## Program Review
### For Cycle 2012-13 (2nd Year Group)

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<td>Enrollment in Math courses has undergone an overall decline of roughly 7.5%, from 14,591 in overall enrollment in 2009/10 to 13,491 in 2011/12. Instructors continually allow class enrollment to grow well beyond the Cap (currently 44 for a single section class) to help alleviate the heavy demand; as a result, the program load (WSCH/FTEF) for math, already one of the highest in 2011 at 680, has continued to increase. Nevertheless, the number of waitlisted students in the fall has more than doubled while the number in the spring has risen more than 250%, which runs counter to the overall trend of the college. The enrollment in Statistics has remained fairly steady at an average overall enrollment of roughly 1400 per</td>
<td>Overall student success has improved slightly from 47.95% in 2009/10 to 49.37% in 2011/12, a modest increase of 3%. For Statistics, the overall success rate has wavered, but has maintained an average overall student success rate of roughly 65% over the same period. The increase in math success is in line w/ the overall success rate increase of the college, while Statistics is nearly on par w/ the college’s student success rate, a surprising result to find in a mathematics subject.</td>
<td>Staffing and workloads continue to be a challenge in the math department. In 2005 there were 25 full-time faculty members and a significantly smaller number of courses to cover. Since then we have had retirements, a full-time member leaving to run the Math Success Center (Ladera Barbee), and have hired only one tenure track member (Pablo Bert) to replace our losses. Currently we have, with the recent addition of Ladera Barbee, 22 full-time math &amp; engineering instructors covering a much larger number of classes. Because of this and the (until recently) burgeoning number of course selections, our part-time faculty has suffered very little in terms of employment. This fall alone they are teaching nearly 45% of the total</td>
<td>See narrative to follow regarding the math department’s effort in this area. Program SLOs: 1. To serve students to meet graduation/GE requirements. 2. To serve students for the fulfillment of their own personal goals. 3. To serve students to meet career/transfer requirements. The data collected since 2009 fluctuates fairly randomly due to the small sample sizes. Success rates of particular SLO problems inserted in final exams ranging from 27% to 100% have been recorded.</td>
<td>The department projects (goals) are listed below; see narrative to follow regarding each. 1. Enhance and improve math distance learning. 2. Improve support of part-time and full-time faculty. 3. Provide responsive scheduling. 4. Improve and institutionalize the assessment of student learning outcomes (SLOs.) 5. Expand and improve the role of the Math Success Center. 6. Investigate and instigate new math education plan pathways. 7. Improve the placement of students in math classes to enhance student success. 8. Create a greater team spirit in the department. 9. Continue to commit to College Promise. 10. Improve math support of CTE programs. 11. Continue to revisit the design of the soon to be built Math/Tech building.</td>
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<th>Year from 2009/10 to 2011/12. The demand for Statistics has continued to increase and the department has been able to meet this demand thus far, with waitlists holding steady as well.</th>
<th>Math TUs; if broken down in terms of numbers of classes taught, our part-time faculty members are teaching 49% of our current fall math offerings. As far as staffing is concerned, our department is supplemented by the diffuse support of one AAA (Wendy Slater) who handles the requests of the entire D-building (Physical Sciences, Life Sciences, and Math) as well as assisting the Nursing Program.</th>
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6. College Wide

Overall – How does this information fit with the College Wide Goals?
The Math program continues to support the college wide goals as stated in the Educational Master Plan, the Board of Trustees goals, as well as those espoused in the President’s Agenda. Math is one of the foundational skills needed by all students who wish to improve themselves and make their dreams a reality, whether they wish to earn a certificate here at LBCC or to transfer to a 4-year university. As such, it is a tad disheartening but also challenging to find that student success still wavers below 50% overall. There are many reasons for this, and the math department faculty members are already searching for ways to improve student success by means both inside and outside the classroom. The skill set the math program provides our students includes critical thinking, problem solving and logic, and hopefully a realization that mathematics is one of the most beautiful of all human creations. These skills will allow the student to resolve problems later in life or on the job with calm intellect and mental acuity rather than allowing emotions to hold sway. As such, the goals of the Math program dovetail nicely with those of the college in aiding our students to achieve success and supporting the College Promise Partnership.

