Program	STEM
Does this program have a CTE component?	Yes
Academic Year	2017/2018
Review Period	6 Year
Service Areas	

A. Program Description and Goals

This section addresses the big picture. Prompts should help you describe your program and goals and the relationship to the institutional mission, vision and goals, and how the program is funded.

1. Describe the program and/or service area under review and how the program supports the mission of Santa Monica College.

The Science Technology Engineering and Math (STEM) office at Santa Monica College commenced in 2011 with the establishment of The Science and Research Initiative (SRI). The goals of SMC's Title III Hispanic Serving Institution STEM grant are to increase:

1. Interest in STEM majors and careers for traditionally underrepresented students
2. Pursue STEM as a major, and
3. Successfully transfer to a 4-year university.

For the past six years, the STEM office and SRI program has aimed to reach its goals by offering outreach, professional development for faculty and staff, and strengthening academic support for students taking STEM courses. These support services include counseling, tutoring, supplemental instruction, and student mentorship. STEM faculty leadership have been heavily involved in the creation and establishment of new coursework including:

1. Science 10 Principles and Practices of Scientific Research 2 units established in 2013
2. Counseling 12: STEM Career Pathways
3. Counseling 15: STEM Job Search Strategies

The STEM Office is also a hub for federal regulation and budget guidance for PI's and project managers, faculty involvement, student services, and administrative support required to fulfill the goals of additional STEM grants awarded to Santa Monica College. These grants include:

1. NASA Minority Undergraduate Research Education Program/Minority Community College Curriculum Improvement
2. National Science Foundation STEM Scholarship

Hispanic-Serving Institutions (HSIs) are defined as colleges, universities, or systems/districts where total Hispanic enrollment constitutes a minimum of 25% of the total enrollment. The effort put forward by the STEM office exceeds Title III grant requirements as we strive to achieve institutional equity for Latino/Hispanic and other underserved students at Santa Monica College by truly "serving" these student populations. As a result of the dedication to providing these services, the STEM office branched into supporting the college's student equity plan. In 2014, the director of STEM became the Associate Dean of Student Equity and STEM Programs and we were granted permission from the US Department of Education to split the Director Assignment to 70% Title III and 30% Equity. Specifically, STEM/Equity is responsible for:

1. Managing the equity budget, determining equity proposal solicitations and allocations, providing equity data

summaries and dissemination, and facilitating faculty/departmental consultations regarding the racial opportunity gap at Santa Monica College.

2. Establishing instructional interventions designed to uncover the hidden curriculum of higher education (STEM Skills workshops, Chemistry Bootcamps, Math Workshops)
3. Training faculty in equitable practices (Black Minds Matter, Teaching Men of Color)
4. Providing workshops that challenge colleagues to call others in when dealing with issues around race, instances of micragressions, and other best practices in non-violent communication during Equity meetings and summits.
5. In collaboration with Institutional Research the STEM/Equity office conducted the Community College Survey of Men as well as focus groups with students, faculty and staff. These reports were features of institutional Flex days and board meeting items that informed SMC's institutional priorities regarding student equity.

The STEM/Equity Office is currently staffed with 1 Associate Dean (50% STEM, 50% Equity), 1 Student Service Specialist (50% STEM, 50% Equity), and 50% AA1 (STEM-currently vacant). The challenge over the past few years is keeping up with the demands of student equity while not losing track of institutionalizing grant priorities associated with Title III STEM funds.

2. Identify the overarching goal(s) or charge/responsibilities of the program or service area. If appropriate, include ensuring/monitoring compliance with state, federal or other mandates.

Science Technology Engineering and Math (STEM)

The STEM office is responsible for the overall management of the US Department of Education Title III STEM Grant and the state funded Student Equity reporting and budget. The Associate Dean of STEM/Student Equity programs is the liaison for the federal program officer at the US department of Education as well as the integrated planning equity report. The office has successfully overseen audits of both accounts with no findings.

Vision: The STEM/Equity office seeks to create a culture around science, technology, engineering and math that empowers students from disadvantaged backgrounds to successfully pursue stem careers and apply scientific methods to solve issues in their communities.

Mission: The Santa Monica College STEM Office will establish innovative programming that aims to close opportunity gaps in the sciences. The STEM/Equity team will continue to pursue grant-funded programs that serve students underrepresented in STEM, provide professional development opportunities for STEM faculty and staff, and create new/enhance existing student and instructional support services in the areas of STEM.

Title III STEM Goals 2011-2017 *SMC/UCLA Science and Reserach Initiative (SRI)*

1. Interest in STEM majors and careers for traditionally underrepresented students
2. Pursue STEM as a major, and
3. Successfully transfer to a 4-year university.

Title III STEM Goals 2016-21 *STEM Leadership and Learning Innovation Center (SLLIC)*

The overarching goal of SLLIC is to improve the academic attainment of Hispanic

students and other low-income individuals at SMC. In partnership with the University of

California, Los Angeles (UCLA) and industry partners, SMC works cooperatively to increase the

number of Hispanic and other low-income students who successfully pursue and obtain STEM

degrees and careers. As outlined in the grant, the three major goals of the program include:

I. Increase the enrollment of Hispanic and other low-income students in STEM

programming

II. Improve student success by strengthening instructional and student support services in

STEM (e.g., peer mentoring), targeting psychosocial development and the teaching and

learning environment

III. Strengthen student transfer and program articulations through the development of

university and industry partnerships

Student Equity:

The STEM/Equity office also manages SMC student equity budget, submissions of equity plans, provides points of contact for individual equity activities, direct support of STEM focused equity interventions (Chemistry Bootcamp and Math Workshops), and the SSSP/BSI integration effort. Additionally, through the involvement with the equity steering committee, student equity committee, equity core teams and integrated planning teams, the office embraces the following visions and mission statements for student equity:

Equity Vision statement, "SMC is a dynamic and culturally responsive educational community that upholds the values of equity, inclusion and social justice as a pathway to personal and academic excellence."

Equity Mission statement, "SMC is an educational institution dedicated to providing an equitable learning and working environment. We intend to make clear, through our lived values and praxis, our commitment to inclusive excellence, which is reflected in our student outcomes and employee satisfaction."

The integrated planning work group wrote five overarching goals for the Integrated Plan:

1. Santa Monica College will embrace student equity as a core value for which all will take responsibility.
2. Decrease the time to completion for degree, certificate, employment outcomes, and transfer, particularly for groups experiencing equity gaps.
3. Increase the persistence, completion, and success in all courses, particularly the ESL and English and math sequences, for African-American and Latino/a/x students and other groups experiencing equity gaps.
4. Increase the overall number of degrees and certificates awarded and successful employment outcomes for African-American and Latino/a/x students and other groups experiencing equity gaps.
5. Increase the overall number of students who are transfer prepared and successfully transfer among African-American and Latino/a/x students and other groups experiencing equity gaps.

3. If applicable, describe how the Institutional Learning Outcomes (ILOs), Supporting Goals, and/or Strategic Initiatives of the institution are integrated into the goals of the program or service area.

The function of student equity has also expanded to include integrated planning and a strong collaboration with the guided pathways efforts. Equity is the centered in all of these activities and therefore is instrumental in moving the needle with regards to improving Santa Monica College's ability to serve our student populations. These activities are instrumental to the college missions and Master Plan Education. OBJECTIVE 14: Identify tools and methods that will integrate Student

Equity activities and similar student success projects across campus in order to maximize the impact on students. Academic Departments: Physical, Life, Earth Sciences and Math continue to outreach to the STEM office to provide guidance on activities to boost student success among underrepresented student populations. With regards to the new courses established by the Title III STEM grant-each course assesses SLOs and tie to the all 5 of the institutional learning outcomes.

4. If your program receives operating funding from any source other than District funds identify the funding source. If applicable, note the start and end dates of the funding (generally a grant), the percentage of the program budget supported by non-District funding, and list any staff positions funded wholly or in part by non-District funds. Do not include awards for non-operational items such as equipment (ex. VTEA) or value added activities (ex Margin of Excellence).

The office is 100% funded by grant funded through the following sources:

- Title III STEM Goals 2011-2017 *SMC/UCLA Science and Reserach Initiative (SRI)*
- *Title III STEM Goals 2016-21 STEM Leadership and Learning Innovation Center (SLLIC)*
- Student Equity

STEM Student Support:

- 1 FT Counselor and 1 part time counselor (STEM)
- 1 part time counselor (Student Equity)

The STEM/Equity Office is currently staffed with:

- 1 Associate Dean (50% STEM, 50% Equity)
- 1 Student Service Specialist (50% STEM, 50% Equity), and
- 50% AA1 (STEM-currently vacant).

