

# The Instructional (Academic Affairs) Program Review Narrative Report

## 1. College: *Laney College*

**Discipline, Department or Program:** *Biology Department*

**Date:** November 13, 2012 (Due by November 13, 2012)

**Members of the Instructional Program Review Team:** *Rebecca Bailey, Leslie Blackie, Amy Bohorquez, Rajeev Banerjee*

## 2. Narrative Description of the Discipline, Department or Program:

Please provide a general statement of primary goals and objectives of the discipline, department or program in light of the College's priorities and goals. Include any unique characteristics, degrees and certificates the program or department currently offers, concerns or trends affecting the discipline, department or program, and any significant changes or needs anticipated in the next three years.

The mission of the Biology Department includes providing:

- introductory courses that meet requirements of AA and AS degrees
- Career Technical Education, specifically Biomanufacturing (including two certificates and an AS degree) Note: Biomanufacturing is included in this PR, and also has its own
- transfer courses to four year schools
- prerequisites for professional schools (including programs for Registered Nurse, Licensed Vocational Nurse, Nurse Practitioner, Radiology Technician, Physician Assistant, Dental, Dental Hygiene, Medical and Pharmacy).

We meet the educational needs of the community by providing up-to-date programs and allowing students flexibility to earn degrees and certificates in select occupational and academic fields. Our program also allows students to expand their general knowledge and improve their position in the work force. Our faculty and staff strive to:

- prepare students for the next level of study
- facilitate and inspire each student's best effort
- be fair, consistent and organized
- challenge students to reach higher and farther than they thought they could.

We have been concerned that cuts to courses that have historically filled will damage the department, not only for short-term enrollment but also in keeping students at Laney. We hope to bring back courses and add courses, to serve the needs of the community. The health care field is growing, and we anticipate increases in enrollment in our pre-professional courses such as Microbiology and anatomy and physiology. Our majors-level General Biology is an important prerequisite for the growing medical and pharmaceutical fields. Biomanufacturing is also an expanding field, and our courses in those subjects are expected to experience increased demand. There are more than 200 local biotechnology companies in the San Francisco-Oakland area, and there is a high demand for entry-level technicians to work in the manufacturing

component of the biotech industry. This demand is expected to grow over the next decade. Also, as Laney as a whole grows, more students will be taking our introductory courses to fulfill their degree requirements. We require two additional full-time instructors, one half-time evening lab technician, one half-time biomanufacturing lab technician, one half-time biomanufacturing job placement coordinator, increased supply and equipment budgets (particularly biomanufacturing), increased student aide budget, money for tutors, and additional space to meet current needs and accommodate anticipated growth. We strongly feel our current building is not meeting our needs and certainly will not meet our needs into the future. A new science building that would allow us to meet current needs, grow and be in close proximity to other science departments is needed.

*See Attachment A for the overview of the Priorities and Goals of Laney College.*

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### **3. Curriculum:**

- a. Is the curriculum current and effective? Have course outlines been updated within the last three years?

The curriculum is current and effective. The oldest outline we have was updated in Summer 2008. All other outlines were updated from 2010-2012.

- b. Please indicate how many active courses are in the department inventory.

25

- c. How many of those have been updated in the last 6 years?

All

- d. If courses have not been updated within the last 6 years, what plans are in place to remedy this?

n/a

- e. Has your department conducted a curriculum review of course outlines? If not, what are the plans to remedy this?

yes

- f. What are the department's plans for curriculum improvement (i.e., courses to be developed, updated, enhanced, or deactivated)? Have prerequisites, co-requisites, and advisories been validated? Is the date of validation on the course outline?

We have recently developed several courses for the Biomanufacturing program. All our courses are relevant and nothing needs to be deactivated (our last deactivations happened a few years ago). All outlines are complete with all factors validated and dates included.

- g. What steps has the department taken to incorporate student learning outcomes (SLOs) in the curriculum? Are outcomes set for each course? If not, which courses do not have outcomes?

All courses have SLOs. There is one course listed on Attachment C (Biol 28). This is an error, as the course does in fact have assessment data entered in TaskStream.

- h. If applicable, describe the efforts to develop outcomes at the program level. In which ways do these outcomes align with the institutional outcomes? (Note: if your department has no certificate or degree offerings and does not offer a course as part of one of the College's associate degree programs, then skip questions 3.h. and 3.i.)