The purpose of Program Review is to summarize and interpret the data and information collected from the resources listed above, reflecting how your department program(s) have been successful and incorporated the information into improvements, where necessary. As a part of the overall college planning process, a meaningful Program Review will be the primary document CPC and other college committees will rely on for
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qualitative and quantitative information on a program, informing enrollment management, budgeting (cap outlay, grants), hiring priorities, and accreditation.

The questions below are designed to help you create, primarily, a narrative review (roughly 5-10 pages). Each question includes the “Feedback Rubric Prompts” that will be used by the committee to read, reflect, and provide feedback on your Program Review; please use these to guide the formulation of your responses. Each program (curriculum guide) within your department requires a separate Program Review Document.

Program Review Questions

Name of Program being reviewed: Mathematics

1– 3. Enrollment, Achievement, and HR Data

Summarize and interpret the data for each of the first three above as they relate to your program.

Response:

Enrollment: The math department continues to be dogged by a uniquely heavy demand for all course offerings and almost every section offered. As mentioned above, although the number of course offerings has been allowed to decline (especially in spring when the school’s budget is most acutely felt) the demand for these courses is at an all-time high, as the CSU campuses close their doors and become much more stringent regarding their math remediation policies, hence delivering a growing number of former university students in need of immediate remediation. Accordingly, waitlists in the fall have doubled and those in the spring have increased by over 250%. Math instructors continue to assist students by allowing class size to increase well beyond the current Cap of 44 students in single section classes, resulting in class overcrowding, students sitting on the floor, and aisles too narrow for an instructor to access students one-on-one as need be. In fall 2011 the department program load (WSCH/FTEF) was one of the highest on campus at 680, while the estimated FTES was nearly 1019, the highest department total by far and very nearly one eighth of the entire campus FTES for the year. It can be assumed that, by and large, the best faculty members to instruct our students are the full-time faculty members who have already been through a rigorous hiring process and picked as the best of their respective applicant pools. However, it can be shown that part-time instructors are teaching more and more classes. For example, in this current Fall 2012 semester adjunct faculty members are teaching 313 TUs compared to 400 TUs taught by full-time faculty, or 43.9%. If we count the courses without consideration to TUs or double sections, part-timers are teaching 76 classes compared to 79 classes taught by full-timers, or 49% of the math classes offered by the department. Each year it is very clear that the math program needs to hire more full-time instructors dedicated to this college rather than rely on part-timers teaching at multiple colleges in order to improve the learning environment and hence the success rate of our students.

Achievement: Although improving, the 3% overall increase of student success in the math program still has a long way to go if it is to catch the college average. The effect of the Math Success Center (MSC) has aided this rise considerably, with workshops and directed learning activities (DLAs) having become an accepted part of
the course description for Math 815, Math 110, and Math 130. Nevertheless, there is still much that the math department can do to help raise student success. One fact that jumps out from the data is that the success rate during summer is nearly 20% higher than in the spring or fall, for instance. The data, albeit skewed by the caliber of student willing to take a math course for 6 weeks during summer, can also be seen to indicate that math courses – especially remedial math courses – may enjoy greater success rates from having to meet everyday, forcing the student to study each night to keep up, hence improving their skills therefore. The same goes for the Accelerated Math courses, a sequence of Math 110/130 typically which meets Monday through Thursday, have also been shown to have a better success rate, although again the caliber of student may skew that data. A scheduling committee was formed last year to see how to best arrange math class offerings to better serve the students. Classes that meet more than twice per week (MWF, TRF, MTW, etc.) have been implemented this semester to better serve the full-time remedial student. These classes meet mainly in the morning and early afternoon, whereas evening classes still meet twice (or even once only) per week to better serve the part-time working student. Other avenues, such as more online support, continual improvement of the MSC experience, extension of the MSC model to other courses such as Math 45, prescriptive workshop assignments and other ideas continue to be researched and/or implemented. A distance learning committee has also been formed and has already convened to seek out how to better serve our distance-learning students by formalizing the online education process in the math department and by sharing “best practices” with each other.

