GARDEN CITY COMMUNITY COLLEGE

ACADEMIC PROGRAM REVIEW REPORT

Mathematics Division
Mathematics and Pre-engineering Emphasis

A.S., A.A., and A.G.S.

Last Approved GCCC Program Review: March 2016

Submitted on May 24, 2018

Signature Page and Archiving

Dean of Institutional Effectiveness — Date: 7/9/18

President — Date

Archiving:

Division Leader submits to Dean of Institutional Effectiveness, Planning and Research.

1. A complete electronic version of the Academic Comprehensive Program Review
2. All documentation (electronic and print)
3. A signed signature page (electronic and print)

GARDEN CITY COMMUNITY COLLEGE

Program Review Faculty and Dean Verification

I verify I have been an active participant in the program review process and have read this Program Review Report to be submitted to the Program/Department Review Committee:

Nicole M. Dick, Program Director — Date 5-24-18

Michael K. Boateng — Date 5-24-18.

An Nguyen — Date 5-24-18

Perla Salazar — Date 5-24-18

Jonathan H. Whitacre — Date 5-24-18

I verify that this program review report is ready to be reviewed for feedback and action by the Program/Department Review Committee.

Nicole M. Dick, Division Leader — Date 5-24-18

As dean of the Academic or Technical Education and Workforce Development Division, I verify that this program review report is ready to be reviewed for feedback and action by the appropriate Program/Department Review Committee. If revisions to original submission of the report are requested (by the committee), I understand another signature by me will be required:

Philip Terpstra, Dean — Date 5/29/18

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Component A - Mission and Context

A.1 Program Mission and Purpose State your program emphasis area's mission and purpose and how it helps to fulfill the broader mission of GCCC. Briefly describe where your program emphasis area fits within the college's structure (e.g. division/dept.) and what credentials and/or areas of specialization it grants. Briefly, discuss the trends in higher education related to the need for your program and identify how the program is responsive to the needs of the region or broader society it intends to serve.

The Mathematics Department is committed to offering quality learning opportunities to students. The courses are designed to meet the preparatory needs of all majors, from foundational to advanced mathematics. The department strives to provide the student with the opportunity to develop mathematical reasoning and numeracy. Students can improve their ability to analyze information and make informed decisions based upon that data.

A.2 Progress Since Last Review Before commencing with this review, attach from your last review the Program Emphasis Area Goals with Recommended Action Steps (or equivalent) (include as Template Appendix A), as well as the Administrative Response to those goals (include as Template Appendix B), and your Strategic Planning Documents (Appendix D). Identify the original goals from your report as well as any new goals that emerged from your mid-cycle report and in the strategic planning process and provide evidence your progress toward accomplishing them. (If you don't have a copy, ask your Dean).

This is the first year to complete this Program Review template. Therefore, the requested goals and responses are not present. However, a similar set of goals (without response) is included from the March 2016 program review in Appendix A.

Goal A was to add emporium, rapid review, online, and co-requisite courses as well as student-support workshops. From this, we have added emporium and online classes. However, co-requisite and rapid review have not been added. Co-requisite classes will likely not be added, but we have worked with the emporium and accelerated classes in a way to allow for completing 2 courses in one semester. (Evidence as given in course calendar for Fall 16 through Fall 17 – shows ALEKS classes, accelerated classes, and online classes.)

Goal B was about instructor positions, computer lab, and using classrooms. We have no open instructor positions right now and more than half of our math-designated classrooms (6) are in use from 7:30am to 2:30pm. (Evidence as shown in course calendar, referenced Spring 2018)

Goal C was a technological goal and pedagogical goal. We have been using MyMathLab as well as ALEKS in and out of the classroom. Video conferencing is not used by many, but is still used for the upper-level math classes when working with Seward County Community College. Most instructors use the out-of-class testing center and provide videos for students as well.

Goal D has been met with the position filled by Leslie Wenzel. This has changed since its inception and is now called the Director of Student Success.

Of the four goals set in the Math Department's Strategic Planning Document (Appendix D) in Spring 2017,
1st: We have not procured Minitab.
2nd: Only one instructor was sent to a conference in Spring 2017 (NADE). However, this current semester we will have all 5 instructors attend a relevant conference.
3rd: What has been done to reduce the cost of text books is that most classes only require an access code and not both an access code and book. With the use of ALEKS, we have a combined textbook which means only one text book needs to be purchased for 3 courses. However the textbook is not required and an access code each semester is.
4th: We have worked on establishing a plan for ALEKS enrollment. Students and advisors have been given more information on what the emporium style class involves in order to make a better decision about enrolling it in. This has been done through a group presentation to faculty and advisors in Spring 2017 and ongoing measures throughout the year.

NOTE: The information for Data Tables required in Components B-E will be provided to the fullest extent possible by the Office of Institutional Effectiveness and Institutional Research (IE/IR). Data collection for faculty will be as of November 1 and student enrollment will be as of October 15 for students of the year prior to the submission of the report (follows IPEDS delineation). Programs ***may*** choose to update data beyond November 1 or October 15 of the year prior to the submission of the report. Data collection for student completion, GPA, and class size will end by June 30 of the year prior to the submission of the report. Programs may need to supplement the tables with information unavailable to IE/IR. In such cases, programs ***must*** specify collection methods and dates (or date ranges). For example, faculty data are recorded at the department level and may not accurately reflect the program assignment. The program is encouraged to review the faculty data provided by IE/IR and make adjustments according to the program records. Please provide IE/IR with any updated faculty data tables.

Data queries can be found in Earth Reports under Accreditation in the Program Review folder.

Component B - Faculty Characteristics and Qualifications

The following faculty classification definitions apply to the data exhibits in section B.

- Full-time faculty – faculty whose load is 100% of a full-time contract within the program/department
- Part-time faculty – faculty whose load is less than 100% of a full-time contract within the program/department

Table B.1 - Faculty Qualifications: Faculty listed below are those who taught courses for the program emphasis area within the 2016-2017 academic year as well as those on the 2017-2018 faculty roster from the Dean's office as of November 1st. (Insert rows as needed).

Faculty Qualifications			
Name of Faculty Member	Highest Degree Earned and Date of Acquisition (provided by dept.)	Institution of highest degree (provided by dept.)	Certifications, practices, specialties, etc. related to the discipline that illustrate qualifications
Full Time			
Boateng, Michael	Masters of Science in Applied Mathematics (May 2014)	Youngstown State University	Emphasis in Applied Mathematics and Differential Equations
Carlson, Ronald	MS Physics (May 1984)	University of Missouri at Kansas City	18 graduate credit hours in Computer Science
Dick, Nicole	Masters of Science in Statistics (May 2008)	Kansas State University	
Francis, Dawnnel	MS Education (2015)	Fort Hays State University	
Marcy, Charles	MBA Finance (1982)	Xavier University	
Nguyen, Thuy	Masters of Science in Mathematics (December 2015)	Wichita State University	Emphasis in Applied Mathematics
Salazar, Perla	Masters of Science in Education (May 2017)	Fort Hays State University	Professional Teaching License from KBE, 26 hours of Graduate Level Mathematics courses
Terpstra, Philip	M.S. Health Physical Education, & Recreation (1996)	Fort Hays State University	
Wenzel, Leslie	M.S.S. Sports Management (2005)	US Sports Academy	
Whitacre, Jonathan	MS Mathematics (Dec 2010)	Youngstown State University	Secondary Education Track
Part Time			
Adams, Karen	M.S. Movement Science (2006)	Barry University	18 Hours in Mathematics
Atchley, Beth	M.A.E. Education (2008)	Baker University	18 Hours in Mathematics
Baier, Michelle	M.S. Mathematics (1997)	Pittsburg State University	

Barrett, Jennifer	M.L.S. Liberal Studies (2010)	Fort Hays State University	
Breitkreutz, Betsy	B.S. Education (1974)	Emporia State University	
Gerwitz, Ryan	M.S.Ed. ESOL (2016)	Newman University	
Hays, David	M.E. Education (2014)	SW College	18 hours in mathematics
Manly, Catelyn	B.S. Mathematics		
Merrihew, Bonnie	M.S. Applied Mathematics (2009)	Fort Hays State University	
Neri, Elise	B.S.E. Mathematics (2008)	Central Michigan University	
Platt, Joshua	BS Mathematics (2012)	Fort Hays State University	
Salazar, Perla	Masters of Science in Education (May 2017)	Fort Hays State University	Professional Teaching License from KBE, 26 hours of Graduate Level Mathematics courses
Terpstra, Philip	M.S. Health Physical Education, & Recreation (1996)	Fort Hays State University	
Vadapally, Praveen	Ph.D. Chemistry		
Wenzel, Leslie	M.S.S. Sports Management (2005)	US Sports Academy	

Table B.2 - Faculty Demographics: Faculty listed below are those who taught courses for the program emphasis area within the academic year "2016-2017" as well as those on the "2017-2018" faculty roster from the Dean's office as of November 1st.

Faculty Demographics						
	Full-time		Part-time		Total	
	Female	Male	Female	Male	Female	Male
a.) Faculty who are						
Asian	1	0	0	0	1	0
Black, non-Hispanic	0	1	0	0	0	1
Hispanic	1	0	0	0	1	0
Race/ethnicity Unknown	0	0	2	1	2	1
White, non-Hispanic	1	1	5	3	6	4
Totals	3	2	7	4	10	6
c.) Number of faculty with doctorate or other terminal degree	0	0	0	0	0	0
d.) Number of faculty whose highest degree is a master's, but not a terminal master's	3	2	4	3	7	5
e.) Number of faculty whose highest degree is a bachelor's	0	0	3	1	3	1

B.3 Faculty Scholarship: Provide, in narrative tabular or report format, a comprehensive record of faculty scholarship since the last program review (last 5 years). In addition to traditional scholarship, include faculty accomplishments that have enhanced the mission and quality of your program (e.g., discipline-related service, awards and recognitions, honors, significant leadership in the discipline, etc.).

