment Growth** – Achieve more than 1.5% FTES growth at 500 productivity (+/- 25) with attention to integrating equity efforts related to enrollment, CTE, and Sunnyvale Center. Consider how the pathway/course sequence through your program is disseminated to students, and *education pathway.

*Education pathway is a having developed and published clear, structured academic program maps (suggested courses for each term) for all academic programs.

1C. Course Enrollment: Enrollment is a count of every student who received a final grade (A, B, C, D, F, P, NP, W) in your program's courses. It also serves as an indicator for program viability. Please use your program review data to examine your course enrollment trends and check the appropriate box below.

5-year Enrollment Trend: ☐ Increase ☐ Steady/No Change ☒ Decrease

Our college goal is to increase enrollment by 1.5% FTES this year. What steps might you take to increase the numbers of students enrolling in your courses? Steps might include cross department collaborations, actions to increase retention, service learning projects, support for student clubs, participation at recruitment events, examination of pre-requisites, review of assessment results, etc.

The GIST program enrollments show a 31% increase over 4 years, and a 65% increase in census enrollment. However, the program enrollments are overall down from a high of 198 in 2015-16 to 156 in 2016-17. The program moved to the Foothill College Sunnyvale center in 2016-17. Coinciding with this move was a sharp decrease in marketing and advertising exposure for the program. The GIST program is a CTE program. The majority of its courses are offered in the evenings at the Sunnyvale center.

The GIST program has two primary cohorts of students:

- Professionals seeking to gain additional marketable skills to advance in their profession (upskilling). These students make up the majority of the program (25-39 years old: 57% in 2016-17; 40+ years 23% in 2016-17)
- Transfer students. These students make up a minority of the program (under 24 was 20% of the program enrollment in 2016-17)

The program would like to increase enrollment with a two-pronged approach. First, we would like to increase marketing and outreach to the upskilling professionals. The program advisory board has noted that there is a large need in the marketplace for professionals with casual knowledge of GIS. The GIST program would like to work with the Marketing department to increase exposure of the GIST program among the tech sector that is proximate to the Sunnyvale Center. Ideas for this include hosting GIS meetup events and increasing targeted sector marketing among city and public safety workers. The program worked with Marketing last year to build a brochure for the program. The next step is for the program to receive more outreach and media marketing exposure.

The second area that the program would like to target to increase enrollment is among 18-24 year old transfer students. The program has already worked to increase exposure among this cohort on the main Foothill campus by offering GIST 11 'Introduction to Mapping & Spatial Reasoning, as a daytime class. GIS skills are highly sought after among academic researchers in the biological and social sciences at four year schools, and GIS is a powerful tool for students to conduct discipline specific research. By incorporating GIS into other Geography classes and promoting GIST 11, enrollments in the GIST program among the 18-24 year old cohort has increased from 7% in 2015-16 to 20% in 2016-17.

1E. Productivity: Productivity is a measure of students served per full-time equivalent faculty and is a factor in program viability. Please use your program review data sheet to examine your productivity trends and check the appropriate box below.

5-year Program Productivity Trend: ☐ Increase ☐ Steady/No Change ☒ Decrease

The college productivity goal is **500 (+-25)**. There are many factors that affect productivity (i.e. seat count/ facilities/accreditation restrictions, curriculum, etc.). Please discuss factors that may be affecting your program's productivity trends and any plans you have for addressing the trends, especially if they are declining.

The GIST program has a low possible productivity because nearly all of the classes in the program are lab classes with limited seat counts. The four-year trend in productivity in the program is down, from 349 to 248. This is partly due to the funneled nature of the program. Students must take the introductory courses before they can proceed to the advanced courses. In the past several years there has been a pattern of attrition in the introductory course, GIST 12. This has limited the possible enrollment in the later program courses. This pattern of attrition will be discussed further in the Student Success section below.

