

Instructional Comprehensive Program Review: Biotechnician (CA)

2013-16

College Mission Statement

Kapi'olani Community College:

- is a gathering place where Hawai'i's cultural diversity is celebrated, championed and reflected in the curriculum, pedagogy, support services and activities, students, faculty, staff, and administration.
- is a nurturing workplace of choice for strong and caring faculty, staff, and administrators committed to effective communication and shared vision, values, mission, and responsibilities.
- strives to provide the highest quality education and training for Hawai'i's people.
- provides open access, and promotes students' progress, learning and success with low tuition and high quality instructional programs, student development and support services, and selective areas of excellence and emphasis.
- prepares students to meet rigorous associate and baccalaureate requirements and personal enrichment goals by offering high quality liberal arts and other articulated transfer programs.
- delivers high quality 21st century career programs that prepare students for rigorous employment standards and to meet critical workforce immediate and long-term needs and contribute to a diversifying state economy.
- prepares students for lives of ethical and social responsibility by offering opportunities for increased service-learning and community engagement.
- leads locally, regionally, nationally and internationally in the development of integrated international education, enriched through global collaborations.
- uses human, physical, technological and financial resources effectively and efficiently to achieve ambitious educational goals and generate a solid return on the public's investment for a sustainable future.
- builds partnerships within the University and with other educational, governmental, business, and non-profit organizations to support improved lifelong learning.
- uses ongoing cycles of planning, best practice research, budgeting, implementation, assessment, and evaluation to drive continuous program and institutional improvement.

Program Mission Statement

The Arts & Sciences academic cluster provides high-quality and innovative programs that prepare students to meet rigorous baccalaureate requirements and personal enrichment goals, pursue lifelong learning, and lead lives of ethical, responsible community involvement. Four programs of study are offered: Biotechnician, Liberal Arts, New Media Arts, and Natural Sciences.

Part I: Executive Summary of CPR and Response to previous program review recommendations

Since many of the Biotechnician certificate students are primarily enrolled as majors in Medical Laboratory Technician (MLT) program or other Science, Technology, Engineering and Mathematics (STEM) disciplines, students do not necessarily declare Biotechnician Certificate of Achievement (BIOT CA) as a major. In addition there are no dedicated BOR-appointed faculty and BIOT alpha courses specific for the degree. Thus, data reported in previous ARPDs are unreliable.

Several BIOT students have continued on to the Associate in Science in Natural Sciences (ASNS) degree program. This has led to an increase in the graduation and transfer rates to the four year institutions.

Recent discussions in response to the emerging needs for research technicians, has considered reframing the certificate with a focus on developing a certificate for research technicians within the Associate in Science in Natural Science (ASNS).

Part II: Program Description

History

The Arts & Sciences program was established in 1965 when Kapi'olani Technical School was converted into Kapi'olani Community College.

The Arts & Sciences (A&S) academic cluster is composed of four units: Arts & Humanities; Languages, Linguistics and Literature (originally referred to as "Language Arts"); Math and Sciences; and Social Sciences. With a staff and faculty numbering well over 200 and responsibility for over 70% of the College's overall SSH enrollment, the A&S cluster is the single largest organizational unit at Kapi'olani Community College. A&S offers courses in support of General Education, transfer to a four-year university, as well as select career programs intended to lead to immediate employment.

At Kapi'olani Community College, students can graduate with an Associate in Arts (AA) degree, ASNS degree, complete subject certificates, transfer into a college or university, and continue as lifelong learners. The Ka'ie'ie dual enrollment program provides a new pathway to a four-year degree by providing pre-admission to a select group of Kapi'olani CC students.

The BIOT CA program, proposed in 2004, is designed to prepare students for employment in the Biotechnology industry and research. Students will learn basic laboratory skills, equipment operation and maintenance, quality control, safety and good manufacturing practices.