B. Populations Served

In this section you will provide information that describes who your program or service area serves. When comparing data from different periods, use a consistent time frame (ex. Compare one fall term to another fall term)

Saved Information For Populations Served

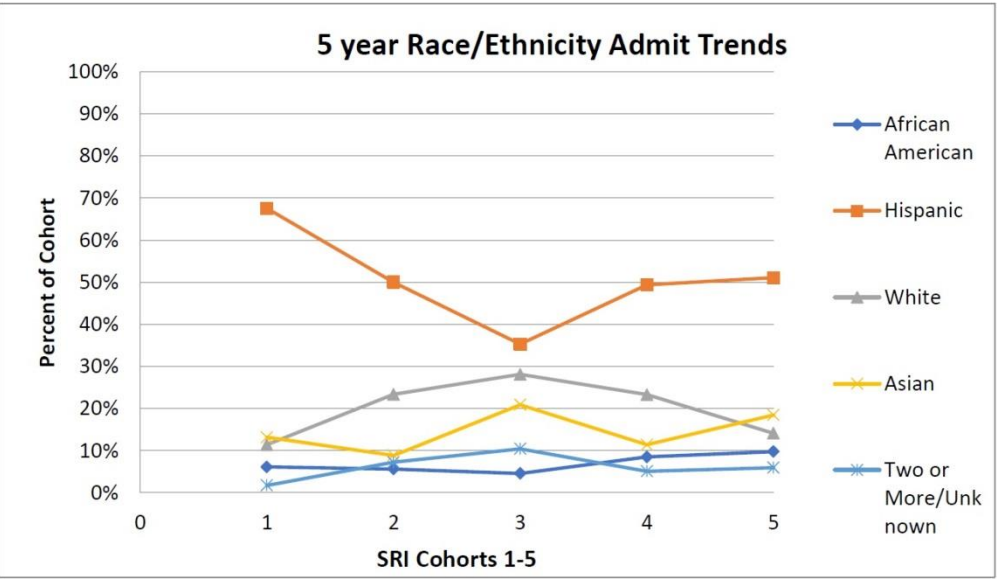**Area/Discipline Information Pertains To**

STEM
1. Describe the students your program serves in terms of ethnicity, race, gender, age, residency status, citizenship, educational goal, enrollment status, and full/part-time status. Note any changes in student or enrollment data since the last program review.

The Title III STEM grant cohort program (SRI 2011-16) has admitted five cohorts for a total of 751 students, exceeding grant goals of 100 students per year for 4 years.

Over the 5 years of our original SMC STEM grant (SRI), the admit trends were tracked by race/ethnicity, income, and gender.

As a Hispanic serving institutions grant, the STEM program admits approximately 50% Hispanic students each year with the exception of Cohort 3. Similarly, it was observed that black students were not applying to the program at the same rates as other students (~5% years 1-3). After year 3 we made the following changes to the STEM program requirements:

1) Eliminated the minimum GPA-we found that underrepresented students saw these as "non-negotiable" terms for admittance and therefore didn't apply.

2) Lowered the math requirement from "completed math 20" to math 31 completion by the summer. It was observed in the data underrepresented students were not successfully passing math 20 and therefore needed support and preparation to succeed. STEM math faculty were brought on in year 3 to address algebra needs.

3) Replaced STEM application workshops with student STEM application announcements during class sessions. We focused on Math 31, Math 20, and Chem 10 courses. Meeting students where they are made a huge impact in years 4 and 5.

5 year Race/Ethnicity Admit Trends

Chart: "Percent of Cohort" (y-axis, 0%–100%) vs. "SRI Cohorts 1-5" (x-axis, 0–5). Series: African American, Hispanic, White, Asian, Two or More/Unknown.

In STEM, female students are underrepresented. Although the Associate Dean has worked hard to empower women in STEM, it took some careful planning to encourage women to apply to the program at same rates as men. The STEM program counselors comb through student data to identify academically talented, resilient women and encourage them to apply as tutors, peer mentors, and front desk staffing. This places women in STEM at the forefront of program services. STEM also partners with the NASA grant to put on student focused women in STEM events. Finally, we discuss the concepts of microagressions and stereotype threat -environmental factors that make it difficult for women to succeed in STEM.

5

5 Year Gender Admit Trends

Percent Cohort / SRI Cohorts 1-5

Male
Female
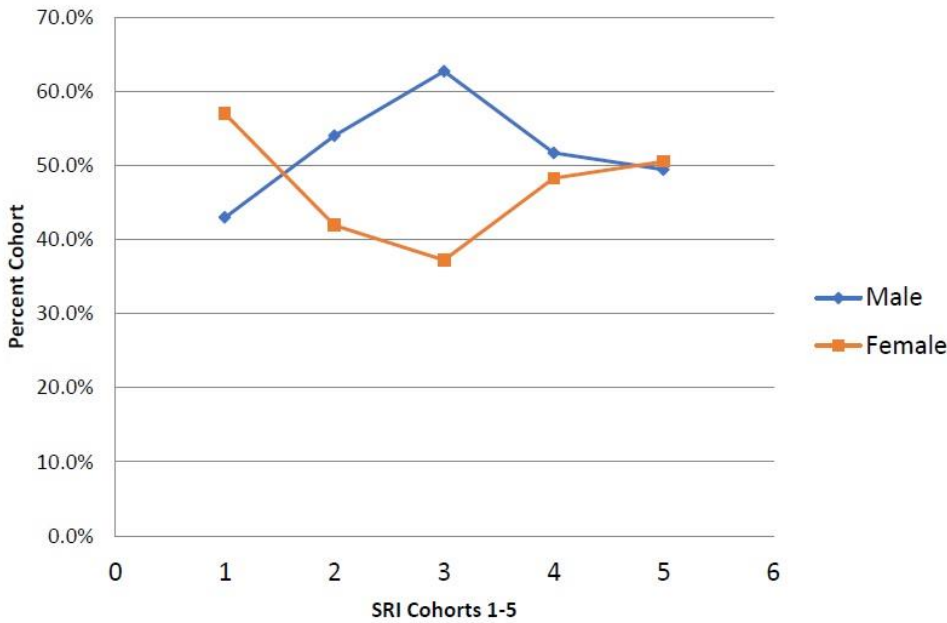
As with race and ethnicity, in year 3 we saw the number of students from low income backgrounds who applied to the SRI program drop. In additiona to the actions described above, the STEM team recruited a specialist from financial aid to assist students with addressing their needs. If students can't afford books, are undocumented and told that they must pay nonresident tuition, or are homeless and hungry; its highly unlikely that will priortize STEM program services. This work inspired the student service specialist and the STEM office is to become allies for dreamers and are heavily involved with Dreamers at SMC.

5 Year "Low Income" SRI Admit Trends

Cohort	Percent
Cohort 1	59.6%
Cohort 2	58.9%
Cohort 3	47.1%
Cohort 4	52.20%
Cohort 5	55.4%
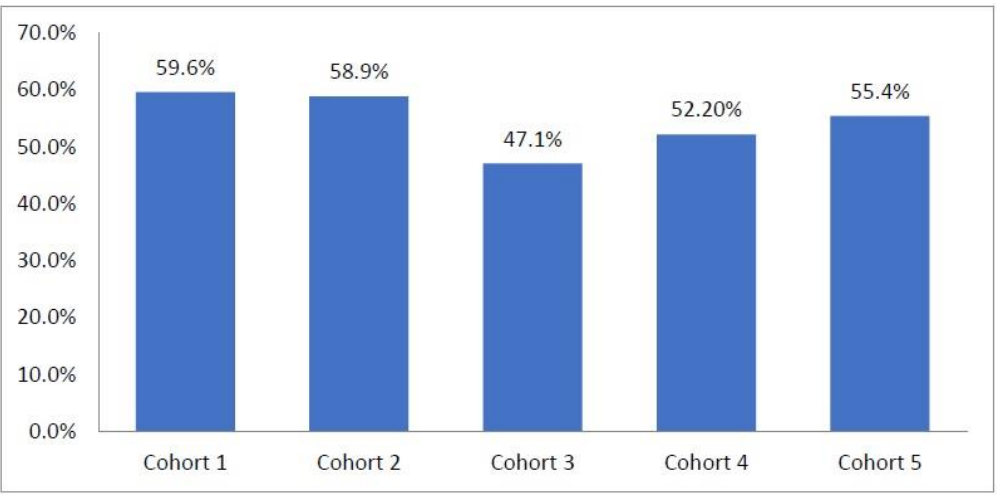
Of the 5 admittted cohorts of SRI and 1 admitted cohort in the new grant (SLLIC), the total active student population is highly representative of the demographics of the college. STEM works hard to ensure that the program services are targeted where underrepresented students need it the most.

STEM Active Student Composition (n=604)

■ African American ■ Asian ■ Hispanic ■ White ■ Two or more ■ Unknown

5.0% 4.0% 8.0%

13.0%

29.0%

50.0%
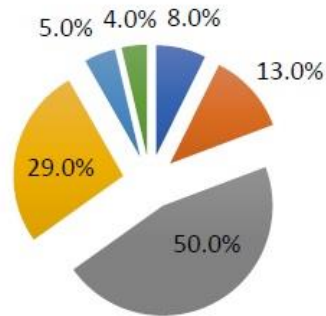
2. Compare your student population with the college demographic. Are the students in your program different from the college population? Reflect on whether your program is serving the targeted student population.

At SMC, the numbers of students pursuing STEM majors has increased since being awarded the Title III STEM grant in 2011.

STEM Majors	Fall 2011	Fall 2012	Fall 2013	Fall 2014	Fall 2015
All STEM Majors	9.8%	10.7%	11.6%	12.7%	13.3%
Total	**2928**	**3241**	**3474**	**3827**	**4067**

Of the total STEM Majors recorded at Santa Monica College, 37.8 % are Hispanic and 7.7% are black respectively in 2015.

