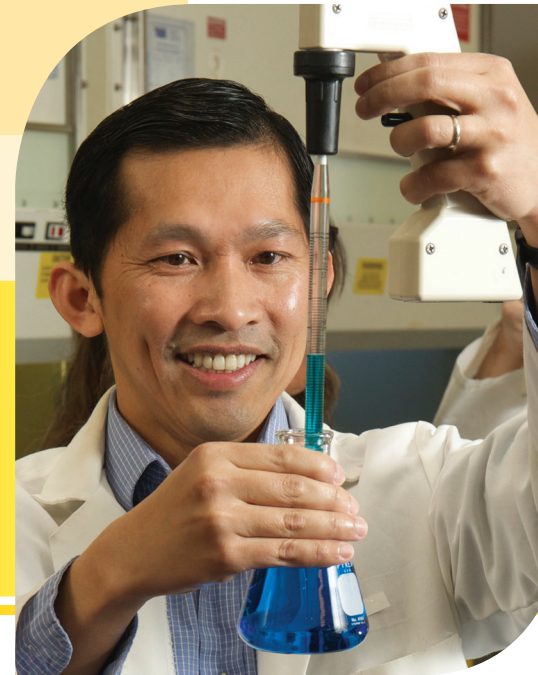
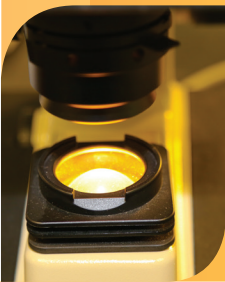


2015

Substantive Change Proposal for the Baccalaureate Program in Biomanufacturing



MIRACOSTA COMMUNITY COLLEGE DISTRICT

MiraCosta Community College District

Substantive Change Proposal for the Baccalaureate Program in Biomanufacturing

Submitted by:

MiraCosta College

1 Barnard Drive, Oceanside, CA 92056

Submitted to:

Accrediting Commission for Community and Junior Colleges,

Western Association of Schools and Colleges

October 4, 2015


Substantive Change Proposal Certification Page

To: Accrediting Commission for Community and Junior Colleges,
Western Association of Schools and Colleges

From: Sunita V. Cooke, Ph.D.
MiraCosta Community College District
1 Barnard Drive, Oceanside, CA 92056

I certify there was broad participation by the campus community and believe this report accurately reflects the nature and substance of this institution.

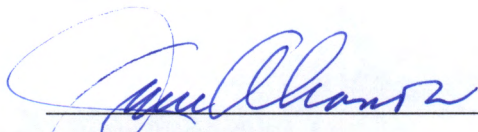
Signatures:



Sunita V. Cooke, Ph.D.

Date: 9/29/15

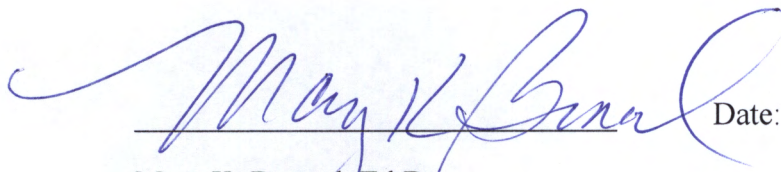
Superintendent/President



Jeanne Shannon

Date: 9/30/15

President, Board of Trustees



Mary K. Benard, Ed.D.

Date: 9-29-15

Accreditation Liaison Officer

Vice President, Instructional Services

TABLE OF CONTENTS

FIGURES	iv
TABLES	iv
A. A concise description of the change and request to add a baccalaureate program	1
1. Evidence that the field of study for the degree is consistent with the institutional mission	1
Mission Review and Modification.....	1
Degree Alignment to the Mission.....	2
2. Rationale for change	3
B. A description of the new program to be offered; level and rigor of upper division courses commonly accepted as appropriate to the baccalaureate degree; program length; identification of delivery mode for the courses	4
Description of the New Program	4
Appropriateness of Upper-Division Courses	5
Program Length	7
Instructional Delivery	8
C. A description of the planning process which led to the request for the change.....	8
D. Evidence that the institution has analyzed, has the capacity, and has provided for adequate human, administrative, financial, and physical resources and processes necessary to initiate, maintain, and monitor the baccalaureate program and to assure that the activities undertaken are accomplished with acceptable quality.....	10
Human Resources and Processes	10
Administrative Resources and Processes.....	11
Technology	11
Student Services Support	12
Financial Resources and Processes.....	12
Physical Resources and Processes	13
E. Evidence that:	14
1. The institution has received all necessary internal and/or external approvals.....	14
Internal	14
External.....	15