Program Level Outcomes are developed for the Biomanufacturing Program for the Certificate of Proficiency in Biomanufacturing Skills, the Certificate of Achievement in Biomanufacturing and the AS in Biomanufacturing Production.. These outcomes have specific student level outcomes that align to the PLO. SLO Assessments from the classes in the program are then used in the analysis of the specific PLO.

- i. Provide one program level outcome (PLOs), and the assessment tool that will be used to measure the program level outcome this fall 2012 and spring 2013.

The PLO that will be assessed this year is "Maintain a laboratory notebook according to standard scientific guidelines". The assessment tool will be an analysis of the student-kept notebooks using a grading rubric that has been handed out to the students previously. One cycle of PLOs has been completed for both the Certificate of Proficiency in Biomanufacturing Skills and the Certificate of Achievement in Biomanufacturing and the reports are in TaskStream.

- j. How are the SLOs and PLOs, if applicable, mapped to the college's Institutional Learning Outcomes? (See Attachment B for copy of the Laney College Institutional Learning Outcomes (ILOs))

Program Level Outcomes are developed for the Biomanufacturing Program. These outcomes align with the Institutional Outcomes.

*Institutional Outcome: Communication - Students will effectively express and exchange ideas through various modes of communication*

Supporting PLOs:

- Maintain a laboratory notebook according to standard scientific guidelines.
- Write clear, well-documented lab reports using the language of science.

*Institutional Outcome: Critical thinking and Problem Solving - Students will be able to think critically and solve problems by identifying relevant information, evaluating alternatives, synthesizing findings and implementing effective solutions*

Supporting PLOs:

- Apply mathematics problems to solve quantitative problems.

*Institutional Outcome: Career Technical Education – Students will demonstrate technical skills in keeping with the demands of their field of study*

Supporting PLOs:

- Describe and practice safety guidelines relating to working with laboratory equipment.
- Set up and manipulate laboratory equipment, carry out experimental procedures and identify possible sources of error.

*Institutional outcome: Global Awareness, Ethics and Civic Responsibility – Students will be prepared to practice community engagement that addresses one or more of the following: environmental responsibility, social justice and cultural diversity.*

Supporting PLOs:

- Explain and discuss both verbally and in writing the science concepts listed in the course content, as well as their relevance to everyday events and circumstances in a broad interdisciplinary context
- k. Recommendations and priorities.  
We plan to continue to make assessment of SLOs and PLOs a priority. We need to offer the second year of classes that will allow students to complete the AS degree in Biomanufacturing Production. Once those classes are offered we will be able to assess SLOs for the classes and PLOs for the program.

*See Attachment C for listing of the courses in your discipline/department. If applicable, this document also lists the certificate and degree programs offered. Be sure to check the appropriate boxes and submit completed forms as part of this Program Review.*

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#### **4. Instruction:**

- a. Describe effective and innovative strategies used by faculty to involve students in the learning process. How has new technology been used by the department to improve student learning?  
Biology instructors use hands-on activities in labs such as performing experiments and manipulation of models. We facilitate group discussions and teamwork, and analysis of data. We do active learning and critical thinking activities, including concept mapping. Technology is used for computer simulations of biological processes and experiments, and multimedia presentations.
- b. How does the department maintain the integrity and consistency of academic standards within the discipline?  
The faculty who teach within a particular program meet on a regular basis. We discuss issues such as exams, assignments and grading scales to ensure integrity and consistency of standards. We have developed an Instructors' Credo and a statement regarding A Culture of Academic Honesty, which are posted on the department webpage (<http://elaney.org/wp/biology/>).
- c. Discuss the enrollment trends of your department. What is the student demand for specific courses? How do you know? Identify factors that are affecting enrollments. Enrollment has decreased somewhat since Fall 2009, mainly because of cuts. Successful course completion and retention have increased over that same time period (currently at about 67% and 79%, respectively). The most recent data show that Biology has high productivity for a department its size. The only five departments at Laney with higher FTES than Biology have lower productivity. Demand has increased in all our courses, particularly in the areas of biomanufacturing and health care career prerequisites. Whenever we are able

to open sections, they fill easily. This is also known anecdotally by instructors, as we experience more and more students trying to add classes during this time of cuts. However, we have strived to keep class size reasonable in order to better serve our students, and believe our efforts are reflected in student success and retention. The current economy and desire for well-paying, secure jobs in health care, as well as strong desire among students to have a meaningful, community-serving job, are salient trends.

