Strategic Initiative Section Report

Math Lab:

Date: 05/09/2016

- Program Review Non-instructional Cycle F 2015_Math Lab

Sorted by: Program

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Math Lab

PR Section 1.0

Program Review Non-instructional Cycle F 2015_Math Lab

1.0

Mission, Vision, Core Values and College Goals drive all college activities. The Program Review committee would like to understand the connection of your program to the Mission, Vision, Core Values and College Goals. Summarize how your program supports each area.

Mission:
The Math Lab strives to increase students' competence, connections, confidence, and collaboration in mathematics. Students have access to textbook-specific resources, generic and textbook-specific material that is available online, and mathematic tutors who can assist when needed. As students are encouraged to study math individually and in groups, the Math Lab certainly helps further the college mission to prepare students to be successful learners.

Vision:
Directed Learning activities, Math Lab Assignments and Activities, interactive software, faculty and staff tutors, and discussion with peers all fulfill the Fullerton College vision to promote inquiry, intellectual curiosity, personal growth, and an appreciation for learning.

Core Values:
Operation of the Math Lab is in line with the college's core values. Our staff and student tutors reflect the diversity of or student population. While mathematics is one of the oldies bodies of knowledge, the Math Lab supports its acquisition with innovative techniques. Faculty, instructional assistants, and student tutors welcome students at all levels of achievement, meet them where they are, and provide support for all students to continue growing and learning.

College Goals:
The Math Lab is integral to Fullerton College achieving the goal is increasing student success. The purpose of the lab is to support all students with their Fullerton College math courses by providing assistance that will encourage them to persist and be successful. This naturally leads to an increase in the number of students who transfer. Some of the needs of English language learners are being addressed by providing computer resources that are available in both English and Spanish, as well as by employing bilingual tutors. The Math Lab also supports the college goal to strengthen connections with the community. Many of the tutors are Fullerton College alumni who have transferred to four-year colleges in the area. Some faculty who tutor in the lab are adjunct instructors who teach full-time at local feeder high schools or part-time at other universities or colleges. The Math Lab also welcomes

qualified volunteer tutors from the community.

PR Section 2.1 - 2.3

Program Review Non-instructional Cycle F 2015_Math Lab

2.1 - 2.3

1. Describe the purpose, components, and staffing of this program.

The Fullerton College Math Lab is open to all students enrolled in a Fullerton College Mathematics course. For the Fall 2015 semester, this represents 8,916 students enrolled in 268.5 sections. Table 1 shows the number of students enrolled in Fullerton College Mathematics courses by semester since the last Program Review.

Table 1
Math Student Enrollments
Spring 2012 to Fall 2015
at Census Day

	Spring	Summer	Fall
2012	**6,992**	**948**	**6,952**
2013	**7,072**	**2,212**	**8,420**
2014	**7,831**	**1,507**	**8,982**
2015	**8,023**	**1,598**	**8,916**

The Lab supports students enrolled in these courses by offering the following services:

- Individual one-on-one walk-up tutoring
- A wide range of supplemental resources
- A venue for students to work, either independently or collaboratively
- Mathematics faculty member on duty every hour the lab is open
- Make-up exams, quizzes, and lectures
- Bootcamps prior to the start of a new semester
- Course specific review sessions
- Topic specific review sessions
- Course-specific Math Lab Assignments and Activities and Directed Learning Activities (DLAs)
- DVD Lectures for most textbooks used in the division
- Computers for students who use online homework and other math course related computer needs

These services provide students with the support they need to acquire the math skills necessary for timely advancement through their requisite sequence of math courses. Math instructors and tutors are available to assist students in solving math problems and

understanding mathematical concepts. The Math Lab has resources and supplemental materials available for student use such: as computers to access a wide range of online materials, DVD lectures, instructor texts, and student solution manuals. In addition to being a place where math students can study, receive tutoring, access supplementary resources, and collaborate with classmates, the Math Lab also offers a bank of computers for students in Computer Science courses and a venue for out-of-class instructional assignments and activities.

The Math Lab is open Monday through Saturday, 66 hours per week, allowing students ample opportunities to utilize this service area resource. The Lab is currently staffed by the Math Lab Coordinator, two Instructional Assistants, an Instructional Aide, Instructors (1 present during each hour of operation), seven adult hourly tutors, two student tutors, and four volunteer tutors. During most hours when the Lab is open, one faculty member, two instructional assistants, and one to two student tutors are on duty.

Starting Fall 2012, the Math Lab has changed its funding mechanism from an arranged hour (required course component) to funding through positive attendance (optional course component at the instructor's discretion). With this change, students can begin to attend the Lab at any time during the semester. Consequently, the student population in the lab and the number of students in Math N01F will increase over the course of any given semester. As of October 31, 2015, the number of students registered in Math N01F Improving Math Skills and utilizing the Math Lab is 2,557 for a total number of 20,652 visits and 17,983 hours. These numbers reflect usage for the Fall 2015 semester only and will increase as the semester progresses. Table 2 shows the number of students using the lab, total visits, and total hours spend in the lab each semester since the last program review.

Table 2
Math Lab Student Usage (No Arranged Hour started Fall 2012)
Spring 2012 to Spring 2014 (Math 10, 15, 20, 30, 40, 129, 141, 141H & 142)
Summer 2014 - Fall 2015 (All Fullerton College Math Courses)
(Data is Based on TimeKeeper Raw Time)

	Spring			Summer			Fall		
	Distinct Users	Total Visits	Total Hours	Distinct Users	Total Visits	Total Hours	Distinct Users	Total Visits	Total Hours
2012	4,668	69,006	51,607	541	9,025	7,390	2,216	24,399	20,936
2013	2,217	23,636	20,083	637	6,669	7,292	2,926	35,261	31,071
2014	2,288	26,790	25,429	563	4,601	5,864	3,176	33,615	31,798
2015	2,468	25,894	21,059	674	4,971	5,274	2,557	20,652	17,983

1. Staffing – complete the table below. Please list the total number of personnel in each type of position in the department/program. Within each classification in the first column, please list the position titles. For confidentiality, **do not** include the names of any people in the position.

CURRENT STAFF					
Classification (Include position titles)	**# of staff in each position title**	**Percent of employment**	**Months per year of employment**	**Source of funding (General / Categorical)**	**FTE**
Managers	**1**				
Coordinator (4 units of release time)	1	26.7%	10	General	8/30
Classified	**3**				
Instructional Assistant	1	100%	12	General	12/12
Instructional Assistant	1	75%	11	General	(.75)(11/12) =11/16
Instructional Aide	1	75%	11	General	(.75)(11/12) =11/16
Faculty (full-time)	**10**				38/40
The number of full-time Instructors tutoring in the Math Lab varies from semester to semester. For Fall 2015, there are ten full-time Instructors tutoring an average of 38 total hours per week.				General and is either part of load or overload	
Faculty (Adjunct)	**11**				29/40
The number of adjunct Instructors tutoring in the Math Lab varies from semester to semester. For Fall 2015, there are eleven adjunct Instructors tutoring an average of 29 total hours per week.				General (Extended Day)	
Hourly - Adult	**7**				72/40

The number of adult hourly tutors in the Math Lab varies from semester to semester. For Fall 2015, there are seven adult hourly tutors working variable hours for an average of 72 total hours per week.					General	
Hourly - Student		**2**				10/40
The number of hourly student tutors in the Math Lab varies from semester to semester. For Fall 2015, there are two adult hourly tutors working variable hours for an average of 10 total hours per week.					General	
Professional Experts						
	Total FTE					**6.367**

2.3 Other Resources

OTHER RESOURCES				
Please list each position by classification in the department/program	**Services Provided**	**Number of Hours**	**Overall Cost**	**Source of funding (General / Categorical)**
Independent Contractors				
NA				
Volunteers				
The number of volunteer tutors in the Math Lab		15 hours per week (on average)		

varies from semester to semester. For Fall 2015, there are four volunteers (three student volunteers and one retired faculty member) working variable hours for an average of 15 total hours per week.				
Interns				
NA				
Total Hours & Costs				
Total FTE				

PR Section 2.4 - 2.8

Program Review Non-instructional Cycle F 2015_Math Lab

Sections 2.4 - 2.8

2.4 Utilize the data provided in the tables above in a discussion of the appropriateness of the staffing levels of this program.