2. Verification the institution is authorized by its state/government to offer the proposed baccalaureate degree	15
3. There is sufficient demand for the program within the area served by the college	15
F. Evidence that each Eligibility Requirement will still be fulfilled, specifically related to the change	16
Authority	16
Operational Status	17
Degrees	17
Chief Executive Officer	17
Financial Accountability	17
Mission	18
Governing Board	18
Administrative Capacity	19
Educational Programs	19
Academic Credit	20
Student Learning and Student Achievement	20
General Education	21
Academic Freedom	22
Faculty	22
Student Support Services	22
Admissions	23
Information and Learning Support Services	23
Financial Resources	24
Institutional Planning and Evaluation	25
Integrity in Communication with the Public	26
Integrity in Relations with the Accrediting Commission	26
G. Evidence that each Accreditation Standard will still be fulfilled specifically related to the change and that all relevant Commission policies are addressed	26
Standard I: Mission, Academic Quality and Institutional Effectiveness, and Integrity	26
I.A Mission	26

I.B Assuring Academic Quality and Institutional Effectiveness	27
I.C Institutional Integrity	29
Standard II: Student Learning Programs and Support Services.....	29
II.A Instructional Programs	29
II.B Library and Learning Support Services.....	30
II.C Student Support Services.....	32
Standard III: Resources.....	32
III.A Human Resources	32
III.B Physical Resources.....	33
III.C Technology Resources	33
III.D Financial Resources	34
Standard IV: Leadership and Governance	35
IV.A Decision-Making Roles and Processes	35
IV.B Chief Executive Officer	36
IV.C Governing Board.....	36
H. Evidence that the baccalaureate program meets the minimum requirements for the degree (120 semester units or equivalent)	37
I. Evidence that the baccalaureate program meets the minimum baccalaureate level General Education requirements	38
1. 36 semester units or equivalent.....	38
2. Distributed across the major areas for General Education (arts/humanities, natural science, mathematics, social science, and oral/written communication).....	38
3. Integrated throughout the curriculum (distributed to both lower and upper division courses)	39
J. Evidence that the library and learning resources are sufficient in quality, currency, variety, quantity, and depth to support the baccalaureate program	40
K. Evidence that faculty qualifications are rigorous and appropriate in regard to:	41
1. Discipline expertise.....	41
2. Level of assignment (at least one degree level above the baccalaureate degree for faculty assigned to baccalaureate degree courses or equivalent).....	42
APPENDICES	43

FIGURES

Figure 1. MiraCosta College Governance Structure.....	9
Figure 2. Biotechnology Department Student Interest Survey	15

TABLES

Table 1. Biomanufacturing Baccalaureate Upper-Division Course Work	5
Table 2. Baccalaureate Education Plan.....	7
Table 3. Baccalaureate Program Requirements	37
Table 4. General Education Course Work	39

A. A concise description of the change and request to add a baccalaureate program

MiraCosta Community College currently offers 64 associate degree programs and enrolls approximately 19,000 students in the College’s credit programs. The passage of California Senate Bill (SB) 850 provided MiraCosta the opportunity to consider offering a four-year degree. The subsequent California Community Colleges Board of Governors approval of MiraCosta’s application to participate in the statewide baccalaureate pilot program allowed the College to develop the bachelor’s degree program in biomanufacturing.

MiraCosta College submits this substantive change proposal to request the Commission’s approval to offer a Bachelor of Science in Biomanufacturing as part of the College’s degree offerings.

1. Evidence that the field of study for the degree is consistent with the institutional mission

The College mission provides the foundation for all of MiraCosta’s programs and services as well as for the creation of institutional goals.¹ The MiraCosta College Integrated Planning Model directs the College to evaluate and revise its mission at least every three years or as deemed necessary ([Appendix A](#): BP 1200).² MiraCosta reviewed and its board of trustees approved the College mission in 2011 and early 2014 as part of the College’s regular cycle of integrated Planning ([Appendix B](#): 2/19/14 minutes, §VIII).

Mission Review and Modification

California Senate Bill 850 requires that community colleges offering bachelor’s degrees “shall have the additional mission to provide high-quality undergraduate education at an affordable price for students and the state” ([Appendix C](#): p. 3). Essential to the College mission are career and technical education and lifelong learning opportunities as well as a tie to strengthen the economic and educational well-

MiraCosta College Mission

The MiraCosta Community College District mission is to provide superior educational opportunities and student-support services to a diverse population of learners with a focus on their success. MiraCosta offers undergraduate degrees, university-transfer courses, career-and-technical education, certificate programs, basic-skills education, and lifelong-learning opportunities that strengthen the economic, cultural, social, and educational well-being of the communities it serves.