It is the long-term goal of the GIST program to increase enrollment in GIST 11, Introduction to Mapping & Spatial Reasoning, which is not a lab science class, and therefore does not have limited enrollment. It is also a goal of this program to put this course online to expand the market for it.

SECTION 2: COURSE COMPLETION & STUDENT ACHIEVEMENT

2A. Institutional Standard: This percentage represents the lowest course completion (success) rate deemed acceptable by the College's accrediting body (ACCJC). The institutional standard during the year for which this program review is being written (2016-17) is **57%**.
Please check the appropriate box:

Program Level Course Completion: ☒ Above Standard ☐ At Standard ☐ Below Standard

If your program's course completion (success) rates are below the institutional standard (see above), please discuss your program objectives aimed at addressing this.

The success rates for GIST classes as a whole is 77%, and 79% among targeted groups. While the overall success rate is high, there is one course that has a pattern of very low completion/success. GIST 12, Introduction to Geospatial Technology, showed a drop in success from 76% to 59%.

In the past year, Apple, Google, Facebook and other regional employers have included GIS skills on job postings. Apparently, some students enroll in GIST and feel that they have gained enough GIS skills after 3 weeks and drop. GIST 12 has a pattern of a large number of students who either withdraw or 'disappear' after 3-5 weeks. It has been the anecdotal experience of the instructors for this class that many of these students are upskilling reentry students who want to learn a little about GIS, but do not want to commit to a four-unit academic class and so drop or simply stop showing up, triggering an instructor drop.

One possible solution for this that the department is exploring is to split GIST 12 (a four-unit class) into GIST 12A (a 1 unit class) followed by GIST 12B (a three-unit class). These classes would be offered sequentially over the quarter (with GIST 12B starting in week 4). This could reduce the number of students dropping the 12 week, four-unit class after a few weeks when they have gained some basic experience with GIS. Instead it would provide students with an option to gain rudimentary GIS skills without committing to a full four-unit course.

2B. Institutional Effectiveness (IEPI) Goal: This percentage represents an aspirational goal for course completion (success) rates; all programs should strive to reach/surpass this goal. The IEPI goal for which this program review is being written (2016-17) is **77%**.
Please check the appropriate box:

Program Level Course Completion: ☒ Above Goal ☐ At Goal ☐ Below Goal

If your program's course completion (success) rate is **ABOVE** the IEPI goal, please share your thoughts about why/how this is so (we hope to learn from your effective practices!).

As discussed above, the GIST program overall has a high success rate. The overall success rate for the program is 77%, with classes late in the sequence of the program showing success rates of 94% (GIST 52) and 84% (GIST53). The success of these classes is largely due to the cohort nature of the program. The students provide support to each other and build a community.

2C. Course Success Demographics: Please examine the **"**Disproportionate Impact data by year**"** shared with your department and discuss actions you are taking, or plan to take, to address any achievement disparities identified in your program. If you are uncertain about actions faculty can take, please take a look at Appendix A.

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 overall success rate for GIST is 77%. Most of the disproportionately impacted groups showed success rates close to this value. The number of students enrolled in the program is low, so for some groups, the statistics are less meaningful (50% success rate for disabled students 1 of 2; 67% success for African American students 4 of 6; and 67% success for Filipino students, 2 of 3).

Of note, the success rates for Veterans is 100% (5 of 5) and Latino, 82% (28 of 34).

Compared to the regional workforce data provided by EMSI, the Foothill program is a much more equitable representation of the population than the GIST industry as a whole. According to EMSI, the GIST industry is 17% female and 27% non-white in our region, while the Foothill program shows an enrollment of 53% female and 61% non-white.

The program will continue to work with college outreach and marketing to target underrepresented student groups and work with them to provide a community of support.

Be sure to include the resources you need to implement or sustain your action plans in Section 3.

2E. Faculty Discussion: Course-Level Outcomes: Please share examples of how assessment and reflection of course-level Student Learning Outcomes (CL-SLOs) has led to changes in curriculum or teaching.