Boateng, Michael
-Liaison for outreach and adjunct instructors (2016-17, 2017-18), Nominee for Student Support Services Outstanding Faculty Member (2016-17)

Carlson, Ronald
-Received a Mary Jo Williams grant to present a Cybersecurity Camp to area high school students on the GCCC campus June 4-9, 2017, Attended NSF funded AMS Climate Studies Diversity Project Workshop (May 21- 26 2017)

Dick, Nicole
-Faculty Senate Alternate (2016-17), Faculty Senate Member (2017-18), Division Leader (2015, 2017-18), Nominated for Student Support Services Outstanding Faculty Member (2012-13, 2013-14, 2014-15, 2016-17), Provided statistical assistance in bill to exclude Lesser Prairie Chickens from federal protection (2013), Mini Grant recipient (2016)

Landgraf, Lorilynn
- Graduated FHSU Dec. 2016 with Master of Science in Nursing FHSU. Recipient of Kansas Board of Regents Nurse Educator scholarship from 2013-2016. Recipient of Wagner Baccalaureate Merit Scholarship 2016 from FHSU. Program coordinator for Practical Nursing Program GCCC 2013-2018.

Nguyen, Thuy An
-Liaison for outreach instructor (2017-2018).

Salazar, Perla
- Bridges to the Future Program Director (2017-18), Faculty Senate Member (2017-18), Liaison for outreach and adjunct instructors (2017-18), Fulltime faculty and adjunct mentor (2017), Cybersecurity Camp Robotics instructor (2017), Nominee for Student Support Services Outstanding Faculty Member (2016-17), Mini Grant recipient (2016).

B.4 Department Scholarship Analysis: State the goals previously set by your department's emphasis area for scholarship production (previous review). Analyze whether goals were met and the factors that contributed to goal attainment. What changes or modifications are necessary in light of this analysis?

From page 6 of the previous review in Spring of 2016:

7. Here are the strategies the Mathematics department will incorporate to recruit new students.
- Increase course offerings including accelerated, co-requisite, emporium, and online courses.
- Continue open discussions with public in support of taking courses at GCCC as well as using social media to promote GCCC.
- Continue to recruit for the STEM program.
- Establish a new scholarship that will be available in Fall 2016 for Science and Math students.
- Participate in Exploration Day.

Since the program review (so for Fall 2016 until now):
For bullet 1 –
-We have offered four accelerated courses each semester, allowing approximately 20 students each semester to progress through two math classes each semester, instead of needing two semesters. Seven classes in total were offered the previous three semesters (Sp15 to Sp16). This in an increase.

-We have offered 12-week accelerated courses (two or three each semester) to allow for late enrollees to complete all material in the course, approximately 18 students each course have taken advantage of this. Two classes in total were offered the previous Three semesters (Sp15 to Sp16). This in an increase.

-We have not given any co-requisite options. This can be looked into for the future.

-We have offered emporium style classes instead of self-paced classes. There have been multiple sections of this piloted over the past three semesters using two different software (ALEKS and MyMathLab). We will likely continue to use ALEKS to offer these classes, although we have decided this is not the best delivery method for all students. We are currently working on ways to make advisors and students aware of this option and what it entails. This class did not exist before, so the offerings have increased.

-Online course offerings have continued. Each semester we offer Beginning Algebra (Math 106), Intermediate Algebra (Math 107), and College Algebra (Math 108) online. About 16 students enroll in each class each semester (including summers). Five classes in total were offered the previous three semesters (Sp15 to Sp16). This in an increase of eight classes over three semesters.

For bullet 2 –
-Science and Math Club has a Facebook page. We promote the Science and Math Club by posting pictures of our activities and notifications of our events. This in turn helps to promote the Science and Math divisions.

For bullet 3 –
-Science and Math Club, Bridges to Success, and the Louis Stokes Alliances for Minority Participation (LSAMP) programs have all been continuing to offer scholarships to students. The funding for the scholarships comes from different grants and fundraising opportunities. The scholarship recipients are chosen through an application process. The applications are different for each program. These three programs encourage students to challenge themselves in the classroom and outside the classroom. For some of the programs, research and presentation are required as well as travel to conferences. The students' enrollment at GCCC helps increase the enrollment in upper level science and mathematics courses.

For bullet 4 –
-In 2016-2017, six students were given full tuition and book scholarships through Science and Math Club. The club participated in various activities and fund-raisers throughout the year. For LSAMP, six students participated are were given full tuition scholarships. For Bridged, five students were in the program and were given full tuition and book scholarships.
-In Fall of 2017, five students were given full scholarships and three were given partial scholarships ($500 per semester instead of full tuition and books) through Science and Math Club. The club continues to participate in activities and events around campus and town. For LSAMP, 6 students participated and then 2 in the summer research program associated with it. For Bridges, 6 students were in the program and were given full tuition and book scholarships.

For bullet 5 –
-Instead of participating in Exploration Day, Fine Arts Day was revamped. It became Discovery Day and the Science and Math Divisions participated. Connections were made and fun was had. Hopefully we will directly see some new students as a result.

Changes and modifications
1. The co-requisite option is very complicated method of instruction and need to be looked into before implementation. The following questions need to be addressed before, if we want to offer this modality: What information is used to determine the default enrollment for students into this mathematics course? Determining whether the college-level instructor will also teach the support/developmental portion. What are the essential foundational concepts that students need to know in order to be successful in the college-level course?

Because of the complexity of this modality, we have decided to postpone it until we are convinced about the efficiency of its implementation.

2. The emporium style courses suffered some challenges such as: unprepared students enrolled in these classes because of lack of information from advisors. To address this problem math division is talking with advisors about the distinction between emporium style course and the traditional face-to-face course so that students know what they are getting into when they enroll. The math department is also trying some different scheduling techniques to help students when scheduling emporium classes.

3. To augment Science & Math Club social media platform on Facebook we have decided to create a link on buster web through math division page to highlight all events and activities that the club does. This will not only make the club attractive but also help increase enrollment.

B.5 Analysis of Faculty Qualifications: From the evidence available, evaluate the qualifications and contributions of your faculty toward fulfilling the mission of the program emphasis area. Comment on the composition of your faculty in terms of diversity. Identify gaps in preparation, expertise, or scholarly production that need to be filled.

All of the full-time mathematics faculty currently employed at GCCC has a Masters in Mathematics or related field (one in Statistics). Faculty continually work to provide opportunities for themselves to grow and to help the students grow. This is done by attending conferences, collaborating, and using new resources and techniques.
Our faculty are diverse. Of the five full time members we have three female and two male. We have one member from Ghana, one from Mexico, one from Vietnam, and two from USA (Kansas and Ohio). All members have at least one year of college level teaching experience.
In addition, our background in education, helps us understand the different pedagogical skills in teaching and learning and when and how to apply them in the classroom.
There are no large gaps in faculty preparation, expertise, and production.

Table B.6 - Full-Time Faculty Workload: For each of the past five years, report full-time faculty workload distribution based on the categories identified below. Include units assigned as overload.

	12-13				13-14				14-15				15-16				16-17			
	FA	SP	SU	TOTAL	FA	SP	SU	TOTAL	FA	SP	SU	TOTAL	FA	SP	SU	TOTAL	FA	SP	SU	TOTAL
Michael Boateng									15	17	6	38	18	17	9	44	18	17	6	41
Nicole Dick	18	17	3	38	14	19	0	33	16	16	0	32	16	19	0	35	16	14	6	36
Linda Diehl					15	15	0	30	18	18	0	36								
Sergio Maria-Fagundez	20	15	0	35																
Dawnnel Francis	18	17	0	35	15	15	0	30	18	15	0	33	18	21	0	39	18	15	0	33
Chris Juarez	13	16	6	35	18	15	6	39												
Thuy Nguyen																	18	18	6	42
Perla Salazar																	18	18	3	39
Philip Terpstra	19	19	0	38	16	17	9	42	18	18	6	42	18			18				
Leslie Wenzel	19	19	6	44	18	18	12	48	15	18	12	45	22	21	15	58				

FA12	SF-Online(.7), PT-Softball(10.5), LW-College Skills(2) Mentor(1)
SP13	CJ-Tennis(1), PT-Softball(10.5), LW-Special Assignment(1)
FA13	DF-Mentor(1), CJ-Acad Challenge Head (3.5 FLC), PT-Mentor(1) Softball (10.5 FLC), LW-Special Assignment(1)
	LW-Special assignment(1) College Skills(3)
SP14	CJ-Tennis(1), PT-Mentor(1) Softball(5775), LW-College Skill Coordinator(2), College Skills(3)
FA14	ND-Mentor(1) IDL(375), PT-Mentor(1), LW- LW-College Skill Coordinator(2), College Skills(6)
SP15	ND-Div Dir(2817) Div Dir Release(2.6) IDL(375), LW-College Skill Coordinator(2), College Skills(3)
FA15	ND-Mentor(1), DF-Mentor(1), PT-Mentor(1) Div Dir(3250), LW-College Skill Coordinator(2), Academic Recovery(2)
SP16	ND-Mentor(2), DF-Mentor(1), LW-Mentor(1) College Success Coordinator(2)
FA16	ND-Mentor(1), DF-Mentor (1)
SP17	ND-Mentor(1) Admin Assign(1)

B.6.1 Analysis of Faculty Workload: In what ways does faculty workload contribute to or detract from faculty ability to work effectively in the program emphasis area?