	Fall 2011	Fall 2012	Fall 2013	Fall 2014	Fall 2015
Asian/PI	642	637	573	665	765
	21.9%	19.7%	16.5%	17.4%	18.8%
Black	255	243	275	283	314
	8.7%	7.5%	7.9%	7.4%	7.7%
Hispanic	887	1029	1198	1386	1536
	30.3%	31.7%	34.5%	36.2%	37.8%
Native American	2	6	8	10	6
	0.1%	0.2%	0.2%	0.3%	0.1%
Two or More	105	126	132	162	167
	3.6%	3.9%	3.8%	4.2%	4.1%
White	932	980	978	1044	1073
	31.8%	30.2%	28.2%	27.3%	26.4%
Unreported	105	220	310	277	206
	3.6%	6.8%	8.9%	7.2%	5.1%

Total	2928	3241	3474	3827	4067
Percent	100.0%	100.0%	100.0%	100.0%	100.0%

3. Discuss any significant change(s) in the population(s) served since the last full program review and the possible reasons for the change(s).

N/A

C. Program Evaluation

In this section programs/units are to identify how, using what tools, and when program evaluation takes place. Evaluation must include outcomes assessment as well as any other measures used by the program. Please use Section D to address program responses to the findings described in this section.

Programs/units with multiple disciplines or functions may choose to answer the following questions for each area. If this is your preferred method of responding, begin by selecting a discipline/function from the drop down, answer the set of questions and click "Save", your answers will be added to the bottom of page. Do this for each discipline/function. If you would like to answer the questions once, choose "Answer Once" from the drop down.

How would you like to answer these questions?

Saved Information For Program Evaluation

Area/Discipline Information Pertains To

STEM

1. List your student or instructional support service SLOs or UOs.

SLOs are specific, measurable statements of what a student should know, be able to do, or value when they complete a program/course or sequence of activities. An SLO focuses on specific knowledge, attitudes, or behaviors that students will demonstrate or possess as a result of instruction or program activity.

UO statements focus on service or operational outcomes such as:

- *Volume of unit activity*
- *Efficiency (responsiveness, timeliness, number of requests processed, etc.)*
- *Effectiveness of service in accomplishing intended outcomes (accuracy, completeness, etc.)*
- *Compliance with external standards/regulations*
- *Client/customer satisfaction with services*

STEM Unit Outcomes:

The STEM program has tracked unit outcomes via our annual program report that is required to maintain federal compliance. Table 1 outlines each overarching program activity, specific implementation activities, and corresponding program goal.

Goal I. Increase the enrollment of Hispanic and other low-income students in STEM programming	
Activity I. Establish SMC Engineering Program	
Implementing Activities	
- Clarify articulation of classes - Create degree/certificate - Create physics intro course - Offer embedded tutoring (ET)	
Goal II. Improve student success by strengthening instructional and student support services in STEM (e.g., peer mentoring), targeting psychosocial development and the teaching and learning environment	
Activity II. STEM Scholars: Strength Student Support Services for STEM Students with a focus on Computer Science (CS) and Engineering	
Key Activities	
- Offer year-round counseling - Develop STEM Skills Academy - Peer coaching - Offer project-based engineering or CS course/ boot camp - Develop annual STEM symposium	
Goal 3. Strengthen student transfer and program articulations through the development of university and industry partnerships	
Activity III. Establish the SMC/UCLA URC/AAP STEM Transfer Bridge Program	
Key Activities	
- Offer summer research experience / Communicating science curriculum - Require PEERS lecture series - Require one-unit honors course	
Activity IV. Create the SLLIC Career/Applied Learning Program	
Key Activities	
- Recruit industry partners - Coordinate paid externships - Offer internship/externship preparation workshops	

Equity outcomes are broader, in that several areas carry out equity projects and attempt to bring projects to scale. Outcomes for student equity are determined by each proposal and compiled into our biannual equity data reports. Equity outcomes for student equity are currently being articulated in the form of the integrated plan. In terms of the office's capacity to continue to serve

Equity Unit Outcomes:

- Organize research groups and professional development activities that focus on closing the equity gap between African American and Hispanic/Latino students and the highest performing groups at SMC.
    - Research and identify equity specific professional development training to offer as part of required FLEX

time and activities.
- Continue to work with Dr. Frank Harris and Dr. J. Luke Wood to provide access to students, faculty and staff, and directly assist with the dissemination of research data obtained from the Community College Survey of Men and the focus group studies at SMC.
- Work with IR to incorporate intensive review of all 2016 equity activities, set reasonable targets for the integrated planning efforts.
- Continue to build strong infrastructures into the Student Equity Committee
  - o Create a website, mission statement and more visible presence for student equity on the SMC website.
  - o Embed resources obtained from the SMC programs, state planning efforts, and nation research to provide more information about closing the equity gap.
  - o Fully integrate planning efforts (equity framework, consultants, and training) into the Faculty Equity/Diversity Committee and the Guided Pathways teams.
- Consult with sister colleges and equity partners with regards to student support and campus-wide equity services (instructional assistants, institutionalized pipeline programs and centers).
- Fully integrate the Student Success Committee (SSSP) and Basic Skills workgroups to ensure SMC is working cohesively toward equitable outcomes in that translates to the classroom and is fully leveraging activities and resources.
- Create a student voice for equity by working with various program across campus to incorporate student representation in the student equity committee.
- Organize SMC Equity Summit to review equity plan, targets, and project outcomes. Share best practices to reduce institutional racism by establishing an equity framework and calling-in culture.

2. Describe when and how the program assesses these SLOs and UOs and uses the results to inform program planning including:

- **how outcomes are assessed and how often**
- **the assessment tool(s) used**
- **the sample (who gets assessed)**
- **how and when the program reviews the results and who is engaged in the process**

STEM will measure on an annual basis using the logic model below. Performance measures will be reported to the US Department of Education on both a monthly (direct progress reports to the program officer) and annual basis (Annual Performance Report). Evaluation reports are presented to UCLA and SMC faculty leadership, counselors and staff on a regular basis.

Project Objective	Performance Goal	Methodology (How do you propose to capture/measure?)	
1. **1.** *Increase the enrollment of Hispanic and other low-income students in STEM programming:***Establish SMC Engineering Program**		Institutional Demographic Data (Course Enrollment and Success, Retention, Declared Engineering Majors, Engineering Degree and Transfer),	

2. Articulate engineering classes 3. Create degree/certificate 4. Create Physics intro course 5. Expand course, program, and degree/certificate opportunities in STEM at Santa Monica College, 6. Increase Hispanic student and other low income student awareness of SMC's Engineering Program and degree/certificate options 7. Foster student transfer from SMC's Engineering Program to 4 year Engineering programs		STEM Student Program Participation Data (SLLIC Center Engagement, Completion rates), Evaluation Instruments: (Engineering Awareness, interest).	
2. Improve STEM student success by strengthening instructional and student support service, targeting psychosocial development and the teaching and learning environment **with a focus on Computer Science (CS) & Engineering** 1. Offer year-round counseling 2. Offer embedded tutoring (ET) 3. *c. Develop STEM Skills Academy (to include peer coaching)* 4. Offer project-based engineering/CS boot camp/course. 5. Develop annual STEM symposium.	1. Establish STEM Learning and Leadership Innovation Center to house STEM Scholars Program and coordinate delivery of STEM counseling 2. Promote student success in Engineering and STEM Program through use of Embedded Tutoring 3. Use high quality methodological tools proven effective in increasing student success)Peer	STEM Student Program Participation Data (SLLIC Center Engagement, Education Plan tracking, Embedded Tutoring courses, success rates by demographic). Evaluation Instruments: Modified Sense of Belonging scale created for present purposes and piloted with students prior to pretest; Institutional Demographic Data (Enrollment, Retention, Course Success, GPA, Graduation data: academic progress, completion, Degree and Transfer completion rates.) STEM Student Program Participation Data (Engineering Bootcamp/ Course and STEM Symposium: Participation, student satisfaction surveys, and focus	

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	Coaching) and expand existing STEM resources and supportive services to include a focus on psychosocial development. 4. Establish and enroll students in Experiential Learning STEM Courses (Winter/Summer) 5. Provide opportunities to for STEM students to demonstrate science communication skills.	groups).	

1. **3.** *Strengthen student transfer and program articulation by:* **Establish the SMC/UCLA STEM Transfer Bridge Program**
   1. Require PEERS lecture series and Spring Transfer Workshops
   2. Offer summer research experience/ communicating science curriculum
   3. Require one-unit honors course post transfer
   4. Develop SMC/UCLA URC STEM Transfer Bridge Program to
		STEM Student Program Participation Data (#of students who: attend spring transfer workshops, peers lectures, complete summer research, attend fall transfer workshops, and make subsequent contacts with transfer mentors, Evaluation Instruments: (Summer Science pre and post survey assessing skill development, focus groups, and content and overall transfer preparedness assessments).	

prepare community college STEM students for transfer 5. Formalize communicating science summer curriculum and offer research experiences prior to graduation. 6. Offer course to engage SMC transfer students at UCLA		
1. **4. *Strengthen student transfer and program articulation by:*** 2. Create the SLLIC Career/Applied Learning Program 3. Recruit industry partners 4. Offer externship prep workshop 5. Coordinate paid externships	a. Develop SLLIC Career and Applied Learning Program to connect community college STEM students with industry opportunities. b/c. Promote student engagement with industry based experiential learning credits and internships.	STEM Student Program Participation Data #Courses with experiential learning, student participation by demographic, number of students who complete internships and make subsequent contacts with industry mentor; Evaluation Instruments: pre and post survey assessing skill development.