(Approved by the Board of Trustees September 9, 2015)

¹ Standard I.A.1 and Eligibility Requirement 6 compliant.

² Standard I.A.4 compliant.

being of the community, all of which support the baccalaureate. However, in order to more clearly include the baccalaureate, the College's Institutional Effectiveness Committee (IEC) reviewed the legislative requirements in spring 2015 and voted to recommend to all four governance councils that MiraCosta remove the word "associate" in the College mission statement to be more inclusive of the new degree ([Appendix D](#): §VI.B).

In August 2015, MiraCosta College's four governance councils (Academic Senate, Administrative Council, Classified Senate, and Associated Student Government) considered and approved IEC's recommendation for the express purpose of complying with the statutory requirements for colleges offering bachelor's degrees ([Appendix E](#): AS §VII.C; AC §VI.B; CS §2.B; ASG §VII.B). The councils' recommendation was tendered to the President's Cabinet for further consideration, and the superintendent/president submitted the change to the board of trustees for action. The board read the proposed change to the mission on August 26, 2015 and suggested substituting "undergraduate" for "associate." The board unanimously approved the revised mission on September 9, 2015 ([Appendix F](#): §IX).

As part of its regular planning cycle, the College will again review the mission statement during the 2015/16 academic year. The superintendent/president has convened a mission statement task force to garner feedback from College constituencies and the community at large about the currency and accuracy of the mission statement. The task force will propose, as necessary, a revised mission statement to guide the College's creation of the *MiraCosta Community College District Strategic Plan 2017-2020*. In addition, the College will consider creating an institutional vision and set of core values to complement the mission statement.

Degree Alignment to the Mission

The proposed baccalaureate in biomanufacturing is aligned with MiraCosta's mission as a career and technical education program and as an effort to support the economic and educational well-being of the communities served.³ The biomanufacturing degree explicitly builds upon the College's existing biotechnology program, which currently offers three certificates and one associate degree ([Appendix G](#)). The new degree will allow students who complete the local associate degree or equivalent course work from other colleges to earn a baccalaureate, which will better prepare them for entry-level positions in biotechnology within the region and beyond.

The biomanufacturing program will serve the needs of the growing biotechnology economic sector in San Diego County. As described in more detail in section E.3, there will be significant growth in biomanufacturing positions in coming years, and MiraCosta College's proposed degree will be well-positioned to serve this need.

³ Standard I.A.1 and Eligibility Requirement 6 compliant.

Further evidence of the baccalaureate's alignment to the College mission is its relationship to MiraCosta's institutional goals. The *MiraCosta Community College District 2011 Comprehensive Master Plan* (CMP) covers ten years and consists of an Educational Plan and a Facilities Plan. Both plans are based on thorough research conducted internally and externally over two years. The CMP resulted in MiraCosta's adoption of institutional goals, which are intended to advance the mission of the College and address anticipated changes.

The *MiraCosta Community College District Strategic Plan 2014-2017* ([Appendix H](#)) contains 14 institutional objectives that describe strategies for achieving the College's five institutional goals. The proposed baccalaureate program in biomanufacturing is aligned with Institutional Goal I, as an innovative practice that will broaden access to higher education for students, Institutional Goal II, as an institution that maximizes student success, and Institutional Goal V, as a conscientious community partner in serving to provide students with the needed skills to participate in the growing biotechnology sector.

2. Rationale for change

On September 28, 2014, California Governor Jerry Brown signed into law Senate Bill (SB) 850, authorizing the California Community Colleges Board of Governors, in consultation with California State University and University of California representatives, to establish a statewide baccalaureate pilot program at no more than 15 California community colleges.

Upon learning California would permit a limited cohort of institutions to offer a bachelor's degree, College leaders began dialogue on whether to apply as a pilot institution, and if so, which discipline made the most sense given the needs of the region and the already existing course and program offerings at the institution.

When the Chancellor's Office issued the request for applications to participate in the pilot baccalaureate program on November 19, 2014, MiraCosta reflected on the College's institutional goal to be a vanguard institution, committed to experimentation and innovation, and decided to apply as a pilot institution. In turn, faculty leaders reviewed the current offerings at MiraCosta as well as the local California State Universities and the University of California.

Over the past decade, the College has built well-recognized degree and certificate programs in biotechnology, capitalizing on the region's reputation in this industry and the attendant need for entry-level trained professionals to support regional industry. When reviewing the baccalaureate option, MiraCosta identified a niche discipline opportunity, biomanufacturing, which complemented the degree offerings at the local universities. In this way, MiraCosta could add to the full spectrum of postsecondary degree options in the region for students in biotechnology. Additionally, the advisory board for MiraCosta's biotechnology program supported a baccalaureate in biomanufacturing ([Appendix I](#)).