Faculty are required to teach 15 credit hours in the spring and fall, or 30 in a year. Summers are extra, as well as overload.
If faculty continue to work hours over their requirements then they will likely get burnt out and lose interest in their job. There are only three times (out of 28 possible) where 30 or less hours were worked. Keep in mind that summer contributes in a unique way. When only considering the fall and spring, there are five time (out of 28 possible) with 30 or less hours. Many instructors are happy to take on overload, and prefer to have it, but too many hours over the expected number of hours will detract from the teachers' ability to work effectively.

Hiring additional instructors, as adjunct or full time, can help to alleviate this problem. Since classes must still be offered, more instructors can fill that need while not placing too much burden on current faculty.

Table B.7 - Percentage of courses taught by each faculty classification: The following table includes the percentage of credit bearing courses taught by emphasis area faculty (by classification) during the five most recent years for which data are available.

Percentage of Courses Taught by Faculty					
Faculty Classification as of November 1	2012-13	2013-14	2014-15	2015-16	2016-17
Full-Time	68.81%	71.67%	70.43%	65.00%	54.96%
Part-time	31.19%	28.33%	29.57%	35.00%	45.04%
TOTAL	100%	100%	100%	100%	100%

Table B.8 - Student Faculty Ratio: The following table includes student to faculty ratios for the five most recent years. The ratios provided are based on the number of students enrolled in the program emphasis area and the faculty assigned to teach in the program emphasis areas.

Student: Faculty Ratio					
Academic Year	2012-13	2013-14	2014-15	2015-16	2016-17
# of Full-Time Faculty	8	8	7	7	7
# of Part-time*	16	16	16	18	20
FTE Faculty	13	13	12	13	14
# of Full-Time Students in Program	12	18	21	15	26
# of Part-Time Students in Program	13	14	18	28	17
FTE Student in Program	16	23	27	24	32
FTE Student in Program: 1 FTE Faculty	1:1	2:1	2:1	2:1	2:1
# of Full-Time Students NOT in Program	370	417	425	441	493
# of Part-Time Students NOT in Program	674	688	722	752	758
FTE Student NOT in Program	595	646	666	698	746
FTE Student NOT in Program: 1 FTE Faculty	45 : 1	49 : 1	54 : 1	53 : 1	55 : 1

* These data are based on course data used for IPEDS reporting

B.8.1 - Analysis of Faculty Distribution: Comment on the adequacy or number of full-time vs. part-time faculty and the ability to deliver quality education.

The number of faculty has remained pretty steady, in terms of full time, part-time, and FTE faculty. The most recent year is the highest for part-time and FTE faculty.

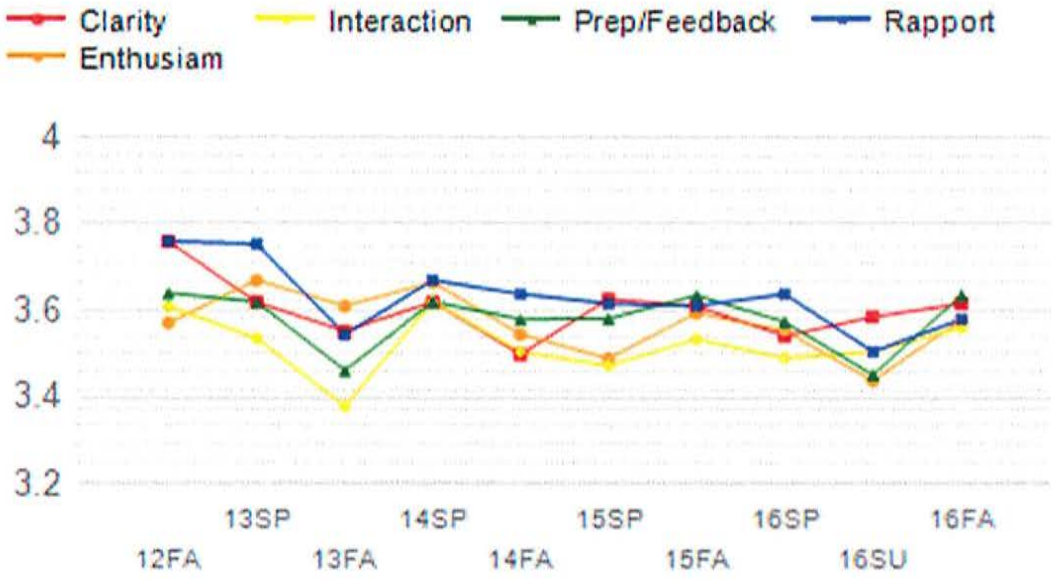
The number of students has fluctuated between 12 and 26 for full time (most recent is high), between 13 and 28 for part-time, and between about 16 and 32 for FTE student (most recent is high).
But the most influential group of students to look at for adequacy for faculty is the NOT in program students, of which we have many more. This group has shown pretty steady increase over the past five years for both full time and part-time. So, in looking at FTE Student not in program we see a low of about 595 in 2012-13 and a high of 746 in the most recent year.

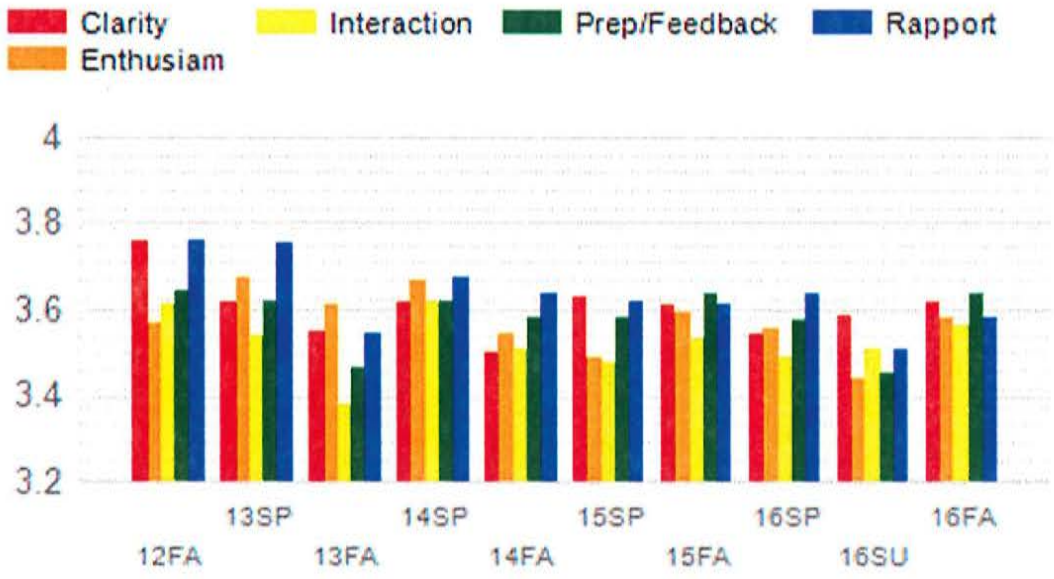
Instead of looking at FTE Student to FTE Faculty ratio, another row was added, with FTE Student to ONE FTE Faculty ratio. This can show the load of our faculty as the enrollment changes.

For in program students, the load has remained around two students per faculty member, which is quite low. However, in our more influential group of students NOT in the program, the load has ranged between 45 – 55 students per faculty. The most recent year is still a high for this statistic as well.

At this point, we do not feel we need to change the number of faculty, either full or part time. However, if enrollment continues to grow, we feel the students would be best served by an additional full time faculty member.

Table B.9. - Summary of Teaching Effectiveness: The following figure includes data derived from student end of course evaluations for the emphasis area.





Note that in Spring 2017 a new Course Evaluation form was used by the mathematics department, therefore those scores have not been included in the charts above.
Overall, average values remain around 3.5 or more. Which, out of 4 possible points, is 87.5%.

Courses include: MATH-006, MATH-101, MATH-105, MATH-106, MATH-107, MATH-107R, MATH-108, MATH-109, MATH-110, MATH-120, MATH-121, MATH-122, MATH-123, MATH-205, MATH-206, PHYS-106, PHYS-205, PHYS-206, PHYS-207 (note that Physics classes are included in the Pre-Engineering program)

B.10 Other Evidence of Faculty Effectiveness: Program emphasis areas may provide additional evidence (not anecdote) of faculty effectiveness.

Classroom observations and peer observations are very valuable tools. They give instructors the opportunity to collaborate with peers and get new ideas.

Feedback from observers help give instructors small goals they can work on during the course of a semester. Each non-tenured instructor, and those tenured instructors on their rotation, are observed at least once a semester. Occasionally, math faculty observe each other as well. After the observation, involved faculty discuss the lesson taught and try to share new teaching methods to implement. Often times the new methods result in more effective delivery of the subject matter.

B.11 Analysis of Teaching Effectiveness: Using data from the data above, as well as other pieces of available evidence, evaluate the effectiveness of faculty in the classroom. When applicable, include an analysis of faculty effectiveness across delivery system (e.g., outreach locations, online, etc.).

Clarity: According to the data above in B9, the minimum score for teachers' performance in clarity of the subject matter is 3.75 out of 4.00, which represents 93.75%. This is way above average. This implies teachers are doing great job when it comes to coherence of teaching and learning.

Enthusiasm: From the graph in B9, the minimum score for teachers' performance in the eager enjoyment with which they is 3.45 out of 4.00, which represents 86.25%. This is way above average. This means, teachers love their students and love what they teach which is helpful to students retention and success.

Interaction: Student–teacher interaction patterns are strong predictors of behavioral and academic outcomes. Students with frequent negative interaction patterns with teachers experience lower ratings of social competence, less praise, more disciplinary infractions, and poorer academic outcomes.
According to the date above in B9, out of four teachers score 3.38 which represents 84.5%. This is good for student's behavioral skill, retention, rapport between students and teachers and academic performance.