The CL-SLO data for the Geography department has not to date been especially meaningful because of the high percentage of adjunct faculty teaching (60%) and low participation rates in SLO assessment across courses. The full-time faculty member has started a Canvas department site to better facilitate sharing of data and discussions of Student Learning Outcomes.

2E. Faculty Discussion: Program-Level Outcomes: Please provide examples of what is being done at the program-level to assist students in achieving your Program-Level Learning Outcomes, degree/certificate completion, and/or transferring to a four-year institution (e.g. review of progress through the program, "career days"/open houses, mentoring, education pathways (clear, structured academic program maps (suggested courses for each term) for all academic programs), etc.). If your program has other program-level outcomes assessments (beyond SLOs and labor market data), discuss how that information has been used to make program changes and/or improvements.

The program level outcome targets in GIST have largely been met. The measure of success is the number of students who are successful in GIST 53, the capstone course in the certificate sequence. The course had an 83% success rate in 2016-17, with all but one of the non-successful students dropping prior to completion because of lucrative job offers. The program's success is largely due to its cohort nature, which provides students with a community of support.

The GIST program works closely with its professional advisory board to adjust the material in the program to meet regional employer needs. The program has recently shifted to emphasize more open source software as well as a greater emphasis on required programming support courses (Python and data base management).

Please attach Course and Program-Level Outcomes (Four Column Report from TracDat).
Contact the Office of Instruction if you need help.

If your department has a Workforce/CTE program, please complete Section 2F.
If your department does not have a Workforce/CTE program, please skip to Section 3.

2F. Workforce/CTE Programs: Refer to the program review website for labor market data.

What is the regional five-year projected occupational growth for your program? 5%

What is being done at the program-level to meet/adjust to the projected labor market changes?

The labor market data indicates that there were 541 jobs in Santa Clara and San Mateo counties in the past year requiring GIS skills, an average of 51 per month. However, many of these are industry specific requiring additional skill sets or education (such as peace officers with GIS skills).

This indicates that there is more than sufficient demand in the region for individuals with GIS skills. Of the four regional programs training students in GIS, only San Jose State has produced more program completers in 2016 (16, according to EMSI data, compared to Foothilll's 10). Foothill program graduates are filling an industry need for upskilling with technology based skill sets. The biggest challenge for our program is to increase awareness of the existence of the program among upskilling professionals who are seeking GIS skills.

What is being done at the program-level to assist students with job placement and workforce preparedness?

The Foothill GIST program works closely with its professional advisory board to match curriculum to the rapidly changing technology demands of the workforce. The program undertook a major overhaul of its curriculum four years ago, and has since received very positive feedback from the advisory board. Students in the program have the opportunity to be placed in a quarter-long for credit internship with a local employer where they gain work experience. In addition, at the urging of the advisory board, the GIST program has integrated soft skills into its curriculum, emphasizing group projects and presentation skills. Students also build an e-portfolio of work and learn about regional professional networking organizations.

It is the goal of the Foothill GIST program to take advantage of its new Sunnyvale Center location in the

heart of the Silicon Valley tech sector by hosting quarterly Geo meetup events that are open to the public. This will increase visibility of the program and provide students with networking opportunities.

Be sure to include the resources you need to implement or sustain your action plans in Section 3.

SECTION 3: SUMMARY OF PROGRAM OBJECTIVES & RESOURCE REQUESTS

3A. Past Program Objectives: Please list program objectives (not resource requests) from past program reviews and provide an update by checking the appropriate status box.

Marketing brochures	Year: 2016	☒ Completed	☐ Ongoing	☐ No Longer a Goal
	Year:	☐ Completed	☐ Ongoing	☐ No Longer a Goal
	Year:	☐ Completed	☐ Ongoing	☐ No Longer a Goal
	Year:	☐ Completed	☐ Ongoing	☐ No Longer a Goal
	Year:	☐ Completed	☐ Ongoing	☐ No Longer a Goal

Please comment on any challenges or obstacles with ongoing past objectives.