The BIOT CA is a small program with no dedicated BOR-appointed faculty and no dedicated facilities. The Program is intended as an option either for students enrolled in other STEM majors or for students in the MLT Program, to enhance their skill set and prepare them for cutting edge work in biotechnology. The curriculum is streamlined and articulated; all courses required for the BIOT CA may also be taken to meet the ASNS and/or MLT program requirements.

Currently the entire BIOT program is under review for possible realignment as a track within the ASNS degree.

Program Goals

1. Become the leading indigenous-serving higher education institution & support the access & success of Native Hawaiian students;
2. Increase the educational capital of the state by increasing the participation and degree completion of students;
3. Address critical workforce shortages and prepare students for effective engagement and leadership;
4. Recognize and invest in faculty and staff and develop innovative learning environments in which to work.

Program Student Learning Outcomes (SLO)

The Biotechnician Certificate of Achievement Program Student Learning Outcomes are:

- Perform highly technical procedures such as cell counting, DNA extraction and characterization, cloning, PCR, ELISA and other immunological techniques, maintenance of cell lines, protein isolation and purification
- Conduct research experiments following operations and safety protocols and apply knowledge of theory and techniques sufficient to troubleshoot appropriately
- Analyze and display data using computer technology
- Manage laboratory activities, including record keeping, ordering supplies and preparing reports
- Apply successful problem solving skills in working with biological, chemical or radioactive hazards

Credentials and Licensures offered:

N/A

Faculty and Staff (overlap with Liberal Arts as reported in ARPD, 2011-12)

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|----------------------------|----------------------------------|
| Annual FTE Faculty: | 95.2 (count) 138.3 (analytic) |
| Annual FTE Staff: | 12 (STEM & Civil Service) |
| Lecturers/Adjunct Faculty | 140 (approximate) |
| Majors (from ARPD 2011-12) | 3873 |

Resources

The bulk of the funds allocated to BIOT CA are from the general (state) funds as awarded by the Hawai'i State Legislature. There is also significant budgetary and in-kind support from non-resident (ESOL program) tuition revenue, U.S. Department of Education, Title III, National Science Foundation, National Endowment for the Humanities, ARRA/Achieving the Dream and various other external sources. Some funding is allocated to the four departments which contribute to the BIOT CA program and other funds are awarded specifically to BIOT CA program.

The program has been successful in securing extramural funds particularly from NIH – INBRE and NSF-EPSCOR. The money has been used to fund stipends for students doing research projects and purchase equipment and supplies that are also used in other biology and microbiology classes. The program has also established a Monoclonal Antibody Service Facility and Training Center (MASFTC) in which biotech students help make antibodies for research investigators throughout the University community. The MASFTC pays student helpers and supports itself by charging investigators a fee for the service.

Articulation Agreements

Recognizing the primacy of in-system transfer, Kapi'olani has signed articulation agreements with three University of Hawai'i campuses: UH Mānoa, UH Hilo, and UH West O'ahu. The college has also secured articulation agreements with Chaminade University of Honolulu, Pacific University, Oregon State University, and Lamar University.

A MOU has been established with the Biology Program at UH Manoa. This MOU stipulates that the Biology Program will accept MICR 230 as equivalent to the Molecular Biology Laboratory course BIOL 275L offered at UH Manoa.

Advisory and Community Connections

Hawai'i Department of Education, National Science Foundation, U.S. Department of Education, State of Hawai'i, State of Hawai'i DBEDT, PCATT, ARRA/Achieving the Dream

Community connections, advisory committees, Internships, Coops, DOE

National Science Foundation, U.S. Department of Education, State of Hawai'i, State of Hawai'i Department of Education, DBEDT, PCATT, ARRA/AtD ("A/S Tactical Plan Strategic Outcomes")