Prep/feedback: Giving students feedback in the classroom during the learning process has been proven to increase learning and improve student outcomes. When given correctly, feedback guides the student in their learning process and gives them the direction they need to reach the target or goal of the lesson. Feedback communicates to the student that the instructor cares about the learning taking place. It also allows the student to become more engage and involve in the classroom.
The minimum score for teacher according to the data above is 3.48 out of 4.00 which represent 87%. This way above average so teacher are doing great job in providing students with concise and timely feedback.

Looking at all of the numbers above, we can say that the teachers at mathematics division over the last five years are well prepared and effective for the job.

B.12 Faculty Summary Analysis: Based on evidence and responses provided above, provide a summary analysis of the quality and quantity of faculty associated with the emphasis area. Discuss how workload, course distribution, or other considerations impact the ability of the emphasis area to deliver excellent teaching to students. Identify resources, mentoring programs, or other services provided or made available by the department to ensure that faculty are developed professionally (this may include release time or funds provided to faculty for curricular and professional development). What changes, if any, should be implemented to ensure faculty effectiveness? Identify any needs related to faculty that impact delivery of a high-quality program.

Currently the number of faculty in the Math department at GCCC is adequate. While the student to faculty ratio is increasing (for majors- 2.32: 1 and for non-majors- 54.56:1, see Table B.8) it is still a very workable number. If it continues to rise, we may need to hire an additional full time position. But our current mix of adjunct and full-time meet the needs of our students.

The quality of our teaching also appears to be doing well. See section B.9 for graphics, but overall our instructors are rated well on course evaluations, almost always above 3.5 (out of 4) on average.

The math department try to keep workload at a level that works for each individual. Those who want to take overload and can still do a good job of their responsibilities, are allowed to take overload. Recently, instructors have kept to about four hours (maximum) of overload each semester.

We have been able to offer many classes to our students each semester. This includes offering new times, new delivery methods, and new classes altogether. We will continue our current practices will being open to new methods and techniques that meet the needs and wants of our students. Faculty will continue to be encouraged to attend conferences and to offer workshops/reviews for our students and fellow staff.

At this point, we do not feel there is need for changes in faculty numbers or structure. However, faculty will continue to be a part of professional development both on-site and off-site.

Component C - Quality of Curriculum and Student Learning

C.1 Curriculum Structure: Provide a brief overview of the course offerings and degree requirements of your program emphasis area. To what degree does the emphasis curriculum align with other comparable programs at other institutions and exemplify best practices for the discipline? Describe the process used by faculty to ensure the emphasis is current and competitive.

GCCC offers 14 math classes, ranging from developmental to calculus based. Students with an emphasis in mathematics are requested to take the following courses at GCCC.

First Semester		17 hours
Course No.	Course Title	Credit
MATH-122	Calculus & Analytical Geometry I	5
MATH-110	Fundamentals of Statistics	3
CHEM-109	College Chemistry I	5
ENGL-101	English I	3
PCDE-101	College Success	1

Second Semester		19 hours
Course No.	Course Title	Credit
MATH-123	Calculus & Analytical Geometry II	5
CHEM-110	College Chemistry II	5
ECON-111	Economics: Macro	3
ENGL-102	English II	3
PSYC-101	General Psychology	3

Third Semester		18 hours
Course No.	Course Title	Credit
MATH-205	Calculus & Analytical Geometry III	5
SPCH-111	Public Speaking I	3
	Math/Physic Electives	5
	Humanities Requirement	3
	Physical Education Requirement	1

Fourth Semester		18 hours
Course No.	Course Title	Credit
MATH-206	Differential Equations	3
	Math/Physic Electives	5
	Social Science Requirement	3
	Humanities Requirement	3
	Physical Education Requirement	1
	Computer Programming Requirement	3-5

This is very similar to the first two years of a Mathematics major at a four-year institution. Thanks to Kansas Board of Regents outcomes, almost all mathematics courses offered at GCCC transfer within Kansas. Exceptions to this include developmental classes, which only transfer as electives.

Each semester, faculty complete a course review and use that information to assess student learning. A selection of outcomes for the course are looked at each semester, to identify problems and success. This helps instructors to identify where in their courses they may need to make adjustments. It also provides instructors of the same course to share methods and discuss issues for each course.

C.2 Assessment of Student Learning: Attach your emphasis area's most updated Multi-Year Overall Assessment Plans (attach as Template Appendix C) and their Annual Assessment Reports since their last program review (attach as Template Appendix D). Briefly describe the direct and indirect measures your emphasis area uses to assess student learning. Analyze how well students are demonstrating each learning outcome within the emphasis area. If there is a culminating project in the emphasis area, include an objective evaluation of a sample of these products since undertaking the last program review. Use a rubric or other criteria to support your assessment of the culminating projects, and analyze the results of this evaluation. Specify the areas where students are not meeting expected levels of competency and provide an analysis of possible explanations for these results.

This is the first year for this Program Review Template. We do not have a Multi-Year Overall Assessment Plan or Annual Assessment Reports to attach and discuss.
However, Course assessments are done each semester and can offer some insight.

Indirect measures used to assessed opinions or thoughts about student knowledge, skills, attitudes, learning experiences, and perceptions was student course evaluation. This is an online survey that assess the course, teacher, classroom, and ask for student suggestions on what need to be improved. The result of the course evaluation is given to all instructors for their own assessment.

Direct measures used to assess student performance of identified learning outcomes were: pre/post- test, course-embedded questions, quizzes and final exams.

Every semester an Individual Course assessment is done for each section of each course. Then, all sections for the same course are combined into a collaborative course assessment. Course assessments use tools and benchmarks set by the department teachers to assess Student Learning Outcomes (SLOs) and Program Learning Outcomes (PLOs). We also look at course statistics such as enrollment, success rate, retention and completion rates.

The course assessments are a quick insight into a class's performance and if it meets a teachers expectations. However, our Course assessments are done based on ALL students taking a mathematics courses, not just those in our program area of emphasis. So it is unhelpful to use the data from them as a mark of the math/pre-engineering students at GCCC. Here is a small overview of the results from the last few years.

Overall, about 50% of course selected SLOs are being met by all students. Part of the reason why 50% are not being met is believed to be due to problems with course placement. Placement in a correct delivery system for a course is a current problem. Some students are not aware of what an Emporium based class is and are not prepared or suited for it. This has had a negative impact on our overall numbers. Instructors believe that this style of learning is not a lost cause. For some students it can be a very successful way of learning and moving through the developmental course sequence faster. Instructors are integrating more technology in our classes, through the iPad cart and continued use of graphing calculators.

Table C.3 - Curriculum Map of Program Emphasis Area Student Learning Outcomes: If your program emphasis area has a curriculum map, paste it below. Otherwise, complete the table. In the column headings across the top, list all student learning outcomes (ELO) from the emphasis area and in the column on the left, list the courses offered. Identify within the cells of the table, where each student learning outcome is introduced (I), the course(s) where it is reinforced (R) and the course(s) where students are expected to have mastered the student learning outcome (M) (See sample table below). Copy and paste the table if room for additional ELOs are needed, numbering the ELO sequentially. Add rows for courses as needed in the existing table.

SEE ATTACHED TABLE: Math Curriculum Map

I = Introduced, R = Reinforced & Practiced with Feedback, M = Demonstrated at the Mastery Level Appropriate for Graduation, I/R = Introduced/Reinforced, I/M = Introduced/Demonstrated Mastery, Reinforced/M = Reinforced/Demonstrated Mastery

C.4 Assessment of Curricular Effectiveness: Using your emphasis area's curriculum map and the evidence collected from the assessment of student learning, outline your emphasis area's intended steps for improving student learning. Include any proposed changes to the curriculum that may be necessary.

We have decided to focus on balance between the content across curricula. This will allow us to look into each classroom and see what students learn and gather data on redundancies or gaps in the course content.

Our intended steps to improve student learning include: to assess the structure of the course, and the time-scale plan of when specific lessons or concepts are taught.

We know for sure that curriculum maps are never considered "done". As long as teachers have new students, new classes, and new school years, we have decided the content and structure should be continually assessed and revised (if need be) to ensure students get the most out of their education, and for teachers to use the most effective strategies in their lessons.

At this point, there are not changes seen as needed to the mathematics program curriculum as a whole. The course sequence progresses naturally and covers the needed topics for the following class.

However, the SLOs within courses may need to be addressed. Some courses that do not have Kansas Board of Regents (KBOR) set outcomes need to be streamlined and have the SLOs redesigned.

C.5 Assessment of Diversity in the Curriculum: Describe and evaluate your emphasis area's efforts to create a culture of diversity through the curriculum. In what ways is your emphasis area being intentional about embedding diversity-related issues in the curriculum?

Hidden Figures movie was shown to students of College Math in an effort to help motivate students of minority status to do well in class.

Names and examples from a variety of cultures are used during word problems in class. This could be calling on students from different cultures in class, so they not only participate in class but other students can be more familiar with their accent and culture. Teachers assign study groups, intentionally including a variety of cultures in each group.

C.6 Use of Continuous Assessment for Educational Effectiveness: Describe and evaluate the process that your emphasis area uses to annually evaluate the quality of curriculum and to assess student learning. Document how your emphasis area has used its assessment findings to impact area decisions. In what ways is this process effective toward making effective educational decisions? In what ways should the process change?