**HR Data:** The math department has been operating since before 2008 with a far less than optimal number of faculty members tasked with handling an ever-growing demand for math classes. Since 2005 two members – John Lenhert and Stan Brinton – have retired, two other members – Narineh Movsesian and Roya Furmuly – have taken jobs elsewhere, and one member – Ladera Barbee – left to head the MSC. With the hiring of Pablo Bert two years ago and with the imminent return of Ladera Barbee, the department has yet to recoup from these losses. As stated above the part-time instructors – a pool of approximately 50 faculty members – continue to teach an increasing number of math classes. With the recent cutting of Cindy Jackson’s staff position the math department must make do with sharing the support of AAA Wendy Slater with three other programs – Life Science, Physical Science, and Nursing. The loss of these positions greatly impedes the department’s ability to achieve its goals.

**Feedback Rubric Prompts:**
*How has the program explained their data for the columns 1-3 (enrollment, achievement, staffing)?*
- Was the content concise yet sufficiently in depth?
- Was there sufficient detail to understand their point?
- Were the data effectively related to trends in student access and performance during the review cycle? If there were anomalies in the data, were they adequately explained?
- Did the review explain how the staffing structure (including full-time to part-time ratio of faculty) has affected, positively or negatively, the program's ability to fulfill its mission and goals?
4. SLOs

a) Summarize the collected program data

Response: The data collected, although scant, does support the rather fuzzy over-arching goals of the program. Problems were created and embedded in the finals of instructors who volunteered to participate. The SLO officer compiled the success rates. Eventually this data was uploaded into TracDat but the assessment of the success rates has only just begun. Because the data collected was limited to only one or two class sections per semester, they do not give a precise measure of student success nor how these three program SLOs are supported. However, ignoring the fluctuations from a low of 27% to a high of 100% on certain SLOs, this data is consistent with the experiences of the math faculty members. It is unfortunate that, although the department was the first to complete their SLO definitions when the movement began, the department did not continue to lead the charge into assessment. There has not been institutionalized a systematic collection of SLO data/review/assessment to this present day. Math faculty deal with numerical concepts daily; a graded final constituted a well-measured indicator of success, and the SLO philosophy unfortunately was slow in elevating to its current status in the department.

Feedback Rubric Prompts:
- How has the program explained their SLO data (class and program level)?
- Were changes and responses made to the courses and/or program as a result of the data analysis?

b) Based on analysis of course and program SLO assessment:

- How are program-level and course-level SLOs being implemented, assessed, and used for program improvement?

  Response: Part of the response that belongs here has already been partially delved into in the prior paragraph. Assessment has been scanty or non-existent and the use of SLO data has not yet occurred. This is not to say that assessment did not take place, however. The department continues to meet informally to discuss new ideas and to seek answers to the undesirably low success rates. In 2010 faculty were alarmed by the abysmal student success rates of our distance learning effort and an independent assessment of our distance learning efforts began. Out of this assessment grew the Online Committee last year as mentioned previously. Best practices are beginning to be shared, and the beginning of a distance learning structure – week zero screening, online software standardization, student support off-campus – has begun to take shape.

- Summarize how the program has responded to SLO assessment results.