Please provide rationale behind any objectives that are no longer a priority for the program.

3B. Current Program Objectives and Resource Requests: Please list all new and ongoing program objectives based on discussion in Sections 1 and 2, including your objectives to eliminate any achievement disparities in course success for student subgroups (Section 2A). If additional resources are needed, indicate them in the table below. Refer to the Operations Planning Committee (OPC) website for rubrics and resource allocation information.

Resource Request	Program Objective	Implementation Timeline	Progress Measures	Resource Type Requested*	Estimated cost
Additional marketing resources targeting tech workers	Increase enrollment	2018-19	Increased enrollment	One time B-Budget	$5000
Funding for GIS meetup events – either administrative support or release time	Increased enrollment & student job placement	2017-19	Increased enrollment	One time B-Budget	$5000
ArcGIS software site license annual fee from the CCC Foundation	Maintain workforce currency	2018-19	Maintain program currency	Ongoing B-budget	$2500
Funding for 2 faculty/administrators to attend California GIST industry	Maintain workforce currency	2017-18	Workforce currency & increased program enrollment	One time B-budget	$5000

conference					

*Resource type should indicate one of the following: One-time B-budget; Ongoing B-budget augmentation; Facilities/Equipment; New faculty/staff.

3C. Faculty/Staff Position Requests: Please describe the rationale for any new faculty or staff positions your program is requesting:

3D. Unbudgeted Reassigned Time: Please list and provide rationale for requested reassign time.

$4200 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 (2 hours per month), coordinating department SLOs (1 hour per month) and writing the department program review (1 hour per month). This is approximately 80 hours annually, or based on Appendix G of the Agreement $4200.

3E. Please review any resource requests granted over the last five years and whether it facilitated student success.

SECTION 4: PROGRAM SUMMARY

4A. Prior Feedback: Address the concerns or recommendations made in prior program review cycles, including any feedback from the Dean/VP, Program Review Committee (PRC), etc.

Concern/Recommendation	Comments

4B. Summary: What else would you like to highlight about your program (e.g. innovative initiatives, collaborations, community service/outreach projects, etc.)?

SECTION 6: FEEDBACK AND FOLLOW-UP

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

6A. Strengths and successes of the program as evidenced by the data and analysis:

The GIST Program has outstanding faculty, high quality curriculum and an active and engaged advisory board comprised of industry and government leaders in GIST. This program review is evidence of the high degree of care and professional quality work that goes into the program curriculum and overall direction. The Program Director, Allison Meezan-Lenkeit, is to be commended for her energy, attention and commitment to the program.

6B. Areas of concern, if any:

The program enrollment and productivity is in serious decline. The factors contributing to this are well defined in the program review. Due to the college's recent focus on WSCH and allowing low-enrolled classes to run more frequently, GIST was able to keep classes that in prior years would not have made. With a District focus on productivity, this is no longer the case and we need GIST classes to increase in enrollment. There are several factors that may have impacted GIST more severely than other departments: the move to Sunnyvale may have had a negative impact on enrollment, rather than the anticipated increase; the marketing team's decision to eliminate the direct-mail newsletter The Heights, which often featured GIST classes; the booming economy in Silicon Valley; a lack of overall marketing focus at Sunnyvale Center.

6C. Recommendations for improvement:

The program is working with marketing to try new methods of reaching students. We may need to look at hybrid courses more closely to encourage working people to enroll, and lessen the driving they have to do to get to class in Sunnyvale. We need to have consistent marketing and awareness of GIST courses. Productivity and enrollment will need to begin to align with college goals.

6D. Recommended Next Steps:

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

This section is for the Vice President/President to provide feedback.

6E. Strengths and successes of the program as evidenced by the data and analysis:

6F. Areas of concern, if any:

6G. Recommendations for improvement:

6H. Recommended Next Steps:

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

Upon completion of Section 6, 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.