- d. Are courses scheduled in a manner that meets student needs and demand? Please describe the criteria and considerations used in the scheduling process.

We communicate with the counseling department and attempt to meet student demand in terms of which courses are offered and at what time of day. We research other department's schedules and communicate with certain departments (such as Chemistry) with which we often share students. We research the schedules at other Peralta colleges. We listen to the students who discuss their challenges in scheduling and respond to the best of our ability. We would like to have more lab space available to expand our offerings in certain areas, especially for certain day sections and evening sections of Biology 10 and anatomy and physiology. Unfortunately, in the current budget crisis, we have been forced to cancel sections that we know will fill based on historical data. Because of this we have had more students than ever attempting to add into other sections.

- e. Recommendations and priorities.

We need to be able to reinstate the sections that have been cancelled in the budget crisis, and add additional sections where possible given the current lab space. We must also offer courses for the Biomanufacturing AS that we have not yet been able to offer. It is a priority to have a new science building that will enable us to provide more sections of most of our courses.

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## 5. Student Success:

- a. Describe student retention and program completion (degrees, certificates, persistence rates) trends in the department. What initiatives can the department take to improve retention and completion rates?

Because I was unable to obtain newer College wide information in time to complete this program review, I am making some comparisons between current Department data and College wide data used in the previous program review. This may or may not be a valid comparison, and I hope to update this information as soon as possible. Student retention in the department is about 79%, which compares favorably with other departments at Laney (overall average is about 70%) and with Biology departments at the other Peralta Colleges. Persistence is about 72%, better than the Laney average of about 63%. Between 09-10 and 10-11, the number of students earning certificates dropped, but increased for 11-12, the most recent year. We believe this is at least in part due to cuts that were necessary not only in our department, but in other departments whose courses

are part of our certificates. With steady offering of the courses that are part of the certificates, we believe demand will continue to grow and more students will complete the programs. We feel that we can improve retention and completion by continuing to seek out excellent full and part-time instructors, and wise use of our supply budget to give students more of what they need to learn. We believe it is critical to bring back courses that have been cut due to budget concerns so that students will be able to take all their courses here at Laney.

- b. Identify common challenges to learning among your students? What services are needed for these students to improve their learning? Describe the department's efforts to access these services. What are your department's instructional support needs?

Students in biology courses need visual representations of the structures and processes they study. Models such as cells, bones, muscles, human cadavers, and a variety of plant and animal specimens are critical to student learning. Students need modern, working equipment to study biology, such as microscopes, computers and biomanufacturing equipment. We have recently received more models, microscopes, and computers through Measure A funds, and have requested increased yearly departmental supply money to replace broken and worn out equipment on a regular basis. Our Biomanufacturing program has accessed CTE funds and must continue to do so. We need at least \$4000/year to have our microscopes serviced.

Two of our labs routinely use laptop computers to perform simulations as part of the regular lab activities. These laptops are extremely useful, but they are now several years old and need to be replaced to run updated software. Thirty laptops are needed would be shared between two labs.

We can run the department effectively with a supply budget of about \$20,000 per year. This reflects a necessary increase based on anticipated growth of the Biomanufacturing program. An adequate yearly supply budget would also allow the department to purchase items that our lab technician and faculty routinely spend their own money on, such as hand soap, bleach, tape, labels, distilled water, gloves for dissection, food and other plants for experiments, sucrose syrup, scented oils, lamination, transparencies, overhead projector bulbs, etc. We don't mind making a contribution to the department now and then, but the situation over the last few years is unacceptable. If we did not spend our own money, we could not effectively run the labs for our students. Also, we typically have very little funds for laboratory items in the summer, and we require additional money in the budget to support the summer lab sections.

Biology students also need tutors. Typically the tutoring center does not find students capable of tutoring our more advanced courses. It would be helpful to establish a program through the department so that qualified tutors could be available. This would help increase retention.

Student assistants in the lab prep area are a critical need. These student workers help with set-up and clean-up of labs, freeing the lab technician to spend more time on highly

skilled tasks and facilitating a healthy and safe learning environment. We feel student assistants are critical to the overall experience of students in our lab classes.