Part III: Quantitative Indicators for Program Review(ARPD for 2009 – 10, 2010 – 11, 2011-12)

| | Demand | Efficiency | Effectiveness | Overall |
|-------------|------------|------------|---------------|------------|
| 2009 -2010 | Unhealthy | Unhealthy | Cautionary | Unhealthy |
| 2010 - 2011 | Cautionary | Cautionary | Cautionary | Cautionary |
| 2011 - 2012 | Cautionary | Cautionary | Cautionary | Cautionary |

The following is an analysis of quantitative trends identified over the past three years of ARPD data:

Demand Indicators

The BIOT CA is a small program. Since many of the Biotechnician certificate students are primarily enrolled as majors in MLT or other STEM disciplines, students do not necessarily declare BIOT CA as a major. Thus the number of majors as reported in the ARPD is unreliable.

Efficiency Indicators

There are no FTE BOR appointed faculty in the program. The faculty teaching the majors courses are FTE BOR appointed faculty in the AA program and lecturers. Thus the student faculty ratio will remain unhealthy. In 2011 – 2012, there were 0.5 analytic FTE faculty teaching majors' courses in the BIOT CA degree. The majors to analytic FTE faculty ratio is 14.5 and the fill rate of the majors' classes has increased.

Effectiveness Indicators

There are no BIOT alpha courses for the Biotechnician CA program. Thus the numbers reported for the Effectiveness Indicator in the ARPD is unreliable. The courses taken by the majors are the same course taken by the ASNS and MLT majors.

Distance Education: Completely Online Courses

There are no online classes offered in the program. Hands-on experience is essential for majors in the BIOT CA program.

Part IV: Curriculum Revision and Review

All of the majors courses in the BIOT CA degree have been revised and updated and are therefore in compliance with the 5-year review.

Undergraduate research is one of the best practices for student success, retention and graduation. Classes where research will be imbedded will be offered in Fall 2013. MICR 230 will be one of the pilot courses that will be offered with an RI (Research Intensive) designation.

Part V: Survey Results

No student exit survey has been conducted for the program.

Part VI: Analysis of the Program

Alignment with mission

The BIOT CA program is an option either for the students enrolled in STEM or the students enrolled in MLT Program to enhance the skill set and prepared them for cutting edge work in biotechnology. Several BIOT students have also continued into pursue a degree in ASNS. The ASNS is designed to lead students into Baccalaureate programs in the STEM fields.

The most recent discussion has considered terminating this BIOT CA program given the emerging need for research technicians. This certificate program will be reframed with a greater focus on developing a research technician program within the Associate in Science in Natural Science.

Current Situation: Internal

After reviewing the 2008-2015 Strategic Plan, the 2011 Annual Report of Instructional Program Data (ARPD), and the Arts & Sciences Tactical Plan Update, the following were identified as the most significant internal factors influencing Liberal Arts program planning:

- WASC ACCJC mandates for outcomes assessment and strategic planning/resource allocation
- UH System goals for community college to university transfer
- UH System goals for degree completion
- An overall decrease in enrollment at KCC
- Efforts to clarify student pathways have led to the introduction of the AS Natural Sciences degree.

The most significant internal threat is the ongoing lack of space which may be dedicated to Natural Sciences use. Appropriate laboratory spaces which allow adequate water flow, drainage, ventilation, bench space, preparation space, and storage are not available. This CPR has identified this lack of dedicated space as a factor which will continue to limit the potential expansion of this program of study.

Current Situation: External

Following a review of "Planning Shaped By External Context," found on pages 10-13 of the Strategic Plan, 2008-2015, the following were identified as the most significant external factors influencing Liberal Arts program planning:

- WASC ACCJC mandates for outcomes assessment and strategic planning/resource allocation
- UH System goals for community college to university transfer
- UH System goals for degree completion
- President Obama's national agenda to enhance degree attainment at all levels of higher education
- Competition for enrollment from other Oahu-based community colleges in higher growth regions

Assessment Results for Program SLO's

In 2011 – 2012, all of the Program Student Learning Outcomes (PSLOS) were assessed. The assessment rubric developed in consultation with the Arts and Sciences Assessment Coordinator was used. Student learning artifacts evaluated included lab reports, quizzes, exams, and final examination. Results indicated that for all PSLOs, 100% of students performed at 80% accuracy or better.