3. What other evaluation measures does your student or instructional support service use to inform planning? (For example, surveys, longitudinal data, support service use etc.) Note trends, differences in performance by group (ethnicity, gender, age), and any unusual patterns in student success and retention.

The external evaluation of STEM Leadership and Learning Innovation Center (SLLIC) grant began in October 2016 and will continue through the duration of the grant ending in 2021. The evaluation includes both formative (implementation and initial outcomes) and summative (overall program merit) components. Implementation questions relate to program processes while outcome questions relate to the goals and objectives established by SLLIC. In addition to answering evaluation questions, progress on performance measures will be reported to the program funder (i.e., U.S. Department of Education). A program logic model has also been developed to communicate program elements and provide explicit links to program outputs and outcomes.

Implementation-Focused Evaluation Questions

1. To what extent are SLLIC and STEM Cohort program activities implemented with fidelity and high quality?

2. What kinds of experiences do the SLLIC and STEM Cohort participants and program staff have as part of receiving/administering the program?

3. What are SLLIC and STEM Cohort participants' perceived level of satisfaction with program activities?

4. What are the SLLIC and STEM Cohort strengths and areas for improvement?

STEM Leadership and Learning Innovation Center Users Outcome-Focused Evaluation Questions (non-cohort)

1. What is the effect of the SLLIC users on students' ability to complete the engineering sequence?

2. What is the effect of the SLLIC users on students' success rates in STEM courses?

3. What is the effect of the SLLIC users on student retention and graduation rates in STEM?

4. What is the effect of the SLLIC users on participants' three-year transfer rates?

5. What is the effect of the SLLIC program on students' desire to pursue a career in engineering or STEM-related field?

STEM Cohort Specific Outcomes:

1. What is the effect of the SLLIC program's STEM Academy on students' feelings of support from other participants, sense of belonging in STEM, identification as a scientist, and science self- efficacy?

2. What is the effect of the STEM Academy on participants' rates of term-to-term retention and cumulative retention in college over two years compared to the business-as-usual condition?

3.What is the effect of the STEM Academy on participants' GPA compared to the business-as-usual condition?

4. What is the effect of the STEM Academy on participants' rates of transferring to a four-year university compared to the business-as-usual condition?

5. What is the effect of the STEM Academy on participants' progress towards graduation and ultimately, graduation rates from a four-year university compared to the business-as- usual condition?

6. What is the effect of the SLLIC program on students' research skills and abilities?

Evaluation Design and Method

The evaluation of SLLIC has two distinct components: (a) the evaluation of all SLLIC activities and (b) a randomized control trial (RCT) experiment to assess the effectiveness of a sense of belonging intervention within the STEM Student Cohort

SLLIC Evaluation Design

The overall SLLIC evaluation has been designed as a pretest-posttest design, in which both qualitative and quantitative indicators are used to answer implementation and outcome evaluation questions. The evaluation team tracks all program data on a regular basis to ensure project activities are implemented as planned while assessing the impact of these activities on the students and the participating institutions. In addition, the evaluation design includes tracking of key measurable objectives over time in comparison to baseline rates. In many cases, Year 1 data will serve as a baseline for the remaining four years of the project.

Evaluation methods used in Year1 include student surveys (Counseling 12 course surveys, end of year survey, STEM Skills survey and assessments, SSRP surveys), student focus groups (three with STEM Scholars, one with SSRP Scholars), review of program documents, and data acquired through the Institutional Research office and program (see Table 2).

Method/Measure	N
Surveys	
Scholar Survey	35
Counseling 12 Survey	15
SSRP Student Surveys	23
SSRP Faculty Survey	14
STEM Skills Surveys	236
Focus Groups	
Scholar Focus Group (3)	19
SSRP Focus Group	23
Institutional Data	
Scholar demographic characteristics and academic information	N/A

STEM Academy Intervention Research Design

In addition to the overall program evaluation, the STEM Academy sense of belonging intervention will be evaluated using an experimental Randomized Controlled Trial (RCT) design.

Method

This design includes treatment and control conditions and is designed to meet the What Works Clearinghouse evidence standards. The RCT design helps to: (a) ensure that participants with varied characteristics will be equally represented in both the treatment and comparison groups, and (b) determine the causal relationship and minimize alternative explanations of the cause between the intervention and student outcomes (increase internal validity). The first cohort of Scholars completed pretesting for the intervention in summer 2017; subsequent cohorts will also follow the same timeline. Students who attended the SMC STEM Scholars Program orientation in June 2017, completed a consent form and pretest survey. These students were randomly assigned to either the treatment or control condition at the student level. The randomization process, which occurs before the delivery of the intervention, was conducted by the evaluation team to ensure that program staff members are not aware of a students' experimental condition when interacting with them; thus reducing potential bias. Scholars in the treatment condition will receive the sense of belonging intervention starting in Year 2 of the grant (see Figure 1). The intervention, which will be introduced to students as their fall STEM assignment and attempts to replicate the intervention by Walton & Cohen (2011), has two components. First, students will be asked to read a summary of and select quotes from a survey administered to SMC second and third-year students. The survey summary will focus on advanced students' experiences coming to SMC, with the intention that Scholars will associate those experiences (including challenges) as part of the typical college student experience and not unique to their own racial/ethnic group or gender. After Scholars have read through the survey results, they will be asked to write a short response to the findings as well as a letter to future STEM students. Scholars in the control group (i.e., "business-as-usual" condition) will not receive the sense of belonging intervention. Instead, the survey results that they are asked to review will be focused on study skills as oppose to sense of belonging.

D. Objectives

As part of the planning process, programs are expected to establish annual objectives that support the program's goals. Please document the status of the program/function's previous year's objectives. Add comments if you feel further explanation is needed.

D 1.Objectives

Objective: Increase: Interest in STEM majors and careers for traditionally underrepresented students; Pursue STEM as a major Status: Completed Comments: - The SRI program has continued to host outreach events at SMC throughout the duration of the grant (e.g., STEM Day, Cool Careers Day). - Through outreach efforts, the program has recruited and admitted approximately 751 students to the SRI cohort program throughout its duration. Each year, the incoming cohort has increased in size. Each cohort of Scholars has attended an intensive summer STEM skills workshop, and completed coursework (Counseling 12 and 15) related to STEM education and career opportunities. In Year 5 an annual survey was administered to Scholars from cohorts 1 –	

4; 114 Scholars completed the survey. Between 89 – 92% of Scholars were Satisfied or Very Satisfied with the information provided by the SRI program on STEM degrees and careers as well as the program helping them to pursue a STEM degree and career.	
Objective: Increase the enrollment of Hispanic and other low-income students in STEM programming: 1) By September 2017, develop degree and certificate in Engineering and corresponding major Status: In Progress Comments: SMC lacked a way of identifying engineering majors on the previous application. Engineers do not qualify for any of the General Science Degrees we offer, in fact, many engineers leave SMC with out obtaining a degree. We plan to document the growth of engineering as part of the new STEM grant (SLLIC).	
Objective: For the past six years, the STEM office and SRI program has aimed to reach its goals by offering outreach, professional development for faculty and staff, and strengthening academic support for students taking STEM courses. These support services include counseling, tutoring, supplemental instruction, and student mentorship. STEM faculty leadership have been heavily involved in the creation and establishment of new coursework including: Status: Completed Comments: Science 10 Principles and Practices of Scientific Research 2 units established in 2013 Institutionalized: Offered 2 sections in 2016-17 Counseling 12: STEM Career Pathways established in 2012 Institutionalized: Offered 3 sections in 2016-17 Counseling 15: STEM Job Search Strategies established 2013 Institutionalized offered 3 sections in 2016-17	
Objective: Increase to 40 the number of STEM course sections that utilize Supplemental Instruction to augment classroom learning over a baseline of zero. Status: Completed Comments: In Year 5, SRI program continued to fund Supplemental Instruction (SI) for STEM courses. The SI courses supported through SRI include biology, chemistry, geology, math, and physics. In Year 5, the SRI program	

supported SI for 16 STEM course sections in fall 2015 and 27 STEM course sections in spring 2016 and, for a total of 43 courses. There were 15 more sections supported by SI in Year 5 than in Year 4. The goal to support 40 STEM course sections with SI was exceeded in Year 5. The number of STEM course sections that utilize SI has steadily increased since the initiation of the grant.	
Objective: Increase the enrollment of Hispanic and other low-income students in STEM programming: 2) By Fall 2017, 25 students enroll in the newly approved introduction to physics course. By Fall 2017, 75% of students will successfully complete the introduction to physics course Status: In Progress Comments: Lead: Physics Faculty	
Objective: Increase the enrollment of Hispanic and other low-income students in STEM programming: 3) By September 2017, 85% of SMC's full-time counselors and 60% of part-time counselors will participate in professional development designed to increase their awareness of SMC's Engineering Program Status: In Progress Comments: STEM Counselors are currently participating in various workshops, flex, and conferences for professional development.	
Objective: Increase the enrollment of Hispanic and other low-income students in STEM programming: 4) By September 2017, minimum of 10 sections of Engineering related coursework will include embedded tutoring	