Students often require time outside of class to work with models, computer simulations, and other equipment to fully learn the material. Students would benefit greatly from additional lab space for studying and working with tutors or instructors during office hours. This space could be provided in a new building.

- c. Describe the department's effort to assess student learning at the course level. Describe the efforts to assess student learning at the program level. In which ways has the department used student learning assessment results for improvement?  
All of our courses have established SLOs. These are being assessed on the recommended 3-year cycle. Some of our courses have already completed one cycle. Program level outcomes are being regularly assessed within the department. We have coordinated with the other departments offering courses in our certificate programs. In nearly all cases of assessment we have met success criteria, and in all cases we consistently use assessment results to spark conversation among instructors and find ways to improve learning.
- d. Recommendations and priorities.  
Continue to request adequate funding to serve students, and increase funding for areas such as student workers and supplies/equipment. Coordinate efforts of multiple departments involved in program level assessment.

The data used above come from the hard copy of Program Review Data for the Biology Department, provided by the Dean. Additional information came from the attached document, Biology Enrollment Data, also provided by the Dean.

*Please either embed or attach data that you will be referencing. Use the Program Review data applicable to your department supplied by your Dean. In addition, the following link, (<http://web.peralta.edu/indev/research-data/documents/>), will take you to more data that you may find helpful as you study the overall efforts and impact of your unit. See the appropriate tab in attachment C referencing the assessment data.*

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## **6. Human and Physical Resources (including equipment and facilities)**

- a. Describe your current level of staff, including full-time and part-time faculty, classified staff, and other categories of employment.  
We currently have four full-time instructors. Each coordinates a program within the department as well as carrying a full teaching load (or overload). We generally have 12-14 part-time instructors, depending on the semester. We have one full-time lab technician. We typically are able to use about 20 hours of student workers each semester.
- b. Describe your current use of facilities and equipment.

We use half of the upper level of the B building. B200 and B267 are shared office space for instructors. B205 is the lab technician's office. B204 and the associated anterooms are for laboratory preparation, storage, and dishwashing. B210 is a large lecture room. Recently there has been a college trend to use this large lecture room for other courses outside the Biology department, and we believe that, regardless of class size, Biology should maintain its historic priority for use of this room. We routinely move large (and large quantities) of models into the lecture room from the labs for use in critical thinking activities. Holding these activities in a room far from the labs would make these activities so central to our program nearly impossible. B201, 202, 203, and 207 are laboratory rooms, which often double as lecture rooms. B201 and 202 are for general biology, B203 is for microbiology and B207 is for anatomy and physiology. The rooms are used for day and evening courses. Even when classes are not scheduled we typically have instructors holding office hours in lab rooms so that students have access to the models and other equipment. Instructors often hold office hours or review sessions on Fridays when no other labs are scheduled. Our Biomanufacturing program uses the B201 and A237 labs.

We have a great deal of equipment that is used in preparation and performance of laboratories. The autoclave (sterilizer) and other equipment used in preparation of labs are in B205. B205 is also used to store items used in classrooms. The laboratory rooms store some items, such as computers, small pieces of equipment, models, and specimens. Our growing Biomanufacturing program requires more space not only for teaching but also to maintain proper function of the equipment.

- c. Are the human and physical resources, including equipment and location, adequate for all the courses offered by your department (or program)? What are your key staffing and facilities needs for the next three years? Why?

We need two more full-time instructors to accommodate anticipated growth and allow our current full-timers to teach a regular load instead of an overload. Additional full-time instructors would enhance our academic programs and would allow more time to be spent on critical concerns such as program and curriculum review and assessment of outcomes. Another reason we need more full-time instructors is that areas such as health care and Biomanufacturing are growing fields, and we expect more demand for the related courses in our department. A full-time instructor devoted to the Biomanufacturing program would give it stability and create more opportunities for pursuing grants and interacting with community partners. There is a need to establish a fuller spectrum of evening classes, and additional full-time instructors would help stabilize the evening program. We also need a half-time night lab technician to accommodate our current evening classes, and an additional half-time technician to meet the needs of Biomanufacturing. We need about 20 hours of student assistants during each Fall, Spring, and Summer. These student workers are helpful in basic tasks like dishwashing so that the lab technician can perform the skilled duties.

In addition to the student laptops mentioned in the previous section, our faculty and staff need updated desktop and laptop computers, and compatible printers.