The information given in the staffing table is important and relevant to this discussion, however there is valuable and noteworthy information not seen here. Prior to Fall 2012 when the funding mechanism changed and the arranged hour was dropped, the Math Lab was staffed with two instructors on duty and two to three student tutors during peak hours. From Fall 2012 to the present, the Math Lab has been staffed with only one instructor and one student tutor per hour open and this is what is reflected in the staffing table above. Furthermore, in Fall 2012, the peak hours have expanded to encompass a larger proportion of the day and student interaction with staff has increased dramatically. In Summer 2014, the Math Lab began offering services to students taking any Mathematics course here at Fullerton College. Since these two major changes to the Math Lab and the growing trend toward the use of Math Lab Activities, Assignments, and Directed Learning Activities (DLAs), the student/staff interaction has increased significantly, while staffing levels have decreased. In Fall 2014, in an effort to appropriately support, analyze, understand, and eventually enhance this growing student/staff interaction, the Math Lab began documenting every individual tutoring contact

between staff and student. Table 3 summarizes the individual contact by semester and by course level.

Table 3
Math Lab Tutor Log Session Summary
Fall 2014 - Fall 2015

	Fall 2014		Spring 2015		Summer 2015		Fall 2015 (10/31)	
Math Courses	Total Sessions	Total Hours	Total Sessions	Total Hours	Total Sessions	Total Hours	Total Sessions	Total Hours
7	20	2.6	31	3.0	n/a	n/a	7	1.0
10	0	0.0	0	0.0	0	0.0	0	0.0
15	408	46.6	260	31.0	9	1.4	127	13.3
20	1,694	197.9	2,109	235.9	483	51.2	1,077	113.9
30	232	25.8	168	20.6	n/a	n/a	322	42.4
40	2,812	299.8	2,321	254.4	425	50.5	2,629	292.2
41	n/a	n/a	n/a	n/a	n/a	n/a	122	13.5
43	346	45.0	241	27.2	n/a	n/a	35	4.9
100	92	12.6	227	30.8	58	6.4	231	27.5
120	554	90.6	412	66.1	144	13.7	305	36.7
129	466	54.7	331	40.2	20	1.2	470	53.4
130	621	86.0	1,421	189.3	158	24.4	458	57.0
141	2,317	272.9	1,037	115.8	431	43.7	305	35.7
142	1,734	202.7	1,738	184.7	238	24.6	1,250	125.3
150A	2,463	322.0	1,950	247.8	308	37.9	1,039	122.5
150B	388	53.3	1,531	195.1	239	27.8	1,001	125.9
150H	1	0.2	n/a	n/a	n/a	n/a	0	0.0
171	6	1.4	n/a	n/a	n/a	n/a	11	1.7
172	n/a	n/a	15	1.6	n/a	n/a	n/a	n/a
250A	152	20.0	300	44.2	88	13.0	380	49.6
250B	67	8.5	98	10.9	112	11.1	103	11.7

250C	**0**	**0.0**	**14**	**2.6**	**n/a**	**n/a**	**6**	**0.6**
Totals	**14,373**	**3,952.0**	**14,204**	**1,701.2**	**2,713**	**306.9**	**9,878**	**1,128.8**

Over the past several years, the number of faculty and student tutors has decreased while the student/staff interaction has increased. In order to continue to increase interaction, the Math Lab staffing levels need to be increased. This disparity is particularly acute during peak hours of Math Lab usage where long tutoring lines are becoming a norm throughout the day and wait times for tutoring are increasing. Higher demand typically occurs Monday through Thursday between the hours of 8am and 4pm and during the semester around exam dates.

2.5 How many students are served? How has this number changed since the last review?

Any student at the college who is seeking an AA or looking to transfer to a 4-year institution is required to complete at least one math course (usually two or more). The Math Lab is a vital resource to help students increase their competence and confidence in mathematics while encouraging collaboration with classmates.

Tables 4A and 4B reflect the total number of students served, by course, in Fall terms from 2012 through 2015.

Table 4A
Math Lab Student Usage by Course
Fall 2012 and Fall 2013

	Fall 2012				**Fall 2013**			
	Enrollment	**Math Lab Usage - TimeKeeper**			**Enrollment**	**Math Lab Usage - TimeKeeper**		
Math Courses	**at Census**	**Distinct Users**	**Total Visits**	**Total Hours**	**at Census**	**Distinct Users**	**Total Visits**	**Total Hours**
10	**132**	**46**	**197**	**133.9**	**128**	**41**	**231**	**177.0**
15	**991**	**354**	**3,178**	**2,785.5**	**1,202**	**510**	**3,930**	**3,140.8**
20	**1,268**	**577**	**5,034**	**4,240.9**	**1,527**	**761**	**7,946**	**6,769.3**
30	**108**	**48**	**594**	**573.5**	**140**	**88**	**1,224**	**1,186.3**
40	**1,341**	**582**	**6,834**	**5,586.1**	**1,529**	**842**	**10,368**	**9,107.1**
129	**147**	**78**	**672**	**597.0**	**251**	**133**	**1,151**	**1,087.5**
141	**629**	**291**	**4,627**	**4,320.9**	**661**	**403**	**7,034**	**6,554.5**
141H	**27**	**11**	**156**	**148.8**	**n/a**	**n/a**	**n/a**	**n/a**
142	**454**	**240**	**3,107**	**2,550.0**	**468**	**226**	**3,377**	**3,049.0**
Totals	**5,097**	**2,227**	**24,399**	**20,936.6**	**5,906**	**3,004**	**35,261**	**31,071.5**