Next Steps in Assessment and Improvement Strategies

Benchmarks have been met for all five PSLOs. PSLOs will continue to be aligned against course SLOs. No other adjustments are planned at this time.

Part VII: Tactical Action Plan, 2013-16

The Arts & Sciences unit is backwards from the rest of KCC in that four departments primarily contribute to a one very large academic program as well as several smaller programs including BIOT CA. Faculty are shared by multiple programs across departmental lines. Consequently, as a result of extensive dialogue by the Deans Advisory Council on the CPR, a decision was made that the Tactical Action Plan for BIOT CA and other programs housed in Arts & Sciences should mirror that of the overall Arts & Sciences academic cluster.

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| STRATEGIC OUTCOMES (KCC Strategic Plan) | A. Become the leading indigenous-serving higher education institution & support the access & success of Native Hawaiian students B. Increase the educational capital of the state by increasing the participation and degree completion of students D. Address critical workforce shortages and prepare students for effective engagement and leadership E. Recognize and invest in faculty and staff and develop innovative learning environments in which to work |
| PERFORMANCE MEASURES | 1) Support employee recruitment, training, and retention to increase student success in transfer-level courses (B3) 2) Implement a process for the regular review of courses and programs (D10) 3) Increase student “success” as defined by persistence, graduation, and transfer rates for Native Hawaiian and non-Hawaiian students (D4) 4) Gather useful data to inform decision-making 5) Recruit, renew, and retain a qualified, effective, and diverse faculty, staff, and leadership team committed to strategic outcomes and student-centered performance measures (E1) |

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| <p style="text-align: center;">STRATEGIES</p> | <ol style="list-style-type: none"> 1) Re/design and create courses which include innovative pedagogy, updated content, and alternative delivery methods (B3) 2) Support programs and faculty initiatives that promote student engagement, learning, and achievement 3) Complete a cycle of learning outcomes assessment in general education diversification areas and all programs of study and use program assessment results to implement improvements (D10) 4) Align course and program outcomes 5) Continue the five-year curriculum review process (D10) 6) Provide orientation, training, and support to new faculty and professional development for continuing faculty (E1) 7) Provide appropriate staffing, workspaces, and/or resources as needed to support student engagement, learning, and achievement |
| <p style="text-align: center;">MEANS OF ASSESSMENT</p> | <ol style="list-style-type: none"> 1) Number of courses redesigned and programs reviewed 2) Number of declared majors 3) Number of degrees awarded 4) UHM transfer rate |
| <p style="text-align: center;">INDIVIDUALS RESPONSIBLE</p> | <p>Faculty Department Chairs APT Staff STEM Center staff Assessment Coordinator(s) Secretaries Dean</p> |
| <p style="text-align: center;">SYNERGIES WITH OTHER PROGRAMS, UNITS, EMPHASES, and INITIATIVES</p> | <p>Maida Kamber Center CELTT, Library, & Testing Achieving the Dream initiative & Title III Student Services Kahikoluamea CTE and Health Academic Clusters Ka'ie'ie and other university pathways OFIE and Service Learning Business Office Human Resources Office</p> |

Part VIII: Resource and Budget Implications

To align with the current budget allocation process, resource requests will continue to be made from the Arts & Sciences unit as a whole. Resource requests will be considered by the Department Chairs and Dean and prioritized on behalf of the Arts & Sciences unit. Such requests will be taken forward to the senior administration as prioritized requests.

Faculty positions left vacant due to resignation or retirement should be considered for recruitment. In some Arts & Sciences disciplines, particularly those which have been disproportionately impacted by retirements and resignations, faculty leadership will help to better position the college for continued growth. Other resources to support program goals around transfer, persistence, and graduation will be