Recent renovations helped improve our current facilities. However, there were many aspects left undone, incomplete, or inadequate. For example, the ceilings and lighting in rooms B200 and B201 were not addressed and are quite literally falling apart. There are leaking faucets in B207 and B203, and the faucets used to replace the old, where this was actually done, are of the wrong type for those rooms. The broken blinds in B207 need to be replaced (this room was left undone when all other rooms received new blinds). All the rooms need to be checked for peeling up flooring and baseboards, and repaired. The health and safety issue that is currently most problematic are the cold rooms in the lab prep area. They have a long-standing mold problem that is completely out of hand, in spite of several repair attempts over the years.

Through Measure A and recent renovations to the B building, we have had some of our health and safety facilities issues addressed. However, not all issues can be addressed adequately by remodeling our current building, and remodeling will not accommodate growth. We feel a new science building would most effectively address all of our needs, and also address needs of other departments in our division. The previous Peralta Risk Manager, Joanne Baldinelli, noted the inadequate and outdated science labs at Laney. She has stated that, “There have been many regulatory, environmental, and technology changes since Laney College was built, and due to our aging infrastructure it is increasing difficult to comply with health and safety and other regulations, or incorporate new technology into our old facilities...It’s like trying to stick a square peg in a round hole. I have also heard from General Services that it is very difficult to provide adequate plumbing and electrical services in some of our classes/labs in order to use more sophisticated equipment, as the infrastructure is not designed to provide this service.” The following points summarize the need for a new science building:

1. Health and safety issues – Even with the recent renovations, facilities do not meet OSHA standards (chemical storage and earthquake safety) or ADA requirements (disabled students have difficulties working in lab rooms), and all rooms need better environmental control and ventilation. Ventilation is always an issue of a comfortable and effective learning environment, and often an issue of potential exposure to chemical fumes. Additionally, faculty have concerns that hazardous materials used in the construction of our old buildings are affecting their long-term health. Many faculty are concerned about the open layout of our building and its accessibility to individuals not affiliated with Laney, and would feel more at ease in a building with greater security, particularly in the evenings and early morning.
2. Align with goals of the Sustainable Peralta Initiative – A new building that is LEED certified is in line with Sustainable Peralta goals. Our current buildings cannot support sustainable changes like solar panels due to inadequate foundations. The new building could meet the goals not only in terms of energy efficiency and overall compatibility with the environment, but also in curriculum development. The sciences are a natural fit with sustainable curriculum. Most LEED buildings on college campuses are designed to foster community building, engaging students and faculty – an important factor in the future of Laney College.
3. Support current enrollment and allow for growth – Current facilities do not allow us to adequately support the students we have enrolled. Over-filled classrooms create many

problems that affect student learning as well as safety. We clearly have enough students to support opening more sections, if more space was available.

- a. For the past several semesters, faculty have experienced more and more students trying to add into full classes. The students regularly request more day and evening sections, particularly for laboratory courses. We should be adding at least one more section of most laboratory courses we teach in order to accommodate student demand and have class size at a level that would best facilitate student learning and allow us to meet health and safety standards. This amounts to 7-10 additional lab sections per semester. Our current facilities simply will not allow this. We overfill our lab sections as it is, sometimes putting up to 40 students in rooms with 27 lab stations. We are attempting to meet student demand by allowing in more students, but this reduces the time instructors can spend with students and results in health and safety compromises. The rooms are so full and difficult to maneuver in that it would be very difficult to exit efficiently in an emergency. It is also difficult for instructors to move around the room and help students during lab.
- b. The pressing need for more lab space is especially apparent in our new biomanufacturing program. The growth here has been even better than anticipated, but there is only one lab designed to support biotech labs, and this isn't even in the biology building. It makes it difficult to effectively use equipment and supply the labs when the room is across campus from the biology prep area.
- c. Most biology labs require designated space due the nature of what we do. Designated lab space for certain types of classes allows for safe and appropriate storage of equipment and supplies, so that delicate items do not have to be regularly transported and potentially damaged. Also, designated space allows for faculty to meet office hours in a space where equipment is available for students. It is also important for setting up labs and practical exams. We currently have four biology labs in the B building, but we need at least 6 designated labs to run classes efficiently and provide for set-up, clean-up, and review time. The designated lab rooms would serve as follows: one for majors biology (bio 1A/B), one for intro biology (bio 10), one for microbiology (bio 3), one for basic and intermediate anatomy and physiology (bio 24 and 20A/B), one for advanced anatomy and physiology (bio 2 and 4), and one for biomanufacturing. These labs should all accommodate up to 30 students. An additional smaller lab would be important as the biomanufacturing programs grows and branches out to include more courses. So, 6-7 designated labs are needed.
- d. Regarding lecture space, we currently have one large lecture room that, according to fire code, can accommodate 53 people, but we routinely have lectures with double lab sections in that room and up to 75 students. Not only is this a health and safety hazard, but makes giving exams very difficult. Many of