Table 4B
Math Lab Student Usage and Tutoring by Course
Fall 2014 and Fall 2015

	Fall 2014						Fall 2015 (10/31)					
	Enrollment	Math Lab Usage - TimeKeeper			Tutoring		Enrollment	Math Lab Usage - TimeKeeper			Tutoring	
Math Courses	at Census	Distinct Users	Total Visits	Total Hours	Total Sessions	Total Hours	at Census	Distinct Users	Total Visits	Total Hours	Total Sessions	Total Hours
7	72	20	163	96.7	20	2.6	81	9	19	10.5	7	1.0
15	696	221	1,889	1,715.6	408	46.6	747	215	1,416	1,215.6	127	13.3
20	1,724	677	5,304	4,226.6	1,694	197.9	1,610	387	2,721	2,201.8	1,077	113.9
30	175	64	449	396.2	232	25.8	166	83	606	504.4	322	42.4
40	1,597	738	9,644	8,821.0	2,812	299.8	1,577	563	4,910	4,048.0	2,629	292.2
41	n/a	n/a	n/a	n/a	n/a	n/a	160	23	112	103.7	122	13.5
43	208	113	1,253	1,141.6	346	45.0	131	28	142	111.6	35	4.9
100	767	103	512	424.0	92	12.6	656	102	518	436.3	231	27.5
120	762	180	864	938.1	554	90.6	888	197	1,032	850.4	305	36.7
120H	26	7	68	73.0	0	0.0	15	9	65	45.4	0	0.0
129	284	107	1,095	1,164.8	466	54.7	301	109	912	803.1	470	53.4
130	243	113	956	869.2	621	86.0	241	93	529	489.5	458	57.0
141	884	367	3,697	3,941.1	2,317	272.9	664	165	984	928.5	305	35.7
141H	n/a	n/a	n/a	na	n/a	n/a	13	4	23	13.0	0	0.0
142	523	257	4,128	4,154.7	1,734	202.7	574	270	2,991	2,680.0	1,250	125.3
150A	481	196	2,534	2,732.7	2,463	322.0	468	166	1,522	1,395.0	1,039	122.5
150AH	5	0	0	0.0	1	0.2	6	0	0	0.0	0	0.0
150B	263	59	522	616.1	388	53.3	293	101	1,203	1,279.4	1,001	125.9
171	49	12	69	84.0	6	1.4	83	22	86	61.5	11	1.7
250A	145	41	364	328.9	152	20.0	149	57	701	690.0	380	49.6
250B	62	21	104	73.8	67	8.5	70	18	153	114.2	103	11.7
250C	16	0	0	0.0	0	0.0	23	3	7	2.1	6	0.6
Totals	8,982	3,296	33,615	31,798.1	14,373	1,742.6	8,916	2,624	20,652	17,984.0	9,878	1,128.8

As reflected in the tables, the number of students served has increased dramatically. In Fall 2012, the Math Lab served 2,227 students and then experienced an increase of 34.9% to 3,004 students served in Fall 2013. This was followed up with another increase of 9.7% for the following year, from Fall 2013 to Fall 2014. In Fall 2014, we served 3,296 students, with 31,799 hours in 33,615 visits. This was an increase of 10,861.5 hours, or 51.9%, since Fall 2012. We also experienced similar increases in growth in the number of visits from Fall 2012 to Fall 2014, where we jumped from 24,399 total visits to 33,615, marking a 37.8% increase. Data collected up to October 31, 2015 indicate that the demand is still increasing for Math Lab services to this day.

2.6 Since the previous Program Review Self-Study what significant changes have occurred that impact the services of this program?

Since our last program review in 2012, the Math Lab has seen some significant changes. In Fall 2012, the arranged hour was dropped making lab attendance an optional component for students. Some mathematics instructors require Math Lab attendance, while others encourage attendance on an optional basis. Many instructors have developed Directed Learning Activities (DLAs) and/or Math Lab assignments or activities to be completed in the Math Lab with the support of the Math Lab tutors.

In Summer 2014, the Math Lab began offering services to student taking any Mathematics course here at Fullerton College. This change has led to a dramatic increase in the demand for tutoring in the Lab. Even though the Math Lab is no longer a requirement for students and fewer individual students are attending the Lab, staff/student interaction has sharply increased. In short, students are asking more questions and the Lab has become a place where students collaborate, discuss, and question. The nature of the interaction between students in the Lab has shifted toward collaboration and peer tutoring. Prior to Fall 2012, staffing in the Lab during peak hours included two math instructors and two to three student tutors; now only one instructor and one student tutor is on duty at any given time.

2.7 Describe any laws, regulations, trends, policies and procedures or other influences that have an impact on the effectiveness of your program.

Since the Math Lab is such an integral part of most math courses at the college, the effectiveness of the Math Lab has been a regular agenda item at Math and Computer Science Division meetings and other Mathematics Committee meetings. These discussions have ensured proper alignment with math courses and maintained strong lines of communication with faculty. The number of students entering the Lab and the duration of time each student spends in the Lab is monitored by the Math Lab TimeKeeper. Faculty, staff, and students associated with the Math Lab have continuous discussions regarding the effectiveness of the Math Lab and what changed may be necessary for continuous quality improvement.

In Spring 2015, the division decided that Math Lab orientations given the first week of classes would be optional. Instructors choosing to not bring their class in for orientation were given a short in-class video orientation to share with their students.

Another notable changed is that the semester has been shortened to 16 weeks. This may contribute to the increased usage of the Lab resources, since the content in all math classes is being covered at a faster pace than in previous semesters.

2.8 Provide any other data that is relevant to your self-study.

In Summer 2013, the Math Lab began offering a series of workshops, bootcamps, small group discussions, topic review sessions, and exam review sessions to support student learning, enhance student understanding of concepts, and provide an opportunity for collaborative discussion of topics and problem solving strategies. Table 5 reflects the number of sessions offered and total hours by course.

Table 5
Math Lab Bootcamps and Review Sessions Summary
Summer 2013 - Fall 2015

	Summer 2013		Fall 2013		Spring 2014		Summer 2014		Fall 2014		Spring 2015		Summer 2015		Fall 2015	
Math Courses	Total Sessions	Total Hours	Total Sessions	Total Hours	Total Sessions	Total Hours	Total Sessions	Total Hours	Total Sessions	Total Hours	Total Sessions	Total Hours	Total Sessions	Total Hours	Total Sessions	Total Hours
15	6	9.0	19	19.0									3	3.25		
20	9	9.0					2	3.0			6	11.5	16	21.75		
30					26	26.0										
40	23	25.0					7	8.0			5	12.0	18	23.75	15	30.0
100													6	7.33		
120							1	1.0								
129													7	7.25	6	12.0
130													12	14.75	4	8.0
141	8	9.0					4	5.0			6	12.0	4	5.00	4	5.0
142	14	14.0					4	5.0			4	8.5	7	8.75	18	29.0
150A							1	2.0			6	10.5	1	16.00	24	60.5
150B							1	2.0			5	10.0			4	8.0
250A							1	2.0								
Totals	60	66.0	19	19.0	26	26.0	21	28.0	n/a	n/a	32	64.5	74	107.83	75	152.5

1 Bootcamp - Monday - Thursday = 16hrs (Summer 2015)
1 Bootcamp - Monday - Thursday = 16 hrs & 23 Review Sessions = 44.5 hrs. (Fall 2015)

These sessions are typically smaller groups and focus on the specific needs of the students attending. As reflected in the table, the Summer 2013 pilot program offered 60 different workshops and review sessions for a total of 66 hours. There were 367 students attending these sessions in this pilot program. Since then, the Math Lab has expanded the number of sessions as well as the number of courses in this program. In Spring 2015, the Mathematics and Computer Science Division allocated equity funds to help expand this program. Because of these funds, we are able to offer a wide variety of sessions to students at varying levels. For Fall 2015, we offered 75 sessions for a total of 152.5 hours. Overall, since the pilot program, there have been 2,610 students attending these sessions.

PR Section 3.0

Program Review Non-instructional Cycle F 2015_Math Lab

3.1 - 3.4

3.1 Based on your analysis in 2.1 through 2.8, what are the strengths of your program?

- The Math Lab staff and student tutors reflect the diversity of our student population.
- The Math Lab supports the college goal to strengthen connections with the community – some tutors are Fullerton College alumni who have transferred, some faculty are adjunct instructors who teach full-time at feeder high schools and other colleges and universities, and we have on staff qualified volunteers from the community.
- A mathematics faculty member is on duty every hour the Math Lab is open.

- The Math Lab shares a computer lab with Fullerton College computer science students.
- The Math Lab hours of operation allow students ample opportunities to utilize its services.
- Classified staff percent of employment and/or months per year of employment increased since the last program review.
- The Math Lab has welcomed any student in any Fullerton College Mathematics course to utilize the Math Lab since Summer 2014.
- In Fall 2015, 82.5% of the 600 Math Lab students surveyed agreed or strongly agreed that the Math Lab has assisted them.