At the end of each semester, each teaching faculty is responsible for completing an Individual Course Review for each course he/she teaches. Twenty-five percent of the Expected Learner Outcomes (ELOs) are evaluated for each academic year, and thus, it takes four academic years to assess all of the ELOs. The Course Review uses the results from the Final Exam to evaluate and to determine whether or not the ELOs, set by the department, are being met by the students. If students are not meeting the benchmark for an ELO, then a plan or a strategy will take place in the future to address that specific ELO. The Course Review also provides data on enrollment number, retention rate, success rate, and completion rate.

The department uses these data to help with decision making. For example, based on enrollment number, the department can make a decision on the number of courses to offer for the following semester. Using the success rate and completion rate, the department can make a decision on whether or not a certain modality is suitable for the majority of student population.

As of the 2017-18 school year, the mathematics department did not have an annual assessment in place. A new annual assessment is in place for the future.

Component D: Student Enrollment and Success

Table D.1 Student Enrollment: The following table includes fall enrollment data disaggregated by gender and ethnicity for the five most recent years. The ethnicity categories are based on IPEDS requirements. Therefore, International (non-resident alien) students will only be reported in this category regardless of their ethnicity.

As of Fall Census	2012-13		2013-14		2014-15		2015-16		2016-17		Totals
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	
Non-resident (International)	0	0	0	0	0	0	0	1	0	2	3
Asian	0	0	0	1	0	3	1	1	0	1	7
Black, non-Hispanic	0	0	0	1	0	1	0	1	0	3	6
Hispanic	0	8	2	8	4	16	1	16	4	22	81
American Indian or Alaska Native	0	1	0	0	0	0	0	0	0	0	1
Native Hawaiian / Other Pacific Islander	0	1	0	0	0	0	0	0	0	0	1
Two or more races	0	0	0	0	0	0	0	0	0	1	1
Race/ethnicity Unknown	0	0	0	0	0	0	0	0	0	0	0
White, non-Hispanic	1	11	0	9	2	11	1	11	0	10	56
Totals	1	21	2	19	6	31	3	30	4	39	156

D.2 Recruitment and Enrollment: Using the evidence provided, discuss your emphasis area's enrollment trends over the past five years, including any trends related to diversity. What events are happening within the profession, local or broader community that might explain enrollment trends? What does evidence suggest might be future enrollment trends for your area over the next 3-5 years? What, if any, changes to recruitment strategies would benefit the area so that it attracts a sufficient number of students who are a good fit?

Our emphasis area's enrollment shows a balance in the White, non-Hispanic ethnicity and a slight increase in the Hispanic ethnicity. Our establishment is centered in a region where the majority of the population are Hispanic. The demographics from the table above shows Hispanics to represent 52% of our area's enrollment. This is a similar representation of the region's population density of Hispanics.

The table above shows that the number of male students who enrolled in the emphasis area has always been greater than the number of female students. We believe that this will be the trend of enrollment for our area over the next 3-5 years. We have been sending instructors and representatives from the math and science departments to high schools and recruitment events within the city as well as outside the city to present and promote about our program.

Overall, the enrollment total is increasing. Once again, this is a representation of the local population.

D.3 Student Fit with Program Mission: Using the student data provided, analyze the quality of students typically enrolled in the emphasis area. What are the student qualities sought by the emphasis area and to what degree do students and graduates exemplify those qualities? What changes, if any, are desired in the type of student enrolled in the emphasis area?

Scholarships offered through LSAMP and Bridges focus on recruiting minorities with science and math related majors to our school and program. Science and Math Club (SMC) can recruit anyone with a high enough GPA and the right academic emphasis. The impact of LSAMP can be seen in the doubling of Hispanic students in the 14-15 school year.

Most of the reason we see a large Hispanic enrollment in the Math/Engineering programs is also due to the make-up of Garden City. Our recruiting efforts do seem to draw in more Hispanics than any other population subgroup.

As mentioned in D.2, there are more male students than female students in our program. This is neither a bad nor good sign. The table just suggests that during the five most recent years there are more male students who are interested in our program than female students. However, we would like to see a balance in enrollment.

D.4 Student Organizations: Identify and describe any national professional, honorary, other student organizations and/or activities sponsored by the department or faculty members in the emphasis area which enrich a student's educational experience.

Organizations that our students participate include:

Name	Description	Who can participate	Coordinator/Positon
Science and Math Club	Students get together to talk about science and math. Each semester they work on a science/math project and have mini competitions. Students also share their knowledge with GCCC peers as well as with younger students in the community thought different science demonstrations.	Any student interested in Science and Math. Our math faculty have a strong presence in the club and are strongly involved in recruiting their students into the club.	Nicole Dick is the club's coordinator and handles the student scholarship associated with participating in the club. She is the Math Division Leader.
LSAMP-STEM Program (Louis Stokes Alliance for Minority Participation – LSAMP)	National Science Foundation program aimed at increasing the quality and quantity of students successfully completing science, technology, engineering, and mathematics (STEM) baccalaureate degree programs. Students in the program complete a mini research project while at GCCC and attend national research conferences during their time in the program. Students in the program also participate in college visits to four year institutions.	Students interested in STEM fields that meet the qualifications of the program.	Dr. William Friesen is the program's coordinator. He is a chemistry instructor.

Kansas Bridges to the Future Program	National Institute of Health program aimed at increasing underrepresented groups in the biomedical sciences. This program is a partnership with Kansas State University (KSU) and allows our students a smooth transition between our college and KSU. Students participating in the program work on a mini research project and attend national research conferences during the academic year. Students receive tuition scholarships during their stay in the program both at GCCC and at KSU.	Any student interested in a STEM field that meets the qualifications of the program.	Perla Salazar is the program's coordinator. She is a Mathematics instructor.

D.5 Student Assistance: Describe any special assistance or services provided by the department for your students (e.g., grants, scholarships, assistantships, tutorial help, job placement, advising and career planning, and awards), and in particular any services provided by the department for students with special needs, which facilitate student success.

Students in the math department can participate in the Science and Math club and get a scholarship, they can participate in the LSAMP-STEM program and get a scholarship, and they can participate in the Kansas Bridges to the Future and get a scholarship. The Comprehensive Learning Center (CLC) provides tutoring in both the morning and evening hours to accommodate all students' schedules.

Students in the math department have access to the CLC tutoring center provided by GCCC, and can get free tutoring by the certified tutors in the center. Good performing students in our department can be referenced to work as tutors and gain their certification as a tutor in the CLC tutoring center. Students participating in the Kansas Bridges to the Future program can also get private tutors for their STEM courses.

Students in the math department have the chance to be advised by math faculty and have the chance to discuss career planning with their math instructors/advisors. Use of Dropout Detective in Canvas gives instructors and advisors quick insights to students and advisees status. Instructors in the math department work closely with our disabilities coordinator on campus to make sure that all our students with special needs receive the accommodations they need.

The preponderance of our math faculty has a strong mathematics education background and practices different pedagogical techniques to make sure all our students have their needs met. Students in the math department have access to a variety of Student Support Services programs supported by the TRIO program in our campus.

D.6 Student and Alumni Achievement: Since the last program review, how have current students and/or alumni exemplified the mission and purpose of the emphasis area? In addition to discussing data produced above, this may include achieving influential positions, engaging in service or practice, acquiring advanced degrees or other significant scholarly accomplishments.

Thanks in part to our three scholarship producing organizations, Science and Math Club (SMC), LSAMP, and Bridges, we have about 10-15 current students who are working on various tasks and research projects to promote their own knowledge of the STEM fields. Through LSAMP, students have had the opportunity to travel to Washington DC to present research done in conjunction with four-year institutions. Through Bridges, students are gathering data to see if different treatments affect the cleanliness of loofahs. Students receiving the Bridges scholarship will likely travel on to K-State after completion at GCCC. Through SMC, students have visited local schools and organizations to help promote the love and joy of science and math through presentations and demonstrations.

Table D.7 - GPA Trend Analysis by Ethnicity: Data in the following table reflect the cumulative GPAs of students in the emphasis area compared to the overall institution (excluding new students without a GPA), disaggregated by ethnicity, for the five most recent years of fall enrollment. Fall enrollment data is a snapshot of enrollment as of Fall census.

GPA Trend										
	2012-13		2013-14		2014-15		2015-16		2016-17	
	Average GPA in major/ program	GCCC Avg	Average GPA in major/ program	GCCC Avg	Average GPA in major/ program	GCCC Avg	Average GPA in major/ program	GCCC Avg	Average GPA in major/ program	GCCC Avg
Non-resident (International)							3.4	3.18	2.74	2.97
Asian			4.00	3.21	2.99	3.17	2.93	3.00	3.00	3.28
Black, non-Hispanic			1.71	2.24	2.31	2.46	3.27	2.59	2.21	2.44
Hispanic	2.85	2.69	2.58	2.76	2.50	2.75	2.45	2.82	2.47	2.79
American Indian or Alaska Native	3.32	2.64								
Native Hawaiian / Other Pacific Islander	3.25	3.10								
Two or more races									2.51	3.00
Race/ethnicity Unknown										
White, non-Hispanic	3.05	3.07	3.19	3.12	3.25	3.07	3.18	3.17	2.48	3.20
Female	4.00	2.95	2.48	2.97	2.74	2.97	2.68	3.06	3.07	3.06
Male	2.95	2.83	2.91	2.85	2.86	2.80	2.81	2.86	2.42	2.83

Table D.8 - Completions Analysis by Ethnicity: The completions table includes emphasis area completers disaggregated by gender and ethnicity for the five most recent completion cycles. A completion cycle includes graduates from the program between July 1st and June 30th of each year. The ethnicity categories are based on IPEDS requirements. Therefore, International (non-resident alien) students will only be reported in this category regardless of their ethnicity.