The College created a bachelor's degree planning team and a Courses and Programs Curriculum Committee work group to review applications of interest from departments. These applications included regional labor market and career and technical education data, local industry demand, and student interest. All disciplines were given the opportunity to submit interest in offering the baccalaureate with supporting evidence to substantiate the need.

The Courses and Programs Curriculum Committee work group reviewed two applications of interest and recommended to the Academic Senate biomanufacturing as the program that satisfied the criteria and addressed an unmet regional need ([Appendix J](#)). The Academic Senate voted, unanimously, in support of the biomanufacturing baccalaureate and forwarded its recommendation to the superintendent/president ([Appendix K: §VII.D](#)). The board of trustees then unanimously passed a resolution in support of the baccalaureate in biomanufacturing, the baccalaureate planning committee prepared the application, and MiraCosta submitted the application to the Chancellor's Office on December 18, 2014 ([Appendix L: Board of Trustees Resolution 9-14/15](#)).

On March 16, 2015, the California Community Colleges Board of Governors approved MiraCosta College's proposal for a bachelor's degree in biomanufacturing as one of the initial 12 pilot programs ([Appendix M](#)).

B. A description of the new program to be offered; level and rigor of upper division courses commonly accepted as appropriate to the baccalaureate degree; program length; identification of delivery mode for the courses

Description of the New Program

The proposed baccalaureate program in biomanufacturing will prepare students for employment in the manufacturing sector of the biotechnology industry, which includes biotherapeutics, diagnostics, supplies and services, and industrial products. The degree will prepare graduates for technical and quality assurance/control-related positions.

Biomanufacturing leverages the understanding of biology to manufacture products or perform services that impact health, agriculture, the environment, and industrial needs. As a product or service progresses from discovery research through development and into production, the science becomes increasingly less isolated. Through a transformation of scale, process control, and compliance, the science of biomanufacturing lives across the product and process lifecycle within a quality management system. The applied biomanufacturing baccalaureate will prepare students for work within the biotechnology industry in the unique environment of biological production where the science thrives in partnership with quality and compliance.

This degree program explicitly emphasizes the applied, quantitative analysis of biomanufacturing-process design and performance. In addition, students completing the program may choose to sit for certification exams from the American Society for Quality. Certification provides valuable, third-party recognition of industry-relevant skills, abilities, and knowledge.

Appropriateness of Upper-Division Courses

The major upper-division course work will be comprised of two primary areas of concentration: *Biomanufacturing Science and Technology* and *Biomanufacturing Quality*, as illustrated in Table 1.

Table 1. Biomanufacturing Baccalaureate Upper-Division Course Work

Upper-Division Major Course Work		
Biomanufacturing Science and Technology Concentration Course	Course Description	Units
Process Sciences (Lecture/Lab)	Fundamental physical and chemical principles and technologies enabling large scale biomanufacturing. Thermodynamics and the properties of fluids; mass and heat transfer, fluid flow, and the energy relationships in fluid systems	4 units
Design of Experiments for Biomanufacturing (Lecture/Lab)	Formal methods in connecting process parameters and quality attributes towards improved process understanding. Full and fractional factorial experimentation.	4 units
Design of Biomanufacturing Processes and Equipment (Lecture/Lab)	Advanced course work in the design of processes and equipment in biological production, recovery, and purification within a quality framework. Aseptic process design, fitness for use, critical utilities, modes of operation.	4 units
Bioprocess Monitoring and Control (Lecture/Lab)	The measurement, monitoring, modeling, and control of biomanufacturing processes.	3 units
Seminar in Biomanufacturing Technologies	Advances and current technology in biological production and purification operations.	2 units
Biomanufacturing Science and Technology concentration subtotal:		17 units

Biomanufacturing Quality Concentration Course	Course Description	Units
Statistical Process Control (Lecture/Lab)	Concepts and methodology for measuring and controlling quality during the manufacturing process; control charts, process capability.	3 units
Global Quality System Regulations (Lecture)	Study of the harmonized quality system approaches of the International Conference on Harmonisation of Technical Requirements for Registration of Pharmaceuticals for Human Use (ICH) Q8, 9, 10, and 11, including quality risk management, qualification, and validation.	4 units
Six Sigma and Lean Manufacturing (Lecture/Lab)	Study of key six sigma concepts and tools; the DMAIC phases: design, measure, analyze, improve, and control. Use and implementation of lean tools to reduce waste.	4 units
Methods in Quality Improvements and Investigations (Lecture/Lab)	The study of continuous quality improvement techniques, including the investigational methods into process deviations.	4 units
Seminar in Biomanufacturing Quality (Lecture)	Advances and current practices in biomanufacturing quality.	2 units
Biomanufacturing Quality concentration subtotal:		17 units