our lecture-only classes are run with discussion group format to facilitate student learning, and need additional lecture space to run well, as rooms like the forum and D200 are not optimal for the format and are in high demand by other departments. We need 3 large lecture rooms that can accommodate 80-100 students. This would allow us to accommodate double or triple lab sections in one lecture, and also have space for some of our lecture-only classes.

- e. Increasingly, instructors are using computer software to help students learn biology concepts. Now, we use laptops that are moved around as needed, and some instructors book the computer labs. It is not optimal to use laptops in the long run, as there are security issues and it is time consuming to set them up daily. Some instructors try to book time in the technology center, but those rooms are in heavy use and not always available. A computer lab nearby the other biology labs that could accommodate at least 30 students will be critical in continuing the important educational trend of using biology software.
  - f. Lab preparation space is desperately needed. The lab technician regularly runs short of space to put all the lab set-ups and still have space to do work. We also run short of supplies such as glassware, but even with the recent renovations we do not have room to store more glassware. There is currently no prep space at all for biomanufacturing. More efficiently designed preparation space in a new building could solve these issues.
4. Remain competitive in sciences in the Bay Area – Several colleges in the Bay Area have new science buildings either already constructed or currently in progress, including other Peralta colleges. Students will be drawn to state-of-the-art facilities, and all of Laney College will benefit.
5. Increased efficiency in operating departments – Science departments use similar equipment and supplies, and some things could be shared if we were located near one another. It is common for students to be taking courses in two or more of our departments during one semester, and the new building would be ideal to bring students together in a way that enhances their interaction with one another and with faculty. An extra room or lobby area where science students could gather to support each other, share information and have study groups would be very beneficial to students. Communication among faculty would also be strongly enhanced by having classroom and office space together. The Chemistry, Physics and Biology Departments could be entirely relocated to the new facility. Ideally, all science classroom and office space would be located in the new building.
- d. If your department experienced a reduction in resources, describe the impact of that reduction on the overall educational quality of your unit and the College.  
We have already been reduced beyond the level where we can function as we have in the past. Last spring, and possibly this coming spring, in addition to reducing sections, we were unable to offer certain classes at all due to cuts. Whereas previously we had been required only to reduce sections offered and were able to sustain a quality program, with

entire courses cut this hurts the overall experience of our students. The courses cut (including Human Sexuality, Medical Terminology, Infectious Diseases, AIDS, and sections of nutrition and majors biology) not only impact regular biology students, but also severely cuts the general education classes usually offered at Laney College. If we had to cut further courses, the department and the College would be severely impaired in its ability to educate students in a way that allows them to get degrees or otherwise move forward in their education. As supply and equipment budgets are cut as well, our labs run the risk of not being able to do important activities, or replace items that are consumable or routinely wear out. This will drastically affect the ability of our courses to articulate with other institutions.

- e. How does the department plan to sustain the quality of instruction and/or services offered through your department in the current environment of reduced resources?

We have already, over the years, made a concerted effort to run as efficiently as possible. We have high productivity, largely because of combining sections and taking on as many students as we possibly can. Many instructors already lecture to double lab sections, resulting in much extra work for which we are not compensated, but saving the College money. We continue to strive for the utmost efficiency, including having several courses with lab manuals written by our instructors to work specifically with what we are able to provide. Most labs have a great deal of group work to help students learn and compensate for the lack of lab tutors. We will continue to work together as a team, use these creative ways of maximizing efficiency, and seek others. We show loyalty, respect and consideration to our wonderful group of part time instructors, hopefully inspiring their loyalty to the department and the College in spite of resource issues. We teach one fee-based course that helps support the Laney edible garden, and we plan to continue to do this.

- f. What does the department recommend that the college do to maintain quality educational programs and services?