Status: In Progress Comments: 10 Sections of these courses will be staffed with an embedded tutor to insure course success and student engagement.	
Objective: Improve student success by strengthening instructional and student support services in STEM (e.g., peer mentoring), targeting psychosocial development and the teaching and learning environment: 1) By June 2017, 200 Hispanic and other low-income students will enroll in the STEM Scholars Program each year and increase by 200 students each subsequent year for a total of 1,000 by June 2021 Status: In Progress Comments: Scholars were randomized into treatment and control conditions for the Year 2 sense of belonging intervention.	
Objective: Improve student success by strengthening instructional and student support services in STEM (e.g., peer mentoring), targeting psychosocial development and the teaching and learning environment: 2) By June 2017, 75% of Scholars participating will have a STEM Educational Plan that clearly outlines degree/career goals, multi-year course schedule, and potential challenges to success and resources to address these challenges and increase by 5% each subsequent year, yielding a 95% complete rate by June 2021 Status: In Progress Comments: 89% of Scholars who began in Year 1 (Cohort 6) had an updated EdPlan.	
Objective: Improve student success by strengthening instructional and student support services in STEM (e.g., peer mentoring), targeting psychosocial development and the teaching and learning environment:	

3) By June 2017, establish peer coaching program and recruit/training 15 mentors to support STEM Scholars. <u>Status:</u> In Progress <u>Comments:</u> Over 173 contacts were made with peer mentors and new cohort students in the Fall 2017.	
<u>Objective:</u> Improve student success by strengthening instructional and student support services in STEM (e.g., peer mentoring), targeting psychosocial development and the teaching and learning environment: 4) By June 2017, 80% of STEM Scholars will participate in 3 or more program sponsored activities each semester, including but not limited to month cohort activities, individual and group counseling, STEM seminars, STEM Symposium, and UCLA-sponsored activities (this number will remain constant throughout the project period) <u>Status:</u> In Progress <u>Comments:</u> It is expected that 80% of Scholars will participate in three or more activities each semester. This percentage will be tracked throughout the duration of the grant.	
<u>Objective:</u> Improve student success by strengthening instructional and student support services in STEM (e.g., peer mentoring), targeting psychosocial development and the teaching and learning environment: 5) Offer Training for 50 STEM faculty on effective teaching and learning strategies each year through one on-site workshop and conference reimbursement funds for faculty to attend off-campus workshops for a total of 250 instructors/counselors by the end of Year 5 <u>Status:</u> In Progress <u>Comments:</u>	

This summer, the program will promote workshops and speakers through the Center for Teaching Excellence, faculty summer teaching institute, and provide Reading Apprenticeship training. The program will also promote off-campus opportunities in Spring 2017, including the PKAL STEM Conference, American Society for Engineering Education and the Society of Women Engineers.	
Objective: III. Strengthen student transfer and program articulation through the development of university and industry partnerships 1) Provide STEM Scholars with a minimum of 2 workshops to prepare for Summer Research Experiences and/or transfer to UCLA during Year 1 and then a minimum of 4 per year Years 2 -5, for a total of 18 by the end of Year 5 Status: In Progress Comments: The program also be held two transfer workshops (in early May), 2 financial aid work-shops, and 2 URC UCLA application workshops to help with internship applications. In addition to these workshops, the STEM Counseling 15 class focuses directly on preparing students for research and transfer opportunities.	
Objective: III. Strengthen student transfer and program articulation through the development of university and industry partnerships 2) By September 2017, a minimum of 20 STEM Scholars will participate in summer research opportunities at UCLA each year for a total of 100 by Summer 2021; 80% will report satisfaction with the summer research experience Status: In Progress Comments: It was expected that 20 students will participate in the summer research experience at UCLA during the summer of 2017. 23 SMC STEM Scholars were selected and participated in the summer research experience. The number of students who participate in the summer research experience at UCLA will be tracked for the duration of the grant.	

Objective: III. Strengthen student transfer and program articulation through the development of university and industry partnerships: 3) Increase number of students attending internship preparation (e.g., counseling courses) and are placed into non academic internships/extnerships. Status: In Progress Comments: STEM internships outside of academia is the direct result of students requesting exposure to industry in previous grant assessments.	
Objective: III. Strengthen student transfer and program articulation through the development of university and industry partnerships: By June 2017, develop STEM Experiential Learning Course to enroll a minimum of 25 students each year for a total of 100 students by Year 5 Status: In Progress Comments: Attempting to scale research experience and applied learning that prove to be beneficial to STEM students from underrepresented backgrounds.	
Objective: Successfully transfer in a STEM major to a 4-year university. Status: In Progress Comments: Approximately 37% of Scholars from Cohorts 1 – 3 have transferred to a four-year university. 80 students completed a 9-10 week internship at UCLA.	

D2. Looking Back

In this section, please document what you did last year as a result of what you described in Section C.

1. Describe any accomplishments, achievements, activities, initiatives undertaken, and any other positives the program wishes to note and document.

With regard to increasing student awareness of STEM education and careers, the SRI program has continued to host outreach events at SMC throughout the duration of the grant (e.g., STEM Day, Cool Careers Day). Through outreach

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efforts, the program has recruited and admitted approximately 682 students (Scholars) to the SRI program throughout its duration. Each year, the incoming cohort has increased in size. Each cohort of Scholars has attended an intensive summer STEM skills workshop, and completed coursework (Counseling 12 and 15) related to STEM education and career opportunities. In Year 5 an annual survey was administered to Scholars from cohorts 1 – 4; 114 Scholars completed the survey. Between 89 – 92% of Scholars were Satisfied or Very Satisfied with the information provided by the SRI program on STEM degrees and careers as well as the program helping them to pursue a STEM degree and career.

The SRI program has also strengthened instructional programming at SMC. The program has developed two career planning courses – Counseling 12 (STEM Career Planning) and Counseling 15 (STME Job Search Strategies) that have been offered throughout the duration of the grant. Furthermore, the program has supported Supplemental Instruction (SI) for STEM courses; the program has increased the number of course sections supported by SI throughout the duration of the grant. In Year 5 there were 15 more STEM course sections supported by SI than in Year 4. There is preliminary evidence that those students who take advantage of SI have better success rates than those who do not participate in SI. For example,in Year 5, 67% of students who attended the recommended amount of SI sessions SI (5+ sessions) earned a successful grade compared to the 39% who did not attend SI and earned a successful grade. The program has also provided students with summer workshops in math and other STEM disciplines.

The SRI program has improved the likelihood of Scholars transfer success in STEM by providing Scholars with academic assistance (SI, tutoring) and information on how to successfully transfer to a 4-year university. Furthermore, the program has provided students with a community of like-minded Scholars to support them through the transfer process. According to the annual survey results, Nearly all respondents (cohorts 1 – 4) *Agree or Strongly Agree* that they want to transfer to a 4-year university (98%) and pursue a STEM degree after they transfer (97%). Furthermore, 88% were Satisfied or Very Satisfied with the information provided by the program on how to successfully transfer to a 4-year university. In the annual focus group, Scholars also noted that the sense of community developed through participation in the program – sense of community with peers and alum - was something that they anticipated would persist even after transferring. Approximately 37% of Scholars from Cohorts 1 – 3 have transferred to a four-year university. In Year 5, alumni were administered a survey to assess the role of SRI in their education. When asked to provide general thoughts about the SMC SRI program, alumni spoke positively of their experiences. One Scholar said "I believe my time in the SMC SRI program truly shaped me as a person." Another said SMC SRI was "the best opportunity I was given during my whole education up to now." Scholars felt the SMC SRI program was beneficial to their success after transferring to four-year universities. One Scholar is grateful to SMC because they are "a lot more prepared coming in from SMC than…from high school." Furthermore, alum listed resources, community, and research experience as being the most helpful SRI components to their transfer success.

Throughout the end of Year 5 (2016), the SRI program has continued its efforts to serve Hispanic and low-income students in the STEM fields. There was an increase in positive student outcomes for Scholars including an increased success rate, persistence rate, and transfer rate. The program strengths include a) the ability of program staff to tailor strategies and programming to meet the needs of their students, b) STEM advising, c) the overall cohort model of support, and d) research training and mentorship. Knowledge accrued through the implementation of the SRI program has informed the development of a STEM-support program that have been recently awarded Department of Education funding. Many SRI program activities (SI, research training) will be incorporated into this newly funded program.

Overall, the SRI program has effectively reached its goal. It has provided students with the tools to succeed in STEM. At the end of Year 5, the SRI program has increased STEM awareness, strengthened instructional programming, and improved transfer success in STEM.

STEM/Equity: Math Workshops and Chemistry Bootcamps

Adopting best practices from STEM grant programming, student equity proposals were submitted to support weekly workshops in Math 31, 20 and Chemistry 10. Chemistry 10 bootcamps are special Saturday workshops led by Professor Walker-Wuagh and supported by several part time and full time faculty in the Physical Science department. In collaboration with the Black Collegians and Adelante programs, these sessions were designed to model proper preparation techniques in chemistry to ensure students from underrepresented backgrounds have are successful in this gateway course to STEM majors. Bootcamps have been ongoing in some form since 2014, and have earned statewide recognition (John W. Rice and Equity Award) for the overwhelmingly positive results. See the one sheet prepared by Institutional Research.

2. Summarize how the program or service area addressed the recommendations for program strengthening from the executive summary of the previous six-year program review.

N/A did not submit a previous 6-year program review.

Please see attached annual reports. The new Title III HSI STEM grant involved actively using student data to revise and plan for the future of STEM Programming.