Question 1: The Math Lab has assisted me in improving my math skills in my math course.				
Answer	Students	Percent		Percent
Strongly Agree	226	37.7%	Strongly Agree/Agree	82.5%
Agree	269	44.8%	No Opinion	15.8%
No Opinion	95	15.8%	Disagree/Strongly Disagree	1.7%
Disagree	6	1.0%	Total	100%
Strongly Disagree	4	0.7%		
Total	600	100%		

- The total number of tutoring sessions for math levels that did not receive tutoring prior to Spring 2014 increased from 0% (last review) to 30.2% (Fall 2014) to 37.8% (Fall 2015).

Math 150A/B/H, 250A/B/C, Math 130, Math 100, 120, 171, 172, 290/H, 291/H						
	Fall 14	%	2014-2015	%	Fall 2015	%
4344	30.22%	11436	36.53%	2413	37.85%	

- Our Math Lab students have proven to be prepared in all of the aspects of the four areas of ISLOs at Fullerton College.
- With an accessible Math Lab Coordinator, the lab is able to support the needs of the math division and individual instructors.

3.2. Based on your analysis in 2.1 through 2.8, what are the weaknesses of your program?

- Since Fall 2012, the number of faculty and student tutors has decreased while the student to staff interaction has increased.
- The Math Lab needs more support staff during peak hours.
- Staffing in the Math Lab prior to Fall 2012 included two math instructors and two to three student tutors; now only one instructor and one student tutor is on duty at any given time.
- The proportion of Math 15, 20, and 141 students utilizing the Math Lab has declined.

Math 15 Math Lab Usage						
Term	Total visits	Total # of sessions	Distinct students	Total hours	Census date	Approximate% students use math lab
Fall 2012	3178	n/a	354	2785.50	991	35.72
Spring 2013	2713	n/a	361	1914.82	987	36.58
Fall 2013	3930	n/a	510	3140.80	1202	42.43
Spring 2014	2743	n/a	328	2312.67	1035	**31.69**
Fall 2014	1889	408	221	1715.58	696	**31.75**
Spring 2015	1090	260	153	1071.25	592	**25.84**
Fall 2015 (August -Oct 31)	1285	127	212	1107.03	747	**28.38**

Math 20 Math Lab Usage						
Term	Total visits	Total # of sessions	Distinct students	Total hours	Census date	Approximate% students use math lab
Fall 2012	5034	n/a	577	4240.93	1268	45.50
Spring 2013	5006	n/a	594	4058.87	1331	44.63
Fall 2013	7946	n/a	761	6769.28	1527	49.84
Spring 2014	5635	n/a	581	4811.78	1401	**41.47**
Fall 2014	5304	1694	677	4226.62	1724	**39.27**
Spring	4073	2109	436	3521.58	1649	**26.44**

2015						
Fall 2015 (August - Oct 31)	2429	602	379	1950.08	1610	**23.54**

Math 141 Math Lab Usage						
Term	Total visits	Total # of sessions	Distinct students	Total hours	Census date	Approximate % students use math lab
Fall 2012	4627	n/a	291	4320.90	629	46.26
Spring 2013	4083	n/a	288	3722.95	583	49.40
Fall 2013	7034	n/a	403	6554.52	661	60.97
Spring 2014	3746	n/a	255	4303.22	578	**44.12**
Fall 2014	3697	2317	367	3941.05	884	**41.52**
Spring 2015	1495	1037	200	1675.38	609	**32.84**
Fall 2015 (August-Oct 31)	845	305	157	789.63	664	**23.64**

- The Math Lab does not have funding to have additional instructors on duty during hours of higher demand.
- Since the last program review, the Math Lab is being used by 30.4% of our Spring students, 40% of our Summer students, and 34% of our Fall students. A goal of the Math Lab would be to see these numbers increase.

% Lab Usage		Spring	Summer	Fall

	2012			31.9
	2013	31.3		34.8
	2014	29.2	37.4	35.4
	2015	30.8	42.2	
	Average	**30.4**	**40**	**34**

- Student surveys indicate that the wait time for tutoring can be improved.
- The Math Lab is not able to offer as many workshops and review sessions as it would like to due to the lack of resources and rooms to hold them in.

3.3 Based on your analysis in 2.1 through 2.8, what opportunities exist for your program?

- Directed Learning Activities (DLAs) and online tutoring may improve our success and retention rates in certain transfer-level math courses.
- The Math Lab needs more space to provide group tutoring and collaborative work areas to present exam review sessions to ensure that all students are successful in their math and computer science courses. This will also shorten students' wait times for one-on-one tutoring.
- The Division would like to allocate more release time to the Math Lab Coordinator, in order to increase and continue to improve the services the Math Lab provides and to enhance the coordination with the division and instructors within the division.
- Our Math 20 success rates have declined and this may be due, in part, to the removal of the prerequisite since the last program review. To help the success rate, we could begin to offer bootcamp sessions for these students.
- Having more adjunct faculty in the Math Lab could help the students who are unable to meet with their instructors.
- Providing training for student tutors would allow them to lead course specific review sessions or topic specific review sessions.

3.4 Based on your analysis in 2.1 through 2.8, what challenges exist for your program?

- Funding for the Math Lab is a challenge. In order to provide effective math tutoring for the students and to keep the Math Lab operating seamlessly, at the very least, the Math Lab must maintain its current staffing levels.
- Encouraging more students, in particular Math 15 and Math 20 students, to come to the Math Lab and to utilize the services is another issue of concern.
- At this time, the Math Lab offers limited tutoring hours for certain courses..
- If the Math Lab increases the number of workshop, review sessions, and/or study groups, then the physical space is inadequate and presents a challenge.

PR Section 4.1 - 4.2

Program Review Non-instructional Cycle F 2015_Math Lab

4.1 - 4.2

4.1 List your SAO/SLOs and complete the expandable table below.

	Service Area Outcomes (SAO) / Student Learning Outcomes (SLO)	**Date Assessment Completed**	**Date(s) Data Analyzed**	**Date(s) Data Used For Improvement**	**Number of Cycles Completed**
1.	(SAO) The Math Lab will offer individualized tutoring to students enrolled in any Fullerton College Mathematics course.	Ongoing	Ongoing	Ongoing	n/a
2.	(SAO) The Math Lab will offer a variety of resources to support students enrolled in any Fullerton College Mathematics course.	Ongoing	Ongoing	Ongoing	n/a
3.	SLO for Math N01F: Upon successful completion of MATH N01F, students will be able to report progress in selected areas of individualized units of study.	Fall 2014 Fall 2015	Fall 2014 Spring 2015 Fall 2015	Spring 2015 current/ongoing	2

4.2 Assessment: Complete the expandable table below.

Service Area Outcomes **Assessment for the Student Services Division of Fullerton College**			
Intended Outcomes	**Means of Assessment & Criteria for Success**	**Summary of Data Collected**	**Use of Results**
1. The Math Lab will offer individualized tutoring to students enrolled in any Fullerton College Mathematics course.	• Student surveys • TimeKeeper reports • Tutoring logs • Observation	The Lab has provided tutoring to students enrolled in any math course since Summer 2014. During the Fall 2014, Spring 2015 and Summer 2015, we provided 31,290 individualized tutoring sessions. This is documented in Table 3 of Section 2.4 19,871 or 63.51% of these sessions were for the students enrolled in courses that received tutoring prior to Summer 2014. • 7,420 sessions or 23.71% were for the students enrolled in Math 150A, Math 150H, Math 150B, and Math 250A • 2,200 sessions or 7.03% were for the students enrolled in Math 130 • 1,799 sessions or 5.75% were for the students enrolled in Math 100, Math 120, Math 171, Math 172, Math 250B and above. • The data show there is a strong demand for Math Lab tutoring at all	Data are used to adjust staffing, add additional tutors based on the average length of a tutoring session and level of satisfaction of students using the Lab, and upgrade technology. The data are used for evaluation and possible modification of Math Lab services and promotion efforts.