Seek to obtain Laney's "fair share" of District resources, distribute money fairly within the College, fund department specific tutoring, pursue grants and donations, provide faculty with help and information about pursuing funding sources.

- g. Please provide any other recommendations and priorities. (Use the appropriate request forms within Attachment D.)

Hire additional full-time instructors, hire a half-time night technician, a half-time biomanufacturing lab technician, a half-time biomanufacturing job placement coordinator, and have more hours available for student assistants in the classroom. Update technology (new desktop/laptop computers for faculty, staff, and student use). Build a new science building to accommodate growth, add space for activities to facilitate student learning, and add security. In the meantime, address facilities needs that were left unmet during recent renovations.

## 7. Community Outreach and Articulation

### *For Career and Technical Education Programs:*

- a. Describe the department's connection with industry. Is there an Advisory Board or Advisory Committee for the program? If so, how often does it meet? Is the program adequately preparing students for careers in the field? How are you assessing this?

The Biomanufacturing Program has an Industry Advisory Board that meets formally once a year and has informal consultations throughout the year. The board has members from several pharmaceutical companies as well as educators from Biomanufacturing programs at other colleges.

Recommendations from Industry Advisory Board have shaped the program specifically to prepare students for careers in the field. Hands-on experience is increasingly important for attaining jobs, even entry level jobs. Having education in specific techniques and equipment taught in the Laney Biomanufacturing program, and working with the temporary staffing agencies increases the student's likelihood of being hired into the workforce. Basic Skills training is important, particularly our Math 208 course, which has a focus on math specifically for scientists, since many applicants have weak or rusty math skills. Other skills that are important are aseptic techniques, working with chemicals, being detail oriented, work well in teams and good documentation. Our program emphasizes all these skills, and they are part of SLOs/PLOs and assessed as such.

- b. Have students completing the program attained a foundation of technical and career skills? How do you know? What are the completion rates in your program?

We are following the curriculum recommendations of the Advisory Board, and assessing the relevant SLOs/PLOs. There has been a large degree of success noted in the assessments, and alterations made to the program and teaching methods as deemed necessary. Overall, we believe the students in the program build a firm foundation of technical and career skills. The Biomanufacturing Certificate Program at Laney College is a career ladder program, intended to train students in basic biotechnology and biomanufacturing skills. The Certificate of Proficiency in Biomanufacturing Skills can be completed in one semester. Students can then continue their academic training by taking additional courses to earn a Certificate of Achievement in Biomanufacturing. Students can then continue on to earn an Associates of Science in Biomanufacturing Production that will prepare them for a higher level of employment within the manufacturing sector of the biotech industry. The programs consist of biotechnology oriented biology, chemistry and math courses with a heavy emphasis on laboratory experience.

- c. What are the employment placement rates? Include a description of job titles and salaries. What is the relationship between completion rates and employment rates?

The Laney Career Technical Education Advisory Committee is participating in a survey to collect data on the employment placement rates of our students. A considerable number of students who have not yet been placed in jobs have chosen to continue on in their education; some are now completing the Certificate of Achievement in Biomanufacturing. Others are working toward AS or BS degrees. We work with Kelly Scientific, a biotechnology oriented-

staffing agency in our area to help place candidates in positions in the Biotechnology and Biomanufacturing fields. We hope to establish similar relationships with Aerotek and Manpower, two other biotechnology oriented staffing agencies in the area.

What are the employment projections (numbers of replacement and new positions) for these job titles over the next 10 years using the California Employment Development Department Labor Market Information? (<http://www.labormarketinfo.edd.ca.gov/Content.asp?pageid=1004> , and <http://www.laney.edu/wp/educational-master-plan/2010-educational-master-plan/> for the Laney College Educational Master Plan, Chapter II, pps. 18-30.)

### **Labor Market Information and Analysis**

The following are some statistics about the biotechnology industry in Northern California obtained from baybio.org from the 2010 BayBio2010 impact report. “From 2003 to 2008 California employment in the life science industry climbed by a steady 3.29%. Despite the recent economic downturn, California life science industry continues to expand its portfolio of therapeutics. The growth of phase II, phase III and marketed treatments portrays the ability of California companies to adapt and grow despite a decrease in the total investments”.