Student Diversity—Completions**											
	2012-13		2013-14		2014-15		2015-16		2016-17		
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Totals
Hispanic	0	3	0	2	0	2	0	1	0	5	13
Native Hawaiian / Other Pacific Islander	0	1	0	0	0	0	0	0	0	0	1
White, non-Hispanic	1	3	0	3	0	3	0	2	0	2	14
Totals	1	7	0	5	0	5	0	3	0	7	28

*For purposes of these data, program refers to degree-granting, credential, certificate, and licensure emphasis areas.
**Data are based on past federal IPEDS reports. Whenever possible, areas should rely on the official IPEDS data. Given past variations in data collection report dates (e.g., inclusion of summer graduations), however, emphasis areas may supplement and elaborate on this exhibit with data they have kept internally.

D.9 - Evidence of Successful Completion: The following tables provide year-to-year retention rates, graduation rates, and time-to-degree rates for the five most recent year's data. Retention and graduation rate tables include individual year counts and percentages as well as five-year averages of counts and percentages. The time-to-degree table includes the number of completers within the completion cycle and the median time to completion in years. A completion cycle includes graduates from the emphasis area between July 1st and June 30th of each year. Emphasis areas may provide other sources of data or evidence to demonstrate student success; please specify timeframes used in this analysis.

Table D-9a – retention rates

One-year retention rates (Fall to Fall)												
5-year average		Fall 2012		Fall 2013		Fall 2014		Fall 2015		Fall 2016	
# in Cohort	% retained	# in Cohort	% retained	# in Cohort	% retained	# in Cohort	% retained	# in Cohort	% retained	# in Cohort	% retained
156	46.15%	22	50.00%	21	61.90%	37	37.84%	33	42.42%	43	46.51%

Table D-9b – graduation rate (150% of time)

Program 3-year graduation rates												
5-year total			Entering cohorts Fall semester									
			2010		2011		2012		2013		2014	
# in Cohort	% Grad	# Grad	# in cohort	% Grad	# in cohort	% Grad	# in cohort	% Grad	# in cohort	% Grad	# in cohort	% Grad
135	20.74%	28	29	17.24%	26	23.08%	22	31.82%	21	23.81%	37	13.51%

Table D-9c – Average semester credit hours for program graduates

Program Average Semester Credit Hours at Graduation														
Academic Year Graduates – Average Institutional and Transfer In Hours														
2012			2013			2014			2015			2016		
# Grad	Avg Inst SCH	Avg Tsf SCH	# Grad	Avg Inst SCH	Avg Tsf SCH	# Grad	Avg Inst SCH	Avg Tsf SCH	# Grad	Avg Inst SCH	Avg Tsf SCH	# Grad	Avg Inst SCH	Avg Tsf SCH
8	66.88	5.00	5	57.40	9.20	5	68.80	1.20	3	64.33	4.00	7	66.86	7.29

Table D-9d – program graduates time to degree

Time to degree (Exiting cohort) (July 1 – June 30)									
2012-13		2013-14		2014-15		2015-16		2016-17	
Median Time (years)	# Graduated	Median Time	# Graduated	Median Time	# Graduated	Median Time	# Graduated	Median Time	# Graduated
2.00	8	2.00	5	2.00	5	1.00	3	4.00	7

Note: The time to degree cohorts are established at the time of graduation and are based on the students that graduated from the program within the year specified.

D.10 Retention and Student Success Analysis: Summarize and evaluate the effectiveness of the emphasis area's recruitment and retention efforts as it relates to enrolling and graduating students who fit the mission of the emphasis area. Identify any areas in need of improvement for producing successful students. In the analysis, address the following elements:

a. What does the evidence from above data suggest regarding how well your emphasis area is producing successful students?
b. List specific events/activities that the emphasis area uses to increase student retention and degree completion.
c. Provide your best practices for tracking students who leave the emphasis area (without completing) and any follow up you may do with these students to determine why they have left.
d. Identify any areas in need of improvement for producing successful students.

Overall, it looks like we can increase our graduation rate. Retention rate is low, but the graduate rate is lower. Maybe by encouraging students to graduate our retention will also increase.

a. I do not view graduation as successful for math/pre-engineering. Most students in this emphasis go on to a four-year school with plans of graduation. Success for this emphasis area is increased enrollment and retention. In Fall 14 (the most recent shown in table D-9c), we had a peak number of students.
b. In Fall 2017, the Mathematics department participated in Discovery Day (formerly Fine Arts Day). This seemed to go very well, based on the day's events. We will see in the future if this helped by surveying new students. The re-forming of Science and Math Club has allowed for up to 6 students to receive a books and tuition scholarship. Of the 4 semester this has been available, it's been full each time. The scholarship is renewable for a second semester, with the possibility of a third as well. Also, the LSAMP is an excellent opportunity for students. It encourages them to attend K-State over the summer for research, and then return to the community college for another year with the opportunity to present their research at a convention in the spring.
c. We do not have a formal method in place for following students. Any information we have is informal or received word-of-mouth.
d. We should direct our improvement on graduating students in mathematics and pre-engineering. This will help with retention rate, too.

Component E: Academic Opportunities and Class Size

Table E.1 – Instruction Type: The following table includes the number of students enrolled by instruction types available through your department/program. Please add any additional data as applicable.

Special Study Option	Number of Students Who Participated/Number of SCH Generated for each Study Option Offered by the Program									
	Academic Year 2012-13		Academic Year 2013-14		Academic Year 2014-15		Academic Year 2015-16		Academic Year 2016-17	
	# of students	Total SCH	# of students	Total SCH	# of students	Total SCH	# of students	Total SCH	# of students	Total SCH
Concurrent Enrollment	65	196	83	249	90	270	119	357	84	252
On-line courses	68	204	92	280	123	378	135	413	206	626
Face to Face courses	1289	4476	1079	3381	1126	3514	1125	3491	1598	4946
Developmental courses	49	147	436	1308	428	1284	432	1296	na	na
MATH-107-DI	6	18	7	21	na	na	na	na	na	na
MATH-107R-DE	6	24	na	na	na	na	na	na	na	na
MATH-122-SC	1	5	na	na	na	na	na	na	na	na
MATH-123-SC	1	5	na	na	na	na	na	na	na	na
MATH-205-SC	na	na	1	5	na	na	na	na	na	na
MATH-108-DE	na	na	na	na	na	na	na	na	6	18
MATH-108-LE	na	na	na	na	na	na	na	na	5	15
MATH-108-SC	na	na	na	na	na	na	na	na	11	33
MATH-108-SD	na	na	na	na	na	na	na	na	11	33
MATH-108-TR	na	na	na	na	na	na	na	na	4	12
MATH-109-HO	na	na	na	na	na	na	na	na	11	33
MATH-109-HP	na	na	na	na	na	na	na	na	9	27
Outreach Combined	14	52	8	26	0	0	0	0	57	171

Table E.2 - Class Size Analysis: Based on the definitions provided below, the following table includes student counts in each class-size category for the past 5 years. Data are reported for the number of *class sections* and *class subsections* offered in each class size category. For example, a lecture class with 100 students which also met at other times in 5 separate labs with 20 students each lab is counted once in the "100+" column in the Class Sections column *and* 5 times under the "20-29" column in the Class Subsections table. Note: data provided by IEPR for this table are from the annual class section report included in the Common Data Set and reflect annual class enrollment from the fall through the following summer semesters.

Class Sections: A class section is an organized course offered for credit, identified by discipline and number, meeting at a stated time or times in a classroom or similar setting, and not a subsection such as a laboratory or discussion session. Class sections are defined as any sections in which at least one degree-seeking student is enrolled for credit. The following class sections are excluded: distance learning classes and noncredit classes and individual instruction such as dissertation or thesis research, music instruction, independent studies, internships, tutoring sessions, practica, etc. Each class section is counted only once.

Class Subsections: A class subsection includes any subdivision of a course, such as laboratory, recitation, discussion, etc.; subsections that are supplementary in nature and are scheduled to meet separately from the lecture portion of the course. Subsections are defined further as any subdivision of courses in which degree-seeking students are enrolled for credit. The following class subsections are excluded: *noncredit* classes as well as individual instruction such as, music instruction, or one-to-one readings. Each class subsection is counted only once.

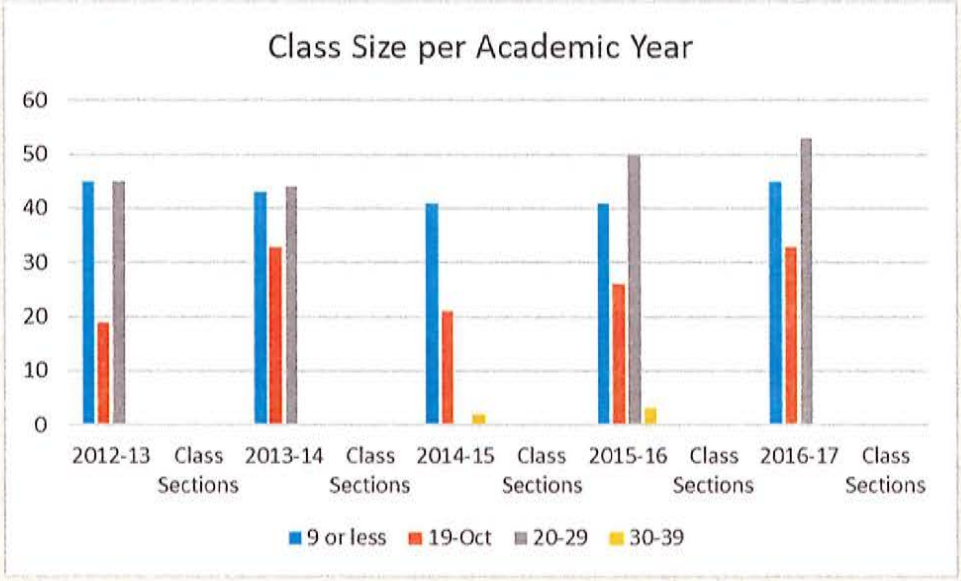
Class Size per Academic Year								
	9 or less	10-19	20-29	30-39	40-49	50-99	100+	Totals
2012 General Class Sections	17	19	44	0	0	0	0	80
2013 General Class Sections	12	29	44	0	0	0	0	85
2014 General Class Sections	14	18	51	1	0	0	0	84
2015 General Class Sections	13	20	50	2	0	0	0	85
2016 General Class Sections	15	26	52	0	0	0	0	93
2012 Edukan Class Sections	16	0	0	0	0	0	0	16
2013 Edukan Class Sections	22	0	0	0	0	0	0	22
2014 Edukan Class Sections	21	2	0	0	0	0	0	23
2015 Edukan Class Sections	23	1	0	0	0	0	0	24
2016 Edukan Class Sections	25	0	0	0	0	0	0	25
2012 High School Class Sections	12	0	1	0	0	0	0	13
2013 High School Class Sections	9	4	0	0	0	0	0	13
2014 High School Class Sections	6	1	0	1	0	0	0	8
2015 High School Class Sections	5	5	0	1	0	0	0	11
2016 High School Class Sections	5	7	1	0	0	0	0	13
Totals Across 5 Years	215	132	243	5	0	0	0	595