		levels. Note that 36.5% of students who used the Lab in 2014-15 were enrolled in courses not previously served in the Math Lab. • See Table 3 for data In Fall 2015 (8/24-10/31), 64.22% of students that received individualized tutoring in the Lab were enrolled in courses that received tutoring prior to Summer 2014. • 2,420 sessions or 24.50% were for calculus students (Math 150A, Math 150H, Math 150B and Math 250A) • 458 sessions or 4.64% were for business calculus students • 656 sessions or 6.64% were students enrolled in Math 100, Math 120, Math 250A, Math 171 and Math 250C • The data show a similar trend to the previous year, again illustrating that there is a strong demand for tutoring at all levels. • See Table 3 for data	
2. The Math Lab will offer a variety of resources to support students enrolled in any Fullerton College Mathematics course.	• Student surveys • TimeKeeper reports • Tutoring logs • Observation	Students have been observed using the various resources that the Math Lab offers. In addition to individualized tutoring, students use computers with internet access, watch instructional videos,	Data are used to adjust staffing, add additional tutors based on the average length of a tutoring session and level of satisfaction of students using the Lab, and upgrade technology. The data

		check answers in the instructor editions of textbooks, collaborate with other students, attend exam and topic review sessions, math bootcamps, and complete Math Lab assignments and/or activities and DLAs assigned by their instructors. See Table 5 for data.	are also used for evaluation and possible modification of Math Lab services and promotion efforts.
Student Learning Outcomes Assessment for the Student Services Division of Fullerton College			
Intended Outcomes	Means of Assessment & Criteria for Success	Summary of Data Collected	Use of Results
1. SLO for Math N01F: Upon successful completion of Math N01F, students will be able to report progress in selected areas of individualized units of study.	• Student surveys • TimeKeeper reports • Grade reports of full-time instructors of Math 150B	In Fall 2014, the Math Lab surveyed 1,212 students on how successful the Math Lab was in assisting them in improving their math skills in their math course. • 75.58% of students surveyed strongly agreed or agreed • 21.37% had no opinion • 3.05% disagreed or strongly disagreed • See Appendix A for data In Fall 2015, students were asked to rate two statements: A. The Math Lab has assisted me in improving my math skills in my math course. • 600 students responded • 82.5% agreed or strongly agreed • 15.8% had no opinion	Data are used to adjust staffing, add additional tutors based on the average length of a tutoring session and level of satisfaction of students using the Lab, and upgrade technology. The data are also used for evaluation and possible modification of Math Lab services and promotion efforts.

		• 1.7% disagreed or strongly disagreed B. If you have used the Math Lab in previous semesters, has the Math Lab better prepared you for your math course this semester. • 597 students responded • 22.9% of students surveyed were using the Math Lab for the first time (thus had not used the Lab last semester and could not evaluate if the Math Lab had helped them to be better prepared for this semester) • Out of 77.1% of students who used the Math Lab before: u25CB 69.3% “Yes” u25CB 11.1% “No” u25CB 19.6% “No Opinion” u25CB See Appendix B In Fall 2015 grades were analyzed (through week 13) of Math 150B students whose instructors were on duty in the Lab. This represents two instructors of seven currently teaching the course. • Sample size was 72 students • Average grade was 69.6% for the students that spent 0 minutes in the Lab (thus were not enrolled in Math N01F)	

		• Average grade was 73.6% for the students that spent at least one minute in the Lab • Average grade was 77.8% for the students that spent at least 500 minutes in the Lab • See Appendix E for data	

PR Section 4.3 - 4.6

Program Review Non-instructional Cycle F 2015_Math Lab

4.3 - 4.6

4.3 How has assessment of program SAOs led to improvements in services provided to students by this program?

The data shows that 11,419 individualized tutoring sessions, or 36.49% in Fall 2014-Fall 2015, were held for the students enrolled in courses that were not served by the Math Lab prior to Summer 2014. This shows that there is a significant demand for individualized tutoring in all levels of mathematics. This supports the decision to open the Math Lab to all students, which is a substantial improvement in access to providing services to all of our mathematics students. Another improvement in services that can be attributed to the assessment of SAOs is that we now post a schedule of instructors and what levels they tutor. Since not all of our instructors on duty in the Lab answer all questions in Math 100, Math 120, Math 150B and higher, the schedule ensures that the students can plan to come to the Lab at specific times when they know someone will be available to help them.

4.4 How has assessment of SLOs led to improvements in student learning and achievement?

After the results from Fall 2014 were analyzed, Math Lab staff and math faculty joined together to discuss the issues and plan improvements to the program. One major plan was to expand the offering of exam, topic, and final review sessions that we began offering in Summer 2013. Not only did we expand the number of sessions offered, but we were able to offer them to more courses. In Spring 2015, the division allocated equity funds were used to help fund this project and we were able to include Math 150A and 150B in these sessions. An assessment of SLOs and analysis of Math 150B data in Fall 2015 indicated that individualized tutoring and resources available in the Math Lab are academically beneficial for students. The combination of resources available in the Lab and face-to-face tutorial services led to improved student learning and academic success as can be seen in Appendix E.

4.5 What challenges remain to make your program SAOs/SLOs more effective?

The main challenges for the Math Lab are to gain the needed campus support and funding to implement expansion in order to provide out-of-class help and support for all mathematics students. Since opening to all levels of math, the lab has seen a steady and high flow of

students throughout the entire day and the demand for tutoring has created longer lines and wait time. This is evidence that the services of the Math Lab are in high demand. Oddly, in a period of campus growth, the staffing level of the Math Lab has actually decreased since 2012, and is currently staffed at the level it was 20 years ago. It is abundantly clear that the current Math Lab space and funding level is woefully inadequate to meet the needs of our students.

The Math Lab needs more space to provide individualized tutoring, group tutoring and collaborative work areas, and present review sessions to ensure that we offer the support to all students that enables them to be successful in their math course. This could be accomplished by:

- Dedicating additional rooms to the Math Lab
- Reverting control of Room 611L to the Math and Computer Science Division, as was originally planned and promised during the previous remodel of this area
- Dedicating an area for math in the Natural Sciences proposed Campus STEM Resource Center
- Incorporating additional Math Lab space into the next classroom office building or possibly dedicating space in the 600 building when remodeling.

More money is also needed in the budget for Math Lab staffing to provide sufficient out-of-class help and student support.

The other challenge that the Math Lab Program Review team encountered was that the current SAOs are not well-written, which made them impossible to “assess.” Both SAOs were not measurable, and the second SAO was not specific. In order to make the Math Lab SAOs more effective, it is necessary to implement new SAOs. We propose the following as the new SAOs:

1. Increase the percent of mathematics students using the Math Lab by 3% by the next Program Review.
2. Increase the success and retention of mathematics students utilizing the Math Lab.

4.6 Describe how the program’s SAOs/SLOs are linked to the college's goals. (*See http://programreview.fullcoll.edu/*)

The Math Lab SAO/SLOs are linked to the college’s goals in the way that as a program we promote student success (Goal 1) and the student learning experience at Fullerton College. The Math Lab provides resources and tutoring so that students will deepen and broaden their understanding of mathematical concepts that directly affect student success. Helping students to be successful in their math classes will help increase course retention/success (Goal 1, Objective 2) and increase the persistence rate of students (Goal 1, Objective 6). As a service and resource to students, we also post flyers for STEM activities in the Math Lab, which supports increasing the number of students participating in STEM activities (Goal 1, Objective 5). As a resource for students, we offer various workshops, covering topics that many students commonly struggle with, thus addressing the needs of underprepared students (Goal 1, Objective 1). The Math Lab promotes a mathematically based community and encourages collaboration that aids students in developing essential skills to be successful.