  Response: The first item of business is to improve the data by collecting more of it, and mandatorily. Course committees were formed last year, one for each course offered in the math program. It is the charge of these committees, amongst other tasks, to assess course SLO data and recommend actions
to the department. These committees have also been charged to look at the course descriptions, especially the objectives, outcomes, and individual SLO questions, to improve this area. Finally, these committees will be responsible for creating a framework set of questions that captures the essence of each course; these questions are then to be inserted into every final given by each instructor of that course. The success rates of these questions will then be collected by each instructor and uploaded to create an overall department success rate for each objective.

This effort will create a much more robust collection of data; the department will then use these success rates to promote discussion of discoveries and a sharing of teaching strategies. This is considered a very large effort, however, and it has been suggested that it be piloted with only 2 – 3 courses (Math 110 & 130 perhaps) at first.

Secondarily, the program SLOs need to be updated to better reflect the mathematical, critical thinking, and problem solving skill sets that we wish our students to take with them when they finish with our program. An effort will be made to ensure that the course/department/college SLOs line up more accurately.

- **Discuss how each action/change is based on ASLO results and how it will contribute to the improvement of the program.**

  **Response:** The Course Committees will help better organize the department. Faculty members will now know who to go to for questions/issues specific to certain courses. Faculty members will also now know whose responsibility it is when it comes to course content, review, and SLOs. The improvement of the SLOs will better enhance the reporting structure of the program and will in turn lend itself to a better appreciation of the overall SLO effort of the program. Finally, the purpose of revamping the SLOs for each course is two-fold: greatly improving the data collection and assessment, and bringing more uniformity to course content as presented by individual instructors. This in turn can be predicted to better enhance the learning experience of our students; they will better know what is expected of them and will in turn be better prepared for the next course in the sequence.

*Feedback Rubric Prompts:*

Do you feel that you have an understanding of how the program has used their SLO data for program improvement?
5. Goals

a) Based on the data from questions 1 – 4 and any other relevant internal or external data your department has collected, how have your department and program goals developed and changed over the past three years?

Response: The goals listed on page 1 of this document are not in any particular order. All of these goals were newly added to the Department Plan last year in an effort to better organize the department and to better serve our students as they travel through the math program. Low student success rates, dialogue with students and with colleagues, the College Promise effort, and a critical look at how our students are served in terms of their future ambitions all contributed to the creation of these goals.

b) Discuss the steps you have taken to address each goal. What have been the results of these efforts?

Response: Goal #1: Enhance and Improve Math Distance Learning – this effort has already been discussed previously; as mentioned, data collected by the college was reviewed, and this assessment led to the current efforts of the Online Committee.

Goal #2: Improve Support of Part-Time and Full-Time Faculty – A need was perceived, long in growing, that, as the procedural tasks of the college became more involved and our students and faculty took to communicating almost exclusively online, it would better serve our faculty members if all information relevant to their tasks be consolidated onto one math department webpage. All instructors will know where to go to get their questions answered and the department will thus work in a more organized manner. A mentoring program to provide support for newly hired part-time instructors is also in the works. Finally, informal assessment of student success has led to the idea of course-by-course support provided by faculty for faculty. Such support will be in the form of course material sharing, class strategies, and informal seminars.

Goal #3: Provide Responsive Scheduling – An effort was begun last year to create a schedule of math classes that better fit the needs of the various students we have in the math program. Data was requested and received from the Institutional Effectiveness group to assist in this effort. It is widely believed that remedial math students fare better when they meet more often, whereas part-time working students would prefer just the opposite. The result of this study is the current Fall Schedule as well as the standing Schedule Committee.

Goal #4: Improve and Institutionalize the Assessment of SLOs – This has already been covered in previous paragraphs of this document. By institutionalizing these plans, although more effort is required, it is believed that student success rates will rise.
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Goal #5: Expand and Improve the Role of the Math Success Center – Past data has already shown that the MSC has improved the student success rates of the math program. Requiring Math 815, Math 110, and Math 130 students to either attend workshops or work on a DLA in the Center according to a prescribed schedule has had the desired effect of introducing students to the benefits found in the MSC, including videos, tutors, and the workshops themselves. Students may also study together in an enclosed room designed for this purpose if they’d prefer. Further implementation of this strategy in other courses such as Math 45 or Statistics is being planned as mentioned previously. The computer lab has not been utilized to its potential as yet, and plans are in the works for that component as well. Finally, the faculty members plan to consider holding some of their office hours in the Center instead of in their individual offices.