3. Describe any changes or activities your program or service area has made that are not addressed in the objectives, identify the factors (e.g., licensure requirements, state or federal requirements, CCCO mandates, regulations, etc.) that triggered the changes, and indicate the expected or anticipated outcomes.

N/A: No changes

4. If your program received one time funding of any kind indicate the source, how the funds were spent and the impact on the program (benefits or challenges).

N/A: All funding for STEM comes from Title III HSI STEM grant.

D2. Moving Forward

Discuss and summarize conclusions drawn from data, assessments (SLO, UO) or other evaluation measures identified in Section C and indicate responses or programmatic changes planned for the coming year(s) including:

- **how the assessment results are informing program goals and objectives, program planning, and decision-making**
- **specific changes planned or made to the program based on the assessment results**

Overall the SRI program has been a successful program. The program has been rolled out effectively, and adapted and tailored to best support the needs of program participants. Goals related to program implementation have been met. Furthermore, Scholar achievement in STEM was bolstered throughout the duration of the grant. There was an increase in positive student outcomes– an increase in student success rates, persistence rates, and transfer rates.

Knowledge accumulated through the implementation of the SRI program (e.g., the need for engineering support services) has informed the development of a recently-funded STEM-support program. The newly-funded Title III program will incorporate best practices from the SRI program including the cohort model, STEM advising services, skills workshops, and tutoring. Without question, the SRI program has provided students with valuable academic support services that in concert have helped to a) increase student awareness of STEM education and career opportunities, b) refine student's STEM interests, and c) assist with the transfer process and transition. For educators that are interested in the SRI program, it is recommended that when implementing program activities you consider your target populations needs and adapt activities accordingly. Many program activities originally outlined in the SRI grant were modified to best meet the demands of target students and the institution at large.

The Science and Research Initiative/STEM grant has profoundly impacted the Santa Monica College community. Enrollment in STEM courses and declared STEM majors has increased 3.5% over 4 years; with the biggest increases among Black and Hispanic students (+3.8%). Black and Hispanic students represent 45% of all STEM majors at SMC. SMC senior administration, Board of Trustees, faculty, staff and community outreach programs all received presentations and updates on the progress of the Science and Research Initiative's many STEM programs. As a result, Santa Monica College has committed to the sustain the following STEM personnel and facilities: full time counseling support, administrative specialists, a STEM specific study and mentoring student space, a full time Engineering faculty member, and classroom for future engineering and other STEM interdisciplinary courses. A plan to sustain special programming established by the SRI program has also been adopted. Our STEM specific Career, Job Search Strategies and Introduction to Research (Science 10) courses have been institutionalized. Our summer STEM Skills Week and boot camps also provide the framework for several student equity interventions at the college. In order to solidify our successful partnership with UCLA, the Science and Research Initiative plans to establish a formalized honors course for transfer students. The 2011-16 Title III HSI-STEM grant was instrumental in building institutional capacity to support these vital student resources and programs, and the SMC/UCLA project team plans to expand on these commitments to further increase the success of Hispanic and Low-Income students pursuing in STEM majors.

The Initial STEM efforts identified engineering as the area most lacking and therefore, offered the best area to support STEM and competitively apply for future grants. The new Title III STEM Grant (STEM Leadership and Learning Innovation Center), the following activities and milestones have been documented for 2016-17:

Program Goal	Key Implementing Activity	Year 1 Status
Increase Enrollment	Hire an articulation counselor to specifically support the engineering program	X
	Establishing and clarify articulation of prerequisite engineering courses at SMC	¡
	Create a pre-engineering major and degree/certificate program in engineering	¡
	Create an Introduction to Physics course	¡
	Offer embedded tutoring in select engineering related courses	¡
Improve Student Success	STEM Skills Academy (intervention)	ü
	Peer Coaching Program	ü
	STEM counseling	ü
	Engineering-specific Cohort Activities	N/A
	STEM Symposium	ü
Strengthen Transfer & Partnerships	URC/AAP STEM Transfer Bridge Program	ü
	Research internships (SSRP)	ü
	PEERS Lecture series	N/A
	Communicating Science course	¡
	Honors Course	N/A
	Develop Makerspace	¡
	Development STEM Experiential Learning course	¡
	Establish industry partnerships	ü
	Industry externships	N/A

ü = Implemented as planned/ on track; ¡ = somewhat implemented as planned; X = not implemented as planned

D2. Objectives (Moving Forward)

Objective #1
Objective:

Increase the enrollment of Hispanic and other low-income students in STEM programming: 1) By September 2017, develop degree and certificate in Engineering and corresponding major

Area/ Discipline/ Function Responsible: STEM

Assessment Data and Other Observations:
UO Assessment Data

External Factors:

Timeline and activities to accomplish the objective: In progress: Sept 2018 (Engineering Major), Sept 2019 Degree program and articulation.

Describe how objective will be assessed/measured: We will pull major data from the new ccc apply application system. Additionally, we will utilize functions of myEd plan to obtain engineering majors at SMC. Jose Cue will work with Tram Dang and Estela Narrie to establish parameters for degree offerings and course articulation.

Comments: SMC lacked a way of identifying engineering majors on the previous application. Engineers do not qualify for any of the General Science Degrees we offer, in fact, many engineers leave SMC with out obtaining a degree. We plan to document the growth of engineering as part of the new STEM grant (SLLIC).

Objective #2
Objective:

Increase the enrollment of Hispanic and other low-income students in STEM programming:

2) By Fall 2017, 25 students enroll in the newly approved introduction to physics course. By Fall 2017, 75% of students will successfully complete the introduction to physics course

Area/ Discipline/ Function Responsible: STEM

Assessment Data and Other Observations:
UO Assessment Data

External Factors:

Timeline and activities to accomplish the objective: This performance measure is in progress with a timeline of Spring 2018 to go to curriculum committee for approval. We will measure and report on this outcome once the introduction to physics course has been implemented in the Fall 2018.

Describe how objective will be assessed/measured: Enrollment in course, success in intro physics course, satisfaction with intro to physics course

Enrollment and success in subsequent physics courses

Comments: Lead: Physics Faculty

Objective #3
Objective:

Increase the enrollment of Hispanic and other low-income students in STEM programming:

3) By September 2017, 85% of SMC's full-time counselors and 60% of part-time counselors will participate in professional development designed to increase their awareness of SMC's Engineering Program

Area/ Discipline/ Function Responsible: STEM

Assessment Data and Other Observations:
UO Assessment Data

External Factors:

Timeline and activities to accomplish the objective: Email updates with details about these workshops have been sent to the entire Counseling Department. Additional comprehensive PD will be offered starting in Summer 2018 with a Flex workshop in August.

Describe how objective will be assessed/measured: Record number of faculty who attend workshops and the offices that receive one pager info sheets.

Comments: STEM Counselors are currently participating in various workshops, flex, and conferences for professional development.

Objective #4
Objective:

Increase the enrollment of Hispanic and other low-income students in STEM programming:

4) By September 2017, minimum of 10 sections of Engineering related coursework will include embedded tutoring

Area/ Discipline/ Function Responsible: STEM

Assessment Data and Other Observations:
UO Assessment Data

External Factors:

Timeline and activities to accomplish the objective: September 2017-ongoing

Describe how objective will be assessed/measured: Embedded Tutors in: Physics 21, 22, 23; Math 7, 8, 11+; Engineering 1: Intro *New Course, 11 Computer Aided Design *New Course, 21/22 Circuits *New Course

Comments: 10 Sections of these courses will be staffed with an embedded tutor to insure course success and student

engagement.

Objective #5

Objective:

Improve student success by strengthening instructional and student support services in STEM (e.g., peer mentoring), targeting psychosocial development and the teaching and learning environment:

1) By June 2017, 200 Hispanic and other low-income students will enroll in the STEM Scholars Program each year and increase by 200 students each subsequent year for a total of 1,000 by June 2021

Area/ Discipline/ Function Responsible: STEM

Assessment Data and Other Observations:
UO Assessment Data

External Factors:

Timeline and activities to accomplish the objective: June 2017-August 2021

Describe how objective will be assessed/measured: Of the 267 students who participated in June's STEM chorot orientation, approximately 260 completed the pretest survey. 236 students attended STEM skills week.

Comments: Scholars were randomized into treatment and control conditions for the Year 2 sense of belonging intervention.

Objective #6

Objective:

Improve student success by strengthening instructional and student support services in STEM (e.g., peer mentoring), targeting psychosocial development and the teaching and learning environment:

2) By June 2017, 75% of Scholars participating will have a STEM Educational Plan that clearly outlines degree/career goals, multi-year course schedule, and potential challenges to success and resources to address these challenges and increase by 5% each subsequent year, yielding a 95% complete rate by June 2021

Area/ Discipline/ Function Responsible: STEM

Assessment Data and Other Observations:
UO Assessment Data

External Factors:

Timeline and activities to accomplish the objective: June 2017-June 2021

Describe how objective will be assessed/measured: STEM Scholars are expected to meet with counselors to create a STEM Education Plan (EdPlan) that outlines their goals and courses. 89% of Scholars who began in Year 1 (Cohort 6) had an updated EdPlan.

Comments: 89% of Scholars who began in Year 1 (Cohort 6) had an updated EdPlan.