4.7 Describe how the program’s SAOs/SLOs support the achievement of the institution level

SLOs.

We support the achievement of the institutional level SLOs by assisting students that receive tutoring in the Lab to complete their basic skills and transfer-level math courses. Through the individualized tutoring, resources and support students received from our program, they are able to develop the skills, knowledge, attitude, and ability to complete their basic skills and transfer-level math courses, and then move on to four-year colleges, universities, or enter the workforce. Students that receive our support and guidance are able to write proofs of mathematical theorems (1B, 2A). They are able to analyze and interpret data using technology (2C), present the findings of their research verbally (1D) and in writing using various graphs and diagrams (1B). During one-on-one interaction with an instructor or a tutor, students are expected to communicate effectively both orally and in writing (1B, 1D), accept criticism if mistakes are found in their work (1C), and respond appropriately to changing situations (4A). For example, since the Math Lab does not help with course exams, and individualized tutoring sessions are generally limited to 10 minutes unless there is a line, students are expected and encouraged to find example problems similar to the ones they are working on in the textbook (1A). In the Lab, students can also utilize a variety of online and offline resources such as instructional video lessons and graphing calculator tutorials available through Pearson's MyMathLab (1C). Additionally, we help students with computations, tables, charts, geometry (2B) and application problem-solving (2D) in the individualized tutoring sessions.

4.8 A. What methods are used to assess the program's success in serving the student population that interacts with your program?

- Student surveys
- TimeKeeper Reports
- Math Program SLO (PSLO) assessment results
- Observations made by the Math Lab staff
- Evaluations of topic and review sessions, workshops, and bootcamps

B. What do the results of the above methods of assessment indicate about the effectiveness of the program?

Over eighty percent of the students that participated in the assessment rated the services of the Lab as helpful, which implies that the program is effective. While this is a pleasant result, from observation, we know that we can be more effective in better serving students who prefer to work in groups while continuing to support students who need a quiet study area. This could be achieved by dedicating additional space, allocating funds to the Math Lab and by increasing our staffing levels. We could also be more effective in addressing the needs of underprepared students. Directed Learning Activities (DLAs) have been used at other colleges to facilitate just-in-time remediation. We plan to investigate how implementing such activities could improve our students' success, retention and persistence rates.

C. How were the assessment results used to make improvements to services provided by this program? Please provide examples.

The Math Lab staff are continually collecting data on the students who are being tutored as well as observing and recording the dynamics of the Lab. The data and observations are assessed and used to make improvements in the services the Lab offers. For example, we noticed that students tend to have difficulties with the same concepts and found ourselves answering the same questions again and again. To be more efficient and improve our services, we determined that it would be beneficial to have group or collaborative sessions for students covering those difficult concepts, ideally in an area with a whiteboard that would be

conducive to facilitating their learning. Thus, we started offering topic review sessions throughout the semester. We have expanded this new service to include exam review sessions for various levels of mathematics courses. We have received positive feedback for the review sessions.

Even with the large number of review sessions for calculus students, the tutoring data reveals that the number of tutoring sessions for students enrolled in Math 130, Math 150A, Math 150B, Math 150H and Math 250A increased from 25.22% in Fall 2014 to 29.14% in Fall 2015 (see Appendix D). This shows that the demand for support for calculus students is strong and increasing. We would like to further improve our services and support of students by shortening the wait time for tutoring in the Lab during peak hours. This is best accomplished by having a separate group tutoring area with an instructor on duty. This improvement can only come to fruition when the Lab gains more space and funding.

Appendix A
Math Lab SLO Assessment
Fall 2014 (11/26/14-12/31/14)
Question/Statement: The Math Lab has assisted me in improving my math skills in my math course.

Answer	Students	Percent		Percent
Strongly Agree	355	29.29%	Strongly Agree/Agree	75.85%
Agree	561	46.29%	No Opinion	21.37%
No Opinion	259	21.37%	Disagree/Strongly Disagree	3.05%
Disagree	19	1.57%	Total	100%
Strongly Disagree	18	1.49%		
Total	1212	100%		

Appendix B
Math Lab SLO Assessment
Fall 2015
Question 1: The Math Lab has assisted me in improving my math skills in my math course.

Answer	Students	Percent		Percent
Strongly Agree	226	37.7%	Strongly Agree/Agree	82.5%
Agree	269	44.8%	No Opinion	15.8%
No Opinion	95	15.8%	Disagree/Strongly Disagree	1.7%
Disagree	6	1.0%	Total	100%

Strongly Disagree	4	0.7%		
Total	600	100%		

Question 2: If you have used the Math Lab in previous semesters, has the Math Lab better prepared you for your math course this semester?

Answer	Students
Yes	319
No	51
No Opinion	90
First Semester	137
Total	597

Results for students who used the lab in the past

Answer	Students	Percent
Yes	319	69.3%
No	51	11.1%
No Opinion	90	19.6%
Total	460	100%

Appendix C
Individual Tutoring Sessions for Calculus Students, Business Calculus Students, Math 142 and below Students, and All Other Students

	Fall 2014	*Percent*	*Spring 2015*	*Summer 2015*	*2014-2015*	*Percent*	*Fall 2015 (8/24-10/31)*	*Percent*
Math 7	20	0.14%	31	0	51	0.16%	7	0.07%
Math 15	408	2.84%	260	9	677	2.16%	127	1.29%
Math 20	1694	11.79%	2109	483	4286	13.70%	1077	10.90%
Math 30	232	1.61%	168	0	400	1.28%	322	3.26%
Math 40	2812	19.56%	2321	425	5558	17.76%	2629	26.61%
Math 41	0	0.00%	0	0	0	0.00%	122	1.24%
Math 43	346	2.41%	241	0	587	1.88%	35	0.35%

Math 100	92	0.64%	227	58	377	1.20%	231	2.34%
Math 120	554	3.85%	412	144	1110	3.55%	305	3.09%
Math 129	466	3.24%	331	20	817	2.61%	470	4.76%
Math 130	621	4.32%	1421	158	2200	7.03%	458	4.64%
Math 141	2317	16.12%	1037	431	3785	12.10%	305	3.09%
Math 142	1734	12.06%	1738	238	3710	11.86%	1250	12.65%
Math 150A	2463	17.14%	1950	308	4721	15.09%	1039	10.52%
Math 150B	388	2.70%	1531	239	2158	6.90%	1001	10.13%
Math 150H	1	0.01%	0	0	1	0.00%	0	0.00%
Math 171	6	0.04%	0	0	6	0.02%	11	0.11%
Math 172	0	0.00%	15	0	15	0.05%	0	0.00%
Math 250A	152	1.06%	300	88	540	1.73%	380	3.85%
Math 250B	67	0.47%	98	112	277	0.89%	103	1.04%
Math 250C	0	0.00%	14	0	14	0.04%	6	0.06%
Total	14373	100.00%	14204	2713	31290	100.00%	9878	100.00%

Appendix D

Individual Tutoring Sessions for Math 130, Math 150A, Math 150B, Math 150H and Math 250A

Semester	Number	Percent
Fall 2014	3625	3625/14373=25.22%
Spring 2015	5202	5202/14204=36.62%
Summer 2015	793	793/2713=29.23%
Fall 2015 (8/24-10/31)	2878	2878/9878=29.14%

Appendix E

Math 150B Grades through Week 13 versus Math Lab Usage

ML=0 Average Grade	69.66

ML>0 Average Grade	73.61
ML>500 Average Grade	77.84
Sample size	72

PR Section 5.0

Program Review Non-instructional Cycle F 2015_Math Lab

5.0

5.0 Evaluation of Progress Toward Previous Goals (Future program review templates for this section will identify “previous goals” as “previous strategic action plans”.)

