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

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<td>The enrollment in engineering continues to grow, experiencing an overall enrollment growth of 50% from 167 total enrollment in 2009/10 to 251 in 2011/12.</td>
<td>The student success rate Engineering increased as well, from 60.48% to 64.54%, a 6.7% increase.</td>
<td>Currently we have enough full-time and part-time instructors to cover the modest number of engineering courses currently being offered.</td>
<td>See narrative to follow regarding the math department’s effort in this area. Program SLOs: 1. To serve students for the fulfillment of their personal goals. 2. To serve students to meet career/transfer requirements. There has been no SLO data collected for the Engineering program.</td>
<td>The goals of the Engineering program currently are a subset of those of the Math/Engineering department. The numbering below reflects that used for the Math program. 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.) 6. Investigate and instigate new math education plan pathways. 8. Create a greater team spirit in the department. 9. Continue to commit to College Promise. 12. Cultivate greater demand for the Engineering program.</td>
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### 6. College Wide

**Overall – How does this information fit with the College Wide Goals?**

The Engineering program is currently worried over by many entities at the college, from the faculty members within the department and on up to the administrators of the college. This is partway due to the nationwide push to create “homegrown” scientists and engineers. The goals of the college – equity and community – and of the President – student success and workforce development – are strongly supported by a vibrant and successful Engineering program. Currently the program at LBCC is still in its fledgling stages even after years of coaxing its growth by opening up new courses of study. Although success rates are increasing and despite the fact that no SLO data has been collected as yet, nevertheless it is highly desirous to the educators at every level and to the community and nation at large that this program be encouraged to grow.
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 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:** Unlike the Math program, the Engineering program continues to suffer from very low demand for all but two of its courses, Engineering 50 (Introduction to Engineering) and Engineering 54 (Computer Methods) which continually have robust enrollment. Two other courses, Engineering 17 (Circuits) and Engineering 35 (Statics), continue to suffer from low enrollment, and were even deleted from the schedule this fall. Engineering 3A/B (Engineering Graphics) have not been offered in years.

**Achievement:** Quite frankly, student success rates have not been much of a factor in the planning of the program, for students who have made their way to this level have already passed Calculus and Physics along the way and are therefore a much more experienced group of students. Concern has been much more focused on how to build this program. This is not to say that student success here is ignored; it is encouraging to see the overall success rate of the program on the rise.

**HR Data:** As mentioned in the column 3, above, the staffing situation of engineering instructors is not a problem in this program insomuch that there is plenty of engineering experience to cover the classes. These same instructors must also cover the multitude of math courses offered as well, however, and the heavy demand for the math program offerings does also impact the Engineering program as well.
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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: As mentioned in column 4, above, there has been no SLO data collected in any of the Engineering courses thus far.

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: This is not being done at present.

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

  Response: The faculty members within the program are rather currently reacting to the lack of any SLO data to which to respond. The engineers in the department plan to visit each of these courses to determine what the SLOs will be and how their success rates will be measured. Because demand is still so small, only one section of each course has any chance of running at all, which means that the data may suffer from the whims of chance.
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- Discuss how each action/change is based on ASLO results and how it will contribute to the improvement of the program.

Response: Pursuing SLO development/measuring/assessment/reaction will have a positive impact on the Engineering program once it has become established.

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. All the goals, that is, except for Goal #12, which has been around for years.

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

Response: 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.
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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.

Goal #6: Investigate New Math Education Plan Pathways – An addendum to the Math program Goal #6 is the investigation by the engineering faculty members into the strategies for promoting the world of engineering to incoming students before they need to confront the task of elevating their skill levels through Calculus and Physics. The department is reaching out to Long Beach State and Long Beach High School faculty to share ideas in this endeavor. Plans for requiring undecided students to take introductory engineering courses that are pre-Calculus and more exploratory are being considered.

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.

Goal #12: Grow the Engineering Program – Besides the possible Education Path mentioned in Goal #6, above, the department must investigate the various successful engineering programs at certain local community colleges to gain some insight as to what might work at our own college. We must also forge a partnership with the Engineering Technology program in the hopes that that conduit of students might provide a few able-minded future engineering prospects. Partnerships must be made both at the high school and the university levels that would include a Path to Engineering perhaps modeled after the Promise Pathways effort. Partnered summer bridge programs have also been mentioned. Finally, advertising at all three educational levels is a must.

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

Response: Please see the narrative for Goals #6 and #12, above.

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: 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 Engineering program supports the goals of Equity, Community, 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?