- 271,000 people are employed by life science companies
- 1/3 of entire US Life sciences industry is based in Northern California
- There are more than 900 treatments in California research pipeline
- 233 treatments in Phase III
- 68 preapproved treatments, 148 approved treatments and 1754 treatments on the market
- more than 3 billion in NIH Grants Awarded to Northern California Organizations
- 1465 millions of venture capital in biotechnology in Northern California, which accounts for 15% of the total venture capital investment in the US.

Although the recession has impacted hiring, the industry remains robust, and new entry level applicants will continue to be needed as more of the products in the pipeline are approved and are manufactured.

According to the Employment Development Department, Biotechnology jobs in California [www.labormarketinfo.edd.ca.gov](http://www.labormarketinfo.edd.ca.gov) . demand for biotechnology jobs requiring only a high school degree will slightly decrease (laboratory support workers, quality control inspectors from year 2000 to year 2010), but demand for Documentation coordinators will increase 19% from 2000 to 2010. Biotechnology jobs requiring associates degrees or certificates will increase including an estimated need of 213,600 manufacturing technicians (up 8% from 2000), and growth in assay analysts (16,100 workers, up 35%) laboratory technicians (26,900 workers, up 28% and instrumentation technicians (107,600 workers up 3%). These numbers are for the state of California.

According to the Employment Development Department statistics for the Oakland-Fremont-Hayward Metropolitan Divisions in Occupational Projections of Employment there will be annual openings of

Life, Physical and Social science Technicians #194000

**145 annual openings and average wage of \$15.09-29.32/hour**

Medical/Clinical lab Technicians #292012

**30 annual openings average wage of \$15.68-26.46/hour**

(Listed as occupations comparable to Laboratory Assistants by the Bureau of Labor Statistics on the EDD website)

Industrial engineering Technicians#173026

**9 annual openings average wage range/hour \$20.15 to 35.71**

(Listed as occupations comparable to Quality Control Analysts by the Bureau of Labor Statistics on the EDD website)

Management Analysts #13-1111

**140 annual openings Average wage range \$ 27.02-47.35**

(Listed as occupations comparable to Documentation Specialists by the Bureau of Labor Statistics on the EDD website)

- d. What industry trends are most critical for the future viability of the program? What are the implications of these trends for curriculum development and improvement?

According to studies by the Centers of Excellence (SF Bay Area and Greater Silicon Valley) [www.coecc.net](http://www.coecc.net)

Medical/Clinical Laboratory Technicians are in the top 10 fastest growing Biotechnology occupations in California and the educational degree required is an Associate Degree. The occupation of Team assemblers is also in the top 10 fastest growing occupations and the educational goal listed is “moderate on the job training. The biomanufacturing program’s advisory committee members confirm that the Career ladder program of certificates and associates degree taught at Laney College develops the skill sets and course requirements responsive to the industry needs.

***For transfer programs:***

- e. Describe the department’s efforts in meeting with and collaborating with local 4-year institutions. How is the program preparing students for upper division course work? Our course outlines are articulated with local 4-year institutions. Students in our programs often transfer to 4-year institutions or are accepted at professional schools in the health care field. We do not have data on their success, although we are eager to have such information. Anecdotally, we are aware that many of our students go on to successfully complete programs, especially in health care.
- f. Has there been a Transfer Model Curriculum identified for your program? Has it been implemented? If not, what are the plans to do so?

The Biology Transfer degree is currently being vetted. We have discussed some of the basics within the department, and are prepared to develop the new degree once the state model is approved.

***For all instructional programs:***

- g. Describe the department's efforts to ensure that the curriculum responds to the needs of the constituencies that it serves.

We have spent a great deal of time developing course and program level SLOs. Every course has outcomes assessed each semester, and thus far we have met success criteria in almost all cases. We listen to student input and the counseling department, as well as other departments who tend to share our students, and try to respond to student need. We have observed the need in the community for Biotech/Biomufacturing programs and have developed two certificate programs and an AS degree in the past few years.

- h. Please indicate how many of the full and part time faculty have been evaluated in the last three years. For faculty that have not been evaluated in the last three years, what are your plans to become current.

One of our newer p/t faculty was evaluated in Spring 2012, and one of our f/t faculty became tenured recently and was last evaluated in Fall 2010. The rest of the faculty need to be evaluated, and we plan to evaluate instructors beginning in Fall 2013.

- i. Recommendations and priorities.

Continue assessment process. Develop transfer degree when state approves model. Evaluate f/t and p/t faculty.