Objective #7
Objective:

Improve student success by strengthening instructional and student support services in STEM (e.g., peer mentoring), targeting psychosocial development and the teaching and learning environment:

3) By June 2017, establish peer coaching program and recruit/training 15 mentors to support STEM Scholars.

Area/ Discipline/ Function Responsible: STEM

Assessment Data and Other Observations:
UO Assessment Data

External Factors:

Timeline and activities to accomplish the objective: June 2017-Ongoing

Describe how objective will be assessed/measured: • 13 peer mentors have been hired and begun meeting with individually with students in SLLIC in September. 2 peer mentor contacts are required as part of the program. Peer-led STEM success workshops Nov 7th. Counselors have created a mentorship manual and met with peer mentors to debrief on the first meeting and plan the group STEM success workshops.

Comments: Over 173 contacts were made with peer mentors and new cohort students in the Fall 2017.

Objective #8
Objective:

Improve student success by strengthening instructional and student support services in STEM (e.g., peer mentoring), targeting psychosocial development and the teaching and learning environment:

4) By June 2017, 80% of STEM Scholars will participate in 3 or more program sponsored activities each semester, including but not limited to month cohort activities, individual and group counseling, STEM seminars, STEM Symposium, and UCLA-sponsored activities (this number will remain constant throughout the project period)

Area/ Discipline/ Function Responsible: STEM

Assessment Data and Other Observations:
UO Assessment Data

External Factors:

Timeline and activities to accomplish the objective: June 2017-Ongoing

Describe how objective will be assessed/measured: STEM Scholars are required to participate in several program-sponsored activities each semester. Scholars will start participating in these activities after they have completed STEM Skills in August 2017. The number of activities in which Scholars participate will be tracked and monitored by the STEM office and the evaluation team.

Comments: It is expected that 80% of Scholars will participate in three or more activities each semester. This percentage will be tracked throughout the duration of the grant.

Objective #9
Objective:

Improve student success by strengthening instructional and student support services in STEM (e.g., peer mentoring), targeting psychosocial development and the teaching and learning environment:

5) Offer Training for 50 STEM faculty on effective teaching and learning strategies each year through one on-site workshop and conference reimbursement funds for faculty to attend off-campus workshops for a total of 250 instructors/counselors by the end of Year 5

Area/ Discipline/ Function Responsible: STEM

Assessment Data and Other Observations:
UO Assessment Data

External Factors:

Timeline and activities to accomplish the objective: January 2017-Ongoing

Describe how objective will be assessed/measured: In Year 1, faculty members were given the opportunity to attend a workshop titles "Faculty Contributions to my success: STEM Student Panel" in March that highlighted the best practices of STEM teaching and learning strategies from the student perspective.
Attendance: 45 faculty members; 2 staff; 2 managers

Comments: This summer, the program will promote workshops and speakers through the Center for Teaching Excellence, faculty summer teaching institute, and provide Reading Apprenticeship training. The program will also promote off-campus opportunities in Spring 2017, including the PKAL STEM Conference, American Society for Engineering Education and the Society of Women Engineers.

Objective #10
Objective:

III. Strengthen student transfer and program articulation through the development of university and industry partnerships

1) Provide STEM Scholars with a minimum of 2 workshops to prepare for Summer Research Experiences and/or transfer to UCLA during Year 1 and then a minimum of 4 per year Years 2 -5, for a total of 18 by the end of Year 5

Area/ Discipline/ Function Responsible: STEM

Assessment Data and Other Observations:
UO Assessment Data

External Factors:

Timeline and activities to accomplish the objective: October 2016-Ongoing

Describe how objective will be assessed/measured: At this time, the program has offered two workshops to help prepare students for summer research experiences and/or transfer to UCLA: Cool Careers (November) and Transfer Coachella (October). We track attendance and satisfaction with event/information.

Comments: The program also be held two transfer workshops (in early May), 2 financial aid work-shops, and 2 URC UCLA application workshops to help with internship applications. In addition to these workshops, the STEM Counseling 15 class focuses directly on preparing students for research and transfer opportunities.

Objective #11
Objective:

III. Strengthen student transfer and program articulation through the development of university and industry partnerships

2) By September 2017, a minimum of 20 STEM Scholars will participate in summer research opportunities at UCLA each year for a total of 100 by Summer 2021; 80% will report satisfaction with the summer research experience

Area/ Discipline/ Function Responsible: STEM

Assessment Data and Other Observations:
UO Assessment Data

External Factors:

Timeline and activities to accomplish the objective: June 2017-August 2021

Describe how objective will be assessed/measured: Pre/Post testing for research skills, mentor surveys, focus groups.

Comments: It was expected that 20 students will participate in the summer research experience at UCLA during the summer of 2017. 23 SMC STEM Scholars were selected and participated in the summer research experience. The number of students who participate in the summer research experience at UCLA will be tracked for the duration of the grant.

Objective #12
Objective:

III. Strengthen student transfer and program articulation through the development of university and industry partnerships:

3) Increase number of students attending internship preparation (e.g., counseling courses) and are placed into non academic internships/extnerships.

Area/ Discipline/ Function Responsible: STEM

Assessment Data and Other Observations:
UO Assessment Data

External Factors:

Timeline and activities to accomplish the objective: June 2017-Ongoing

Describe how objective will be assessed/measured: Number of students who complete STEM counseling 12 and 15, and Science 10; Number of industry partners (2 in Year 1), and number of students who participate in internships. Post-survey of experiences (currently being developed).

Comments: STEM internships outside of academia is the direct result of students requesting exposure to industry in previous grant assessments.

Objective #13
Objective:

III. Strengthen student transfer and program articulation through the development of university and industry partnerships:

By June 2017, develop STEM Experiential Learning Course to enroll a minimum of 25 students each year for a total of 100 students by Year 5

Area/ Discipline/ Function Responsible: STEM

Assessment Data and Other Observations:
UO Assessment Data

External Factors:

Timeline and activities to accomplish the objective: June 2017-Ongoing

Describe how objective will be assessed/measured: Will work with STEM faculty and the career center to offer experiential learning opportunities through existing courses.

Comments: Attempting to scale research experience and applied learning that prove to be beneficial to STEM students from underrepresented backgrounds.

Objective #14
Objective: Successfully transfer in a STEM major to a 4-year university.

Area/ Discipline/ Function Responsible: All

Assessment Data and Other Observations:

External Factors:

Timeline and activities to accomplish the objective:

Describe how objective will be assessed/measured:

Comments:

F. Community Engagement

In the prompts that follow, please delineate the partnerships you have with the rest of the SMC community as well as those you have with external organizations.

1. If applicable, describe how your department staff members engage in institutional efforts such as committees and presentations, and departmental activities.

Melanie Bocanegra, the Associate Dean of STEM/Student Equity Programs was involved in the following committees:

1. Student Equity, Student Equity Steering, SSSP/BSI coordination
2. Integrated Planning (Equity Chair)
3. Faculty Evaluation Committee Chairs (2 Math, 1 Physics/Engineering)
4. Hiring Committees (Math, Physics, and Life Science)
5. Sabbaticals Committee
6. Faculty Equity and Diversity Committee: Interested Party
7. Guided Pathways Redesign Team
8. NASA MUREP/MC3I advisor
9. Advisor to STEM Club and Society for the Advancement of Chicano and Native American Scientists.

Dr. Bocanegra also presents to program and departments that are interested in STEM program best practices and equity based professional development. Every Spring, Dr. B delivers a STEMinar on Stereotype Threat and Microagressions to the STEM Cohorts.

Vanan Yahnian, Student services specialist STEM/Equity is involved in:

1. Student Equity and Equity Steering Committees
2. Co-Advisor to STEM Club
3. Honors Council
4. Gender Equity/Social Justice Taskforce
5. DACA Ally Training and Dreamer taskforce

AA1 is currently Vacant. STEM Counselors serve on necessary departmental and hiring committees.

2. If applicable, discuss the engagement of program members with the local community, industry, professional groups, etc.)

Melanie Bocanegra, the Associate Dean of STEM/Student Equity Programs was involved in the following:

1) Los Angeles STEM Hub

2) LA County Incubator (LACI)

Dr. Melanie Bocanegra is a member of the Alliance of Hispanic Serving Institution Educators and is becoming a member of the Hispanic Association for Colleges and Universities. Involvement in these organizations ties into objectives that include expanding the reach of SMC STEM programming nationally.

Dr. Bocanegra and Vanan Yahnian and the STEM counselors are actively involved in the Association for American Colleges and Universities STEM community to engage 4-year institutions with SMC STEM programs.

3. Discuss the relationship among program faculty and staff, between program faculty, staff and students, and the involvement of program faculty and staff with other programs or areas.

The STEM/Equity Office works closely with every office on campus. Through the STEM grant, the Associate Dean and Specialist works closely with chairs of Earth, Life, Physical Science and Math to strengthen STEM student programming at Santa Monica College. STEM has put on several departmental presentations for Physical Science and math including an upcoming joint meeting in March. The STEM program counselors work with all programs to embed best practices in

educational planning for STEM in all student support programs. Functioning under the office of academic affairs allows STEM to focus on curriculum development and enhancement. The STEM/Equity office and faculty teams embeds the love of science and respect for students in every aspect of service that we provide.

G1.Current Planning and Recommendations

The following items are intended to help programs identify, track, and document unit planning and actions and to assist the institution in broad planning efforts.