NOTE: Math courses have no subsections

Table E.3 Non-credit Courses: If your department offered non-credit courses during the past five academic years, please use the chart below to list the course(s) and the number of students who *completed* the course.

The Mathematics department does not offer non-credit courses.

E.4 Academic Opportunities and Class Size Analysis: Using the evidence provided in all exhibits above, discuss the trends in the emphasis area's class sizes and, if relevant, the impact on student learning and emphasis area effectiveness. Note, in particular, downward or upward trends in class size and provide justification for those trends. When possible, identify the impact of special study options and individualized instruction on emphasis area quality. Make certain you address, if appropriate, all off-campus and on-line courses and/or programs.



According to the data above, except 2014-2015 and 2015-2016 where the class size was 30 students or above (only five sections), all the class size were below 30 students (590 sections out of 595 (99.2%) over the last five years).

In general, we can say our class size is fairly small. It is great for recruitment and marketing because small class size promote learning, each student gets noticed, increase student's performance, community in the classroom and quick feedback.

Component F - Student and Constituent Feedback

F.1 Student Feedback: Summarize available findings that relate to emphasis area quality from student surveys, focus groups, exit interviews or other student sources. Include their perceptions of how well the emphasis area met their needs, the area's strengths and weaknesses, and suggestions for improving the emphasis area. Describe the ongoing mechanisms that are in place to acquire and utilize student feedback regarding emphasis area quality. What changes need to be made to meaningfully incorporate students into the program review process?

No formal tool is in place as an exit interview. Currently our knowledge of such opinions is based on casual conversations with students.

Overall, no concerns have been brought to our attention. Students have seemingly been prepared for transfer to a four-year school.

Having an exit system in place for mathematics and pre-engineering graduates is something we will need to improve on.

F.2 Alumni Feedback: Summarize the results from available alumni surveys, focus groups, or advisory committees as it relates to emphasis area quality. When possible, include data indicating how well the emphasis area met the alums' goals and expectations, how well they think the emphasis area prepared them for next steps professionally and academically, and any emphasis area changes they recommend.

See F.1 for similar answer. This is not a tool we have in place, so we do not have formal feedback from alumni.

F.3 Employer/Supervisor Feedback: Summarize the results from available surveys, job performance appraisals, intern or clinical supervisor evaluations, or other relevant data as it relates to student preparation or competence or emphasis area quality. Comment on the level of preparation given to students as a result of the emphasis area.

Our department does not have internships or clinical opportunities. We also do not have a system in place for job performance appraisals or surveys.

F.4 Constituent Feedback Analysis: Analyze the emphasis area's overall effectiveness at utilizing student, alumni, and supervisor feedback as part of the assessment process. How well does the emphasis area solicit and respond to feedback, as well as communicate results of program review to its constituents, especially its current students?

We do not do well with this part of the assessment process. We have no formal tools or processes in place to assess if students are successful once they leave GCCC. This lack of a process makes it hard to communicate the information and results to our current students and to use for recruitment efforts.

Component G - Resources and Institutional Capacities

G.1 Information Literacy and Library Resources: Information literacy can be understood as the ability to "recognize when information is needed and...to locate, evaluate, and use effectively the needed information" (from the Association of College and Research Libraries). Describe the degree to which library and information resources are adequate and available for students and faculty members in your department (onsite and remotely). What level of support and instruction is available to students and faculty in the areas of technology and information literacy? Provide examples of how students are meeting information literacy competencies and discuss the level of competency exhibited by students in the emphasis area. What resources are needed for your emphasis area in this area?

At Garden City Community College, we have a high level of adequate and available library and information resources provided for both faculty and students. Our library has a large number of resources available onsite as well as many remote resources. Faculty and students can utilize the resources provided through the many available research databases (six at this time) available in the library's website. Faculty and students can also checkout resources though the interlibrary loan system at our library's campus. There is a high level of support available for both faculty and students when it comes to the areas of technology and information literacy. Our library's website has several video tutorials on how to properly take advantage of the available research databases. The library staff are also available to help in person during the library's open hours. Students in our emphasis area are constantly meeting a high level of information literacy competencies. Students in our emphasis area are highly trained on recognizing when information is needed to complete a task and they know how to locate and use that information. For example, our emphasis students recognize very easily that when they do not understand a mathematical process their best way to locate that information is with their instructor, lecture notes, or textbook. If these resources are not available, students know to look for additional resources at the library with our campus tutors. At this point, no new resources are needed for our emphasis area with regards to information literacy.

G.2 Resource Analysis: Discuss the process used by emphasis area faculty to secure needed resources for the emphasis area. Include innovative strategies that have resulted in successful resource acquisition. Evaluate the emphasis area's effectiveness at securing necessary resources to ensure emphasis area quality. What systems or processes are working well, and what improvements could be made to make non-budgeted resource acquisition successful?

The amount of resources available may influence the quality of teaching of each faculty positively or negatively. It may also influence the daily function of the emphasis area department. Each faculty in the emphasis area can secure needed resources by writing a request for a grant to purchase the needed resources. The request in writing is forwarded to the Dean of Academics and the Dean of Instruction and Student Services for review. If the request is approved, the grant will be distributed to the emphasis area department.

Faculty members of the emphasis area can also use the Collaborative Course Review to suggest additional resources that each faculty feels are necessary to aid student learning. The emphasis area Division Leader is the first individual beside faculties who wrote the Collaborative Review to review the request for additional resources. He or she will make a decision of whether or not to forward the request to the next individual for review.

In addition, the emphasis area can suggest/ask for additional resources by proposing those resources as one of its "Department Goals".

Our department has been approved for several grants in the past five years to purchase needed resources to better serve our students. The emphasis area was able to acquire the needed resource under a reasonable amount of time. Thus, the system and the processes that involved are working very efficiently.

Table G.3 - Budget and Enrollment Analysis: Insert emphasis area data from at least five academic years. Contact Deans for data.

Academic Year	Revenue: Tuition/Fees, State	Change from Prior Year	Expenses	Change from Prior Year	Profit/Loss	Change in P/L from prior year
2012-13	$555,762	n/a	$281,732	n/a	$274,030	n/a
2013-14	$576,626	3.75%	$348,199	23.59%	$228,427	-16.64%
2014-15	$604,675	4.86%	$365,744	5.04%	$238,931	4.60%
2015-16	$673,228	11.34%	$310,120	-15.21%	$363,108	51.97%
2016-17	$738,460	9.69%	$373,264	20.36%	$365,196	0.58%

The revenue generated from the mathematics department has increased each year since 2012-13 school year and has always profited. In the 2015-16 year, there is a decrease in expenses due to missing a faculty member. We were not able to find a replacement and went the year with one teacher too few. That position was replaced the following year, hence the increase of approximately $63,000 in 2016-17.

G.4 Analysis of Acquired Resources: Since the last program review, identify each major emphasis area resource acquisition and its direct or indirect impact on emphasis area growth or improved quality. Discussions of impact should include the measureable effect of acquisitions such as new faculty, staff, equipment, designated classroom/office space, non-budgeted monies, awarded grants, scholarships, and other acquisitions by the emphasis area or faculty on student learning, enrollment, retention, revenue or other emphasis area indicators of educational effectiveness. Justify the program's use of resources through this analysis. When appropriate, discuss resource acquisitions that did not positively impact the emphasis area.

Methods employed by teachers to teach effectively are to a very large extent influenced by the kind of resources and facilities available in the school. The teaching methods, in turn, influence the level and quality of participation and performance by students. In general, where resources and facilities - teachers, textbooks, laboratories, tools and equipment, teaching aids, stores, offices etc. - are inadequate, the teaching approach tends to be teacher-centered.

In the past five years, the mathematics and pre-engineering department has acquired numerous resources that help the program run effectively. The following are some examples: 3-D printer, new computers at the computer lab, iPad cart with about 30 iPads, graphing calculators for each division faculty member, about $2,000 worth of Vex robotics, establishment of science & math club, new full time faculty members, scientific and graphing calculators for student use during tests, and other stationeries and teaching aids.

Impact of Resources on Program

3D printing is the latest technology, and it is vital that schools educate students in modern production techniques. 3D Printers help students experience the paradigm shift that leads to a career in science, technology, engineering and mathematics (STEM). 3D printing technology positions students as creators. Instead of consuming the creations of someone else they become the inventors.