5.1 List the goals from your last self-study/program review.

Short Term Goal #1: Maintain at least one instructor on duty during all hours of operation.

Short Term Goal #2: Keep the Math Lab under the auspices of the Division of Mathematics and Computer Science, with a full-time faculty member as the Math Lab Coordinator.

Long Term Goal #1: Expand the space of the Math Lab so that workshops, review sessions, and study groups can be facilitated.

Long Term Goal #2: Expand the Math Lab support to other math courses.

5.2 Describe the level of success and/or progress achieved in the goals listed above.

Short Term Goal #1: Maintain at least one instructor on duty during all hours of operation.

This goal was accomplished. There is one instructor on duty during all hours of operation; however, the statistics show that the student/staff interaction is increasing and the lab requires more than just one instructor on duty during high demand. An extension of this goal would be to add 8-10 hours of staffing for each day Monday through Thursday for a total of about 40 hours a week.

Short Term Goal #2: Keep the Math Lab under the auspices of the Division of Mathematics and Computer Science with a full-time faculty member as the Math Lab Coordinator.

This goal was accomplished. The Math Lab continues to be managed by the Division of Mathematics and Computer Science with a full-time faculty member as the Math Lab Coordinator. The Math Lab Coordinator is hands on, being a liaison between the Math Lab and the Mathematics and Computer Science Division. The coordinator teaches math courses, is an instructor on duty, coordinates the hiring and training of staff and tutors, and manages all aspects of the lab under the consent of the division and the dean.

Long Term goal #1: Expand the space of the Math Lab so that workshops, review sessions, and study groups can be facilitated.

This goal has not been achieved, and continues to be a need of the Math Lab. The Math Lab was able to utilize rooms around the campus for workshops, bootcamps, small group discussions, and review sessions. However, this has caused a logistical issue because the rooms are not always located close to the Math Lab and are not always available. Oftentimes, sessions are cancelled or are not held at the desired time due to the inability to find a room. Workshop times have to be changed and offered at a time that is not the most suitable for the students. The Math Lab is in need of a room and/or its own expanded space, in close proximity to the current lab, to greater serve our Fullerton College Math students.

Long Term Goal #2: Expand Math Lab support to other Math courses.

This goal was achieved, but could continue to be improved upon. The Math Lab is now open to all students currently enrolled in a Fullerton College Mathematics course. The students are able to use the Lab space and resources during all open hours. However, tutoring is not guaranteed for all math levels at all times and students are provided with a schedule of tutoring availability. With funds for additional instructors on duty, we could address this need and possibly provide additional hours of tutoring.

5.3 How did you measure the level of success and/or progress achieved in the goals listed above?

Short Term Goal #1: Maintain at least one instructor on duty during all hours of operation.

This was measured by examining staff assignment sheets and Math Lab Instructor on Duty schedule.

Short Term Goal #2: Keep the Math Lab under the auspices of the Division of Mathematics and Computer Science, with a full-time faculty member as the Math Lab Coordinator.

This was measured by observation and staff assignment sheets. This goal was accomplished and has proved to be beneficial. With numerous changes that have occurred in the Math Lab, the coordination of the Lab with the Math Division has made these transitions smooth. With an accessible coordinator, the Lab is able to support the needs of the Math Division and individual instructors.

Long Term Goal #1: Expand the space of the Math Lab so that workshops, review sessions, and study groups can be facilitated.

As stated previously, this goal was not accomplished. Without the resources or the location of a space to expand the physical environment, the Math Lab has needed to locate various rooms around the campus to accommodate workshops, study groups, review sessions and bootcamps. The lack of dedicated room space conducive to these activities has impeded the lab’s ability to serve the students in a larger capacity. As pointed out earlier, it is rather difficult to find a suitable open room at the most opportune time and place that coincide with the needs of the students.

Long Term Goal #2: Expand the Math Lab support to other math courses.

The success of this goal is verified through the examination of TimeKeeper reports and tutoring logs. These documents confirm that all levels of Fullerton College math students utilize the Math Lab.

5.4 Provide examples of how the goals in the last cycle contributed to the continuous quality improvement of your program.

Short Term Goal #1: Maintain at least one instructor on duty during all hours of operation.

By maintaining an instructor on duty during all hours of operation, the Lab has created an environment in which a professional in the field is always available to work with students. The instructors have expertise in the subject and their experience in teaching mathematics in the classroom is invaluable to the lab. They also contribute to the development, mentoring, and training of all other tutors working in the lab.

Short Term Goal #2: Keep the Math Lab under the auspices of the Division of Mathematics and Computer Science, with a full-time faculty member as the Math Lab Coordinator.

As stated previously, the accomplishment of this goal has allowed the Math Lab to stay closely connected with the Math and Computer Science faculty, and therefore the staff is able to keep abreast of current faculty and student needs and/or concerns. Any issues that arise can be addressed as needed at regularly scheduled division meetings. In addition, the Math Lab has implemented and responded to requests, ideas, and needs of the math faculty.

Long Term Goal #1: Expand the space of the Math Lab so that workshops, review sessions, and study groups can be facilitated.

Since this goal has not been achieved, it will continue to be a goal of the Math Lab. A designated space for the Lab would allow more flexibility when scheduling activities that are an extension of the Lab's normal functions, such as the successful conduction of workshops and review sessions. In addition, having a space for student study groups would promote greater camaraderie and support between Fullerton College math students and faculty.

Long Term Goal #2: Expand the Math Lab support to other math courses.

The Math Lab has seen a significant number of higher-level students make use of the available tutoring ever since the Lab opened to all math levels in Summer 2014. This is reflected in our TimeKeeper reports and tutoring logs. According to recent tutoring log summaries, Math 150A and 150B students, in particular, are greatly utilizing the tutoring available. The number of students being tutored at the lab is a clear indication of the successes of this accomplished goal. The Math and Computer Science Division is proud of this significant change, and is working to continue to provide the best assistance to all Fullerton College math students.

5.5 In cases where resources were allocated toward goals in the last cycle, how did the resources contribute to the improvement of the program?

Short Term Goal #1: Maintain at least one instructor on duty during all hours of operation.

The use of division allocated funds made it possible to employ certificated staff, which continually adds to the quality of instruction and professional atmosphere in the Math Lab.

Short Term Goal #2: Keep the Math Lab under the auspices of the Division of Mathematics and Computer Science, with a full-time faculty member as the Math Lab Coordinator.

No resources allocated or needed for the first part, but four units of release time is allocated for the Coordinator. The division would like to allocate more release time to this position in order to continue to improve the service that the lab provides.

Long Term Goal #1: Expand the space of the Math Lab so that workshops, review sessions, and study groups can be facilitated.

Resources were not allocated towards this goal for space, but the office staff assisted in finding rooms. Division allocated equity funds were used for instructors and clerical work to facilitate and teach review sessions, workshops, bootcamps, and facilitate small group discussions.

Long Term Goal #2: Expand the Math Lab support to other math courses.

Resources were not allocated, but there is a definite need for funds. The Math Lab needs to increase staffing levels to address the increased demand on the tutoring staff and to help facilitate Directed Learning Activities (DLAs) and lab activities and assignments.