1. Identify any issues or needs impacting program effectiveness or efficiency for which institutional support or resources will be requested in the coming year. [This information will be reviewed and considered in institutional planning processes but does not supplant the need to request support or resources through established channels and processes].

The following issues impact the office's workload and ability to provide meaningful program services in a timely manner:

- Equity functions of the office (administrative, managerial, logistical, institutional planning activities) are not formally documented anywhere. Although student equity plans and activity reports provide institutional and programmatic updates, the volume of equity administrative duties is largely unaccounted for. Therefore, the Associate Dean and Specialist spend a lot of time maintaining compliance (Time and effort reporting, procurement of supplies, budgeting updates, preparing contracts, mid-term reporting, etc.) for campus-wide equity activities and this makes accomplishing more complex and strategic equity initiatives difficult.
- STEM Cohort tracking is resource intensive and requires constant attention. STEM retention must be updated databases in real time in order maintain federal compliance to the current grant activities. A dedicated STEM coordinator/senior specialist should be maintained by the STEM grant.
- The Associate Dean is responsible for multiple reporting functions: Federal (US Department of Education) monthly and annual grant updates, State Legislator (Annual Budgeting Reports, Biannual Equity/Integrating planning updates, mid term budget reports), Board of Trustees (Annual reports on Equity/Integrated Planning), faculty STEM committee meetings, UCLA partner meetings, assistance with NASA/MUERP reporting, and requests made from PI's on other STEM grants. Program Review, while important to college planning, does not align with the other reporting responsibilities.
- Strain on the offices human resources and logistical function makes it difficult to disseminate Santa Monica College's successful STEM program more widely.

Over the last few years, the associate dean's SMC wide administrative role has increased and without additional support to ensure grant funded projects are running smoothly, the enhancement of STEM programmatic elements and data driven strategic decision-making suffers.

2. If applicable, list additional capital resources (facilities, technology, equipment) that are needed to support the program as it currently exists. [This information will be reviewed and considered in institutional planning processes but does not supplant the need to request resources through established channels and processes].

The new 2016-2021 Title III HSI-STEM grant (SLLIC) will support the expansion of applied engineering and other courses (art, bike repair etc) by establishing a makerspace equipped with a computer lab that runs SolidWorks (Computer Aided Design Software), a 3-D printer, a laser cutter, and other electrical equipment. Labor for demolition and student-use equipment (desks, white, boards, shelving) will be needed.

3. If applicable, list additional human resources (staffing, professional development, staff training) needed to support the program as it currently exists. [This information will be reviewed and considered in institutional planning processes but does not supplant the need to request resources through established channels and processes].

- STEM Retention Coordinator/Senior Specialist (100% grant funded)
- Administrative Assistant for Equity (50% Equity Funded)

- Full time counselor STEM (Currently Grant funded)

100% categorically funded, STEM and Student Equity must continue to push for grants to provide support for ongoing services that are adopted by the college but not necessarily eligible for future funding. For example, in addition to the entire office, the STEM grant also funds Supplemental Instruction for Physical, Life, Earth Sciences as well as Math (Math 20-Multivariate Calculus). Maintenance of an existing support service is not always considered competitive for grant funding.

4. List all current positions assigned to the program.

STEM Student Support:

- 1 FT Counselor and 1 part time counselor (STEM)
- 1 part time counselor (Student Equity)

The STEM/Equity Office is currently staffed with:

- 1 Associate Dean (50% STEM, 50% Equity)
- 1 Student Service Specialist (50% STEM, 50% Equity), and
- 50% AA1 (STEM-currently vacant).
- 25% Director of SI/Tutoring

G2. Future Planning and Recommendations

The following items are intended to help programs identify, track, and document unit planning and actions and to assist the institution in broad planning efforts.

1. Projecting toward the future, what trends could potentially impact the program? What changes does the program anticipate in 5 years; 10 years? Where does the program want to be? How is the program planning for these changes?

As we continue to grow STEM and the engineering program at Santa Monica College, the STEM / Equity office must be able to respond to the increased need for systemic tracking, data collection and analysis. Detailed analysis of progress and success are vital to future grant funding opportunities, industry collaborations, institutional planning processes and the advocacy for additional resources to support students. The investment in technology and staff support will pay off by increasing SMC's ability to successfully compete for grant funds to support growing STEM initiatives and enrollment.

In order to fully realize our vision, STEM must also create more ways for non-STEM majors to get exposed to the concepts that drive science policy (or lack thereof). Courses such as the new "coding for non-majors" course in Computer Science, was established through the NASA MUREP grant to provide students with transferrable coding skills. More courses that provide non-STEM majors with tools for conducting critical analysis of every day issues will both benefit enrollment and extend the reach of the STEM program in the SMC community. Communal spaces like the makerspace, computer labs, and the student services and new math/science buildings will enable SMC to breakdown silos and make our processes more transparent for students to engage.

Finally, integrated planning (student equity, SSSP and BSI categorical funds) and guided pathways will influence the way in which we promote SMC's STEM pathways to traditionally underrepresented students. It will be necessary for SMC leaders to infuse equity into these discussions as we move the college forward on these initiatives. For example, crafting a strong statement that Santa Monica College is a Hispanic serving institution that doesn't just meet a threshold of enrollment, but embodies the vision of making their campus and services should be at the forefront of outreach. The STEM/Equity office must be poised to respond to the needs of SMC faculty/staff as they are being challenged to meet students where they are and help them reach their future goals.

2. If applicable, list additional capital resources (facilities, technology, equipment) that will be needed to support proposed changes. [This information will be reviewed and considered in institutional planning processes but does not supplant the need to request resources through established channels and processes].

As the makerspace gets established, more equipment will need to be procured to respond technological advancements in the field. If SMC is to remain competitive as a center that trains students in cutting edge skills, we must be able to equip and maintain the space long term. For example, the computer aided design software necessary to run Engineering 11 (Engineering Design) is currently 100% grant funded by NASA until 2016.

3. If applicable, list additional human resources (staffing, professional development, staff training) that will be needed to support proposed changes. [This information will be reviewed and considered in institutional planning processes but does not supplant the need to request resources through established channels and processes].

As the makerspace comes online we will need to think about training <u>technicians and staff members</u> to operate the equipment and machinery. We will also need to find a better system of allowing access to multiple instructors. Long term, an idea to generate income for the makerspace will be to charge an "access fee" to community members who use the space. This type of fee would include training and maintenance required for upkeep of the equipment. It would also be a great way for Santa Monica College to work with the city to make a space that encourages connections to the campus community.

<u>Additional engineering faculty</u> will need to be hired to assist the single FT faculty member (Tram Dang) who has been charged with creating SMC's engineering program. Specifically, faculty that bridge industry needs and SMC's career technical educations programs will be vital to the future. While SMC touts being number one in transfer, the economic imperative from the chancellor's office challenges focuses on creating a future workforce with the state's student populations. STEM must be able to create pathways that lead to careers in two years to meet these demands. We must also maintain an equity focus to insure that black and Hispanic students are not allowed to fall through the cracks of future planning.

The STEM office currently allows any student (program or not), to make counseling appointments and create education plans. For engineering students, these Edplans are complex and ever changing. Although we have one full time counselor and 2 part time counselors, the demand for STEM counseling services continues to increase. Adding new pathways should include <u>a strong counseling component</u> to insure students are guided into the correct courses and reach milestones that are vital to accountability.

4. If applicable, note particular challenges the program faces including those relating to categorical funding, budget, and staffing.

As a categorically funded program, the pressure to find resources to sustain program services creates an environment of insecurity among staff and students. For example, the anxiety over whether or not SMC would be able to obtain funding to continue the STEM program negatively impacted both students and staff. Furthermore, equity projects are often regarded with skepticism from several faculty and staff members who want to know if this is just another fad that will be tabled when funding becomes difficult. It makes financial sense to invest in programs that build capacity to both enroll and retain students at the college, and the STEM/Equity office works hard to retain students at Santa Monica College.

5. Summarize any conclusions and long term recommendations for the program resulting from the self evaluation process.

In order to maintain compliance and provide a solid foundation for the vision and mission of both student equity and stem at Santa Monica College, increased support and long term planning will be required. The STEM/Equity office will continue to function at maximum capacity to meet the growing needs of the college; however, efficiency will rely on the ability to make institutional wide changes. Time and training is essential to achieving an equitable environment at SMC and the STEM/Equity team looks forward to working toward this goal.

6. Please use this field to share any information the program feels is not covered under any other questions.

N/A

Evaluation of Process

Please comment on the effectiveness of the Program Review process in focusing program planning.
The STEM grant is reviewed extensively each year by the funding agency. The office looks forward to working with the college to report on program planning. The outcomes and outputs of the grant don't entirely align with the program review process; however, reports are attached to give the committee an example of the reports STEM compiles.

Executive Summary

These fields to be filled out by the Program Review committee. Reports will be sent to the program and will be available on-line to populate relevant fields in the annual report and the next 6 year report.

Narrative

Program Evaluation

Commendations

Recommendations for Program Strengthening

Recommendations for Institutional Support

Attached Files	
Annual Report: Federal	
Best Practices: HSI Program Officer Report	
Chemistry 10 Bootcamp	
STEM Admit Trends by Gender	
STEM Admit Trends by Income	
STEM Admit Trends by Race/Ethnicity	
STEM Cohort Students 2017-18	
Summer STEM Activities Reports	