Computers play a vital role in the modern education and business world. Making computers and iPads available to students helps them do their school assignments and prepare them for any number of possible careers that use computers.

In today's' technology-driven world, it's important now more than ever to prepare students for the future. Teaching robotics and calculators to young students can increase their ability to be creative and innovative thinkers and more productive members of society. By teaching our students the basics of robotics and calculators, they are introduced to programming, creativity and prepare them for the future.

The Science and Math Club (SMC) is a social, academic, and service oriented organization of which students can be a part at GCCC. The SMC promotes the enjoyment and appreciation of the life and physical sciences, mathematics and technology, while emphasizing the importance of community service and social

fellowship. SMC helps in recruitment and promote the interest of students in the STEM program by awarding scholarships to students.

In the last five years, about four new full time faculty members joined the department. Faculty members reflect their centrality in addressing the primary educational mission of GCCC. As faculty members teach, they disseminate and impart basic and applied knowledge to students and assist students with the learning process and applying the knowledge. The teacher is the content expert, and students are regarded as learners or novices to the academic discipline or field of study. Faculty members are also expected to participate in creating the new courses that are taught. The availability of effective faculty members promote recruitment and students' confidence in the field of study.

G.5 Resource Allocation Relative to Capacity: Analyze trends in the emphasis area's operational budget as it relates to emphasis area enrollment, emerging needs, and emphasis area goals. Has the budget increased or decreased in proportionate response to emphasis area growth? Using evidence obtained from this review and other data, discuss your emphasis area's enrollment trends and/or revenue streams as it relates to non-budgetary resource allocation. In other words, if an emphasis area has reduced enrollment or income, what steps have been taken to correct resource allocations or expenses; if an emphasis area has increased in size or income, what resources or capacities are needed to meet new demand? What is the impact of budget changes on educational effectiveness? For each necessary capacity, rank order its importance relative to other needs and estimate its cost. Describe planned efforts to obtain funding for these needed capacities.

The mathematics department serves all of the population of GCCC students. All students obtaining a degree will have taken at least one mathematics course (level 107 or higher). Our costs are covered by the revenue our classes provide through tuition. This revenue is in excess of our costs, enough to show a profit each year.

If the school continues to grow in enrolment, we will need to grow in department size as well. But at the moment, I do need see a need for this.

Our program has also not seen a great deal of change (either up or down) over the past five academic years. The only major fluctuation results from a vacant professor position that was filled as it needed to be.

Summary Conclusions

Summarize the major findings of the program review as it relates to both the strengths of the emphasis area and areas in need of improvement. Include in this discussion any "intangibles" or assessments that you wish to discuss that were not requested in the Program Review Report. Make sure your conclusions are based on evidence.

Our mathematics department is performing well. There is not a large number of mathematics and pre-engineering majors, however the department does have a large number of students taking courses as general education requirements. See table B.8 for comparison of majors to non-majors enrollment numbers.

Table B.6 shows the number of hours faculty teach. While many faculty are happy to take on overload, one should be aware of possible burn-out. If numbers continue to remain above the minimum of 15 hours per semester, the risk of tiring out our faculty members may present itself. Adjunct faculty and additional full-time positions can help alleviate this issue.

The number of enrollees in the math program has increased with the implementation of LSAMP grant and with Bridges. Both of the programs focus on minorities, and as can be seen in Table D.1. There has been an increase in Hispanic enrollment over the years. The program does suffer from the traditionally lower numbers of females enrollment. This is a problem many STEM fields face and is not unique to GCCC.

In the future, it is the hope of the math department that Program Review will also look at the progression of students through the sequence. This report would not be aimed at Mathematics/Pre-engineering emphasis students, which would be mainly be limited to Calculus I through Differential Equations). There is very low enrollment in these classes, thus would not see much of a trend over a short 3-5 year span. Instead the report would look at all students enrolled in any class, primarily developmental.

In a general education program review the success of students moving from the lowest level classes on up can be assessed. By studying this progression through the series, one can see when students start to struggle. Then the department can address that with a method that will help students to learn the knowledge needed to be successful in their future math classes.

Program Goals with Recommended Action Steps

Program Name: Mathematics Date: 5/17/18

Include this document with your Program Review Report. Considering the totality of the program review report, use the table to set goals that, if met, would result in improved student learning, increased enrollment, retention, revenue, or other emphasis area indicators of success. Set reasonable, measureable, and achievable goals and identify clear action steps needed to obtain the goal.

(Attach ***this*** year's "Program Goals with Recommended Action Steps" as Template Appendix A in your emphasis area's ***next*** program review. See "Schedule of Future Program Reviews" document, next page, for date of your next review.) You may add rows to this table as needed.

Component Area	Specific Goal or Desired Outcome to Maintain or Improve Program Emphasis Area Quality.	Activity or Strategies to Achieve Goal (include responsible person)	Proposed start and end dates	Progress Metrics and timeframe for measurement	Resource requirement (in-kind & direct)	Priority of Resource Allocation (High, Medium, Low.)	Anticipated Impact on Educational Effectiveness & relation to GCCC Skills
A - Mission and Context	Rewrite math department mission statement.	Full time math faculty will review current mission statement, use Assessment Training workbook to rewrite.	Start and complete in August 2018	NA This can be done in one session	NA	Low	Connections to college mission ad course SLO's will be easier to identify.
B - Faculty Characteristics and Qualifications	Continue to peruse professional development	Attend conferences through year, either in person or web-based	Ongoing for 18-19 school year	Requests to Faculty Senate for funds throughout year	Funding for conferences, through FS	Medium	Keep teachers aware of current trends and strategies in math ed
C - Quality of Curriculum and Student Learning	Update PLOs and increase the success rates	Revisit the wording of PLOs and how we measure them	Ongoing for 18-19 school year	Rewrite in Fall 18	NA	Medium	Will make it easier to show math/pre-eng students are successful
D - Student Enrollment and Success	Increase student recruitment in high schools in the surrounding areas.	Establish connections with high schools in surrounding areas, let them know the opportunities & scholarships available. Scholarship directors will invite HS students to Discovery Day.	Ongoing for 18-19 school year	Recruiting will start at the beginning of fall and continue through discovery day. Follow ups with interested students will happen in the spring.	Recruiting materials from admissions. Printing from the copy center.	Low	Increase program oriented recruitment will improve enrollment in higher-level math and science courses.

Component Area	Specific Goal or Desired Outcome to Maintain or Improve Program Emphasis Area Quality.	Activity or Strategies to Achieve Goal (include responsible person)	Proposed start and end dates	Progress Metrics and timeframe for measurement	Resource requirement (in-kind & direct)	Priority of Resource Allocation (High, Medium, Low.)	Anticipated Impact on Educational Effectiveness & relation to GCCC Skills
E - Academic Opportunities and Class Size	Lower class size in developmental classes	Review success rates and class size at peer schools	Start: SP18 Complete: before F18	Class size will be lowered on course schedule	More sections may need to be offered for developmental classes	Medium	With smaller classes, faculty can better meet the diverse needs of developmental math students
F - Student and Constituent Feedback	Establish a method of gaining feedback	Research peer schools and begin to gather non-academic contact information from students	Start: SP18 Ongoing	By end of SP19, should have some means to contact alumni	Possible survey/letter	Medium	Will also us to track if our graduates are successful at the next level.
G - Resources and Institutional Capacities	Math department will provide a software (WebAssign/ Canvas) workshop for math students prior to the start of Fall 18	All math faculty will provided topics to be discussed in the workshop. Workshop will take place during new student orientation.	Start and complete in August 2018	Workshop will be designed and delivered August 2018. This workshop can be used to inform future workshops for incoming freshman.	Online resources. Student accessibility to their canvas accounts. Good internet connection. Possible computer lab or other technology accessibility.	Medium	Workshop should reduce student software issues and allow class to be subject focused at the start of the semester rather than time being used for troubleshooting.
Summary Conclusions	Overall, math department is doing well. There are enough teachers, and students' needs are being met.	Most strategies can be implemented by math faculty with some research.	Within coming school year.	Varies	Nothing of too much money, mostly time is needed.	Varies	All these goals will increase the success of the math/pre-eng departments and thus increase college success.

Template Appendix A

Program Goals with Recommended Action Steps—From Previous Review

Attach this document with your Program Review Report for Section A.2 above.

Program Goals

A. The goal of the mathematics department is to add emporium courses, additional rapid review courses, co-requisite courses, online courses and student support workshops. Workshops will include instruction on math study skills, use of the graphing calculator and tools for success in My Math Lab.

B. Successful implementation of the program goals will require replacing open instructor positions, use of classrooms as well as computers and/or computer lab.

C. The department will continue to use My Math Lab and its resources. The department has video conferencing capabilities that could be used for a class or one on one meetings with students. Notes and quizzes are available online. Instructors work with Accommodation Services to provide extended testing time. The out of class testing center is utilized to provide additional alternative testing times. Instructors provide opportunities for in and out of class practice. Videos and resources are created for students to aid in the success.

D. Successful implementation over the next three years will require a team effort of all faculty and staff members in the department as well as the Developmental Education Coordinator.

E. The Mathematics departments isn't currently apart of any 2 + 2 agreements.

Template Appendix B

Administrative Response Sheet—From Previous Review

Attach this document with your Program Review Report for Section A.2 above.

Template Appendix C

Annual Assessment Reports—Since Last Program Review

Attach the program's Annual Reports for the last 5 years or since the last program review.

Template Appendix D

Strategic Plan and Status Reports Since Last Review

Attach the program's Strategic Plan and Status Reports for the last 5 years or since the last program review.