5.6. If funds were not allocated in the last review cycle, how did it impact your program?

Short Term Goal #1: Maintain at least one instructor on duty during all hours of operation.

Funds were allocated, but on instructor on duty is not enough, especially at peak hours. The Math Lab needs another instructor to increase available tutoring, facilitate small group discussions, and assist in the development and implementation of Directed Learning Activities (DLAs) and lab activities and assignments.

Short Term Goal #2: Keep the Math Lab under the auspices of the Division of Mathematics and Computer Science, with a full-time faculty member as the Math Lab Coordinator.

No resources allocated or needed for the first part, but four units of release time is allocated for the Coordinator by the Division Dean. The division would like to allocate more release time to this position. With more release time, for example, the coordinator would be able to have additional time to analyze data in order to more appropriately address the needs of the math students at Fullerton College.

Long Term Goal #1: Expand the space of the Math Lab so that workshops, review sessions, and study groups can be facilitated.

Workshops, review sessions, small group discussions, and bootcamps have been held in a variety of rooms and locations across the campus. This has caused a logistical issue and at times, we cannot offer a session that students need, or the session cannot be held at a time most beneficial to the students because of space/room availability. Some sessions are held in open areas, like the annex, which is not suitable for such activities. The need for our own expanded space or location close to the Math Lab becomes more critical as we continue to develop these type of sessions to enhance student learning.

Long Term Goal #2: Expand the Math Lab support to other math courses.

The Math Lab did not receive funding to increase the number of instructors on duty, therefore

placing higher demand on the current staff. Without the funds to address greater tutoring demand that has stemmed from opening the Lab to all math levels, students are having to wait in longer lines for tutoring. This can be a deterrent for the students, especially those students that are apprehensive or nervous about seeking help in the first place. The Lab hopes to make lines shorter and have the ability to address student needs promptly.

PR Section 6.0

Program Review Non-instructional Cycle F 2015_Math Lab

SAP

SAPs for this three-year cycle:

STRATEGIC ACTION PLAN # 1	
Strategic Action Plan Name: (formerly called short-term goal)	Math Lab Expansion
List College goal/objective the plan meets:	College Goal #: 1 Objective #: 1, 2, 6
Briefly describe the SAP, including title of person(s) responsible and timeframe, in 150 words or less.	Provide an area (room 611C, for example) where math students of all levels can discuss and collaborate on problems, work together in groups, write out problems on white boards while discussing them, and have an instructor present to facilitate from of the discussion and provide assistance as needed. If properly funded, timeframe for implementation could be as soon as Fall 2016. The Math Lab Coordinator and Division Dean are the persons responsible.
What *Measurable Outcome* is anticipated for this SAP?	An increase in the number of students utilizing Math Lab services and an increase in the performance of those students in their math courses.
What specific aspects of this SAP can be accomplished without additional financial resources?	Gaining control of the room dedicated to the Math Lab expansion.
If additional financial resources would be required to accomplish this SAP, please complete the section below. Keep in mind that requests for resources must follow logically from the information provided in this self-study.	

Type of Resource	Requested Dollar Amount	Potential Funding Source	
Personnel	$60,000 (1 fulltime faculty) $30,000 (hourly for each hour of lab operation)	College funds	
Facilities	Designated classroom	College funds	
Equipment	$5,000 for furniture	College funds	
Supplies	$3,000 per year	College funds	
Computer Hardware	$6,000	College funds	
Computer Software			
Training			
Other			
Total Requested Amount	**$104,000**		

STRATEGIC ACTION PLAN # 2

Strategic Action Plan Name: (formerly called short-term goal)	Online Tutoring
List College goal/objective the plan meets:	College Goal #: 1 Objective #: 1, 2, 6
Briefly describe the SAP, including title of person(s) responsible and timeframe, in 150 words or less.	Investigate online tutoring and support for students at other academic institutions as well as at Fullerton College (Academic Support Services has a similar service), identify SWOCs for those programs, then implement an online math tutoring program. Procure appropriate technology (Surfaces, IPads, etc.) and sufficient staffing (classified staff, tutors, etc.) and training for successful implementation. Investigation of other programs could be done relatively quickly, and implementation could happen as early as Fall 2017. The Math Lab Coordinator and Division Dean are the persons responsible.
What *Measurable Outcome* is anticipated for this SAP?	An increase in the number of student utilizing Math Lab services and an increase in the performance of those students in their math courses.

What specific aspects of this SAP can be accomplished without additional financial resources?	None

If additional financial resources would be required to accomplish this SAP, please complete the section below. Keep in mind that requests for resources must follow logically from the information provided in this self-study.	

Type of Resource	Requested Dollar Amount	Potential Funding Source	
Personnel	$37,000 (1 faculty - overload) $11,100 (1 hourly) (20 hrs/wk for 37 wks)		
Facilities	Designated classroom		
Equipment			
Supplies	$1,000		
Computer Hardware	$2,400		
Computer Software	$1,000		
Training	$1,000		
Other			
Total Requested Amount	**$53,500**		

PR Section 7.0

Program Review Non-instructional Cycle F 2015_Math Lab

7.0

Describe the long term plans (four-six years) for your program. Please consider future trends in your narrative. Identifying financial resources needed for these plans is optional.

The Math Lab would like to continue and expand the current tutoring services that are available to Fullerton College Mathematic students. Expansion of these services would include holding small collaborative group study sessions with an instructor present to facilitate and located in a room within or in close proximity to the Math Lab. We would also like to offer online tutoring, roving tutoring within the Lab and expand the Math Lab activities, assignments and DLAs available to our students. In addition, the Math Lab would like to expand the

offerings of the current review/topic study sessions to all math courses and hold bootcamps prior to the start of a semester for more of our math courses. Ideally, we would like to have several small rooms within the Math Lab to facilitate small group tutoring and study sessions. The resources needed to accomplish these goals would be funding and allocation of space. Funding is necessary for additional instructors on duty and for increasing our current staffing levels and the release time for the coordinator in order to support and manage these improvements. We would also need additional funds dedicated to the expansion of topic and review sessions, bootcamps and small collaborative group study sessions. Finally, we would need to locate a permanent room, within or close to the Math Lab, where all of these sessions could be held.

PR Section 8.0

Program Review Non-instructional Cycle F 2015_Math Lab

8.0

This section provides the reader with an overview of the highlights, themes, and key segments of the self-study. It should not include new information that is not mentioned in other sections of this document.

Since opening in 1967, the Math Lab has had 48 years to grow and refine its mission, procedures and policies to serve the ever-changing student population of Fullerton College. The Lab offers excellent support to all levels of Fullerton College Mathematic courses and students with a variety of resources. In Fall 2012 when the arranged hour was dropped, the Math Lab recorded a decrease in the number of students attending but experienced an increase in interaction between staff and students. Tutoring services were being utilized at increasing levels and instructors were beginning to introduce activities, assignments and DLAs. In the Summer of 2013, the Lab began a pilot program of review and topic sessions that has evolved into an excellent resource that supports student learning and enhances student understanding of concepts as well as provides an opportunity for collaborative discussion among students and faculty. In the Summer of 2014, the Math Lab opened its doors to students at all levels of Mathematics and experienced an even higher demand on its staff and especially for one-on-one tutoring. During the process of Program Review, Math Lab staff and members of the Math and Computer Science division had the opportunity to meet and discuss the current and future needs of the lab and how it can better serve the students. In short, the Math Lab needs to increase its staffing levels in all areas and more space to facilitate its goals. As the Fullerton College Math Lab evolves with the particular aim toward continuous quality improvement, it will continue to play a crucial role in the mathematical development of the students it serves.