Goal #6: Investigate New Math Education Plan Pathways – the department as a direct result of the low student success rates is currently planning Alternative math courses. A contextualized math path to Stats is currently being considered; these courses would remove some of the more abstract algebra concepts and replace them with real-world problem solving in an effort to better serve the non-hard-science folk who make up the majority of our students. A 2-unit CTE math course has been dreamt up with the help of the CTE folk who have expressed a dire need for math remediation of their students. Such a class would cover whatever math is needed in the various trades taught on campus, and would probably take place during the first eight weeks of any given semester. Also in an effort to greater speed the students along their individual education plans will be a workshop-flavored course, offered Winter Session and Summer Session only, and designed to allow students to proceed through various math concepts at their own pace with the goal of testing upward and into a higher math class as a further incentive. All three of these ideas were born out of the desire to better educate our students and to better assist them through the program.

Goal #7: Improve the Placement of Students in Math Classes – It need not be pointed out that, if students are placed in classes optimally suited to their skill levels, then these students will not become frustrated and have a much better chance of success, which will in turn cause student success rates to rise. The department will need to work with the Assessment Center to help improve the AccuPlacer rubric, and will need to continually participate in the Promise Pathways effort and speaking with the counselors about improving the placement of these students as well.

Goal #8: Create Greater Team Spirit – For the rest of these goals to be realized, the department needs to work together; the better the sense of team, the better the results, which leads to greater student success as well.

Goal #9: Continue to Commit to College Promise – The department believes in the philosophy of the College Promise effort and continues to provide whatever is needed. Classes have been added, semester schedules changed, and input has been provided at many Promise Pathways meetings, and this effort will continue on into the future. Department faculty members also realize the value of exchanging ideas with their colleagues both in the high schools and at the universities.
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Goal #10: Improve Math Support of CTE Programs – Major strides have been made in this area as mentioned in Goal #6, above. Both the CTE Math and the contextualized math sequence were originally dreamt up in support of the trades. It is hoped that student success will rise not only in the math program but also in the CTE programs as a result.

Goal #11: Math/Technology Building – As the result of the thought expended on the Math Success Center (Goal #5) and new math pathways (Goal #6), math faculty members are looking to alter the layout of the planned Math/Technology Building to better serve in these endeavors. A larger area for the MSC is currently being discussed, as well as how to better facilitate the Winter/Summer Session workshop course already described.

c) Based on the new data collected (4), what are your plans for change in the future?

Response: The changes prompted by the data collected are described in the SLO discussion provided previously. Please see the narrative in Section 4: SLOs.

Feedback Rubric Prompts:
Describe what appears to have contributed significantly to the program's plan development for the past three years.
   o Do they have a vision?
   o Have the data from questions 1-4 (of the program review template) informed their planning?

6. College Wide

Discuss how the program SLOs as well as the department goals integrate, articulate, and complement the institutional goals and initiatives. (How does your department fit into the big picture?)

Response: As outlined in the Department Plan, the goals of the math program are intimately related to the goals outlined by the Board of Trustees, the Educational Master Plan, and the President’s Agenda as well. In the narrative above it is hoped that both the current effort and the proposed plans described show that the Math program supports the goals outlined in the EMP of Student Focus, Equity, and Community; the Board of Trustees goals of Student Success and CTE Development; and the goals outlined in the President’s Agenda of Student Success and Workforce Development.

Feedback Rubric Prompts:
Do you have a clear idea of how their program supports institutional goals?
   o Did they reference the institutional goals and mission?
   o How does their Program Review give you a clear idea of how their program fits into the college mission?