Upper-Division General Education Course Work		
Course	Course Description	Units
Advanced Technical Writing for Regulated Environments (Lecture)	Advanced technical writing applied to a variety of documents including reports, standard operating procedures (SOP), batch production records, and investigations	3 units
Public Health/Principles of Epidemiology (Lecture/Lab)	Application of epidemiologic procedures to the understanding of the occurrence and control of infectious and chronic diseases, mental illness, environmental health hazards, accidents, and geriatric problems.	3 units
Leadership Skills and Team Dynamics (Lecture)	Leadership concepts and skills, including the psychological process, conflict resolution, counseling, and human service skills. The course further addresses awareness and development of personal leadership styles.	3 units
Upper-Division General Education Subtotal:		9 units
Upper-Division Course Work Total:		43 units

The first concentration focuses on the science and technology of a biological production process, developing connections between process understanding, process scale, and process control in biomanufacturing. The *Biomanufacturing Quality* concentration focuses on the impact of quality and compliance on regulated biological products and the business practices employed by biotechnology companies to assure product safety, efficacy, and quality.

The upper-division course work integrates foundational knowledge and skills developed in the lower-division programming. It includes advanced application of critical thinking and increases currency in the field as evidenced in lecture, laboratory activities, assignments, and readings. Students will demonstrate this integration of knowledge and skill through writing, oral communication, and/or computation.

Program Length

The new Bachelor of Science in Biomanufacturing will follow a format that builds on the existing associate in arts program within the Biotechnology Department.

Prior to enrolling in the program, students will be given the baccalaureate course requirements as well as a two-year education plan of specific major course offerings. Table 2 illustrates how a full-time student’s educational plan will be structured.

Table 2. Baccalaureate Education Plan

Lower Division	Biotechnology associate degree or equivalent preparation	
Upper Division, Year One	Fall Term	Spring Term
	<ul style="list-style-type: none"> ● Process Sciences ● Design of Experiments for Biomanufacturing ● Global Quality System Regulations ● Elective courses 	<ul style="list-style-type: none"> ● Design of Biomanufacturing Processes and Equipment ● Statistical Process Control ● Advanced Technical Writing for Regulated Environments ● Elective courses
Upper Division, Year Two	Fall Term	Spring Term
	<ul style="list-style-type: none"> ● Bioprocess Monitoring and Control ● Six Sigma and Lean Manufacturing ● Seminar in Biomanufacturing Technologies ● Public Health/Principles of Epidemiology ● Elective courses 	<ul style="list-style-type: none"> ● Methods in Quality Improvements and Investigations ● Seminar in Biomanufacturing Quality ● Leadership Skills and Team Dynamics ● Elective courses

Course sequencing will permit a full-time student to complete the requisite 120 units for the baccalaureate in four years.

Instructional Delivery

Upper-division biomanufacturing and general education course work will be offered in lecture through traditional face-to-face as well as distance education formats as appropriate. Laboratory courses will be delivered face-to-face with hands-on instruction and practice. Assignments will include research papers with technical writing components, individual and group projects, and other authentic assessments of student learning. All hybrid and completely online instruction will utilize the selected existing online learning platform (e.g., Blackboard), and students will have access to the library and supplemental instruction as well as counseling services and other student support services.

C. A description of the planning process which led to the request for the change

MiraCosta College has a well-established integrated planning model and mature governance processes through which initiatives such as the baccalaureate are brought, considered, and acted upon by the appropriate constituent bodies ([Appendix N](#)).

Initial discussions about the baccalaureate took place in fall 2014 between faculty and division leaders to assess the need for the degree and the feasibility to offer the program. The College solicited proposals from departments that were interested in developing a bachelor's degree in their area. Faculty members and administrators met with regional program educators and local industry to assess labor market demand and industry support for the program. The proposals were then reviewed by a work group of MiraCosta's Courses and Programs Curriculum Committee (CPCC), which is responsible for reviewing all new and modified courses and programs as required by Title 5 of the California Code of Regulations and per board policy ([Appendix O: BP 4020](#)). CPCC advises the Academic Senate, the superintendent/president, and ultimately the District board of trustees on recommendations pertaining to the programs and courses offered by the College, as illustrated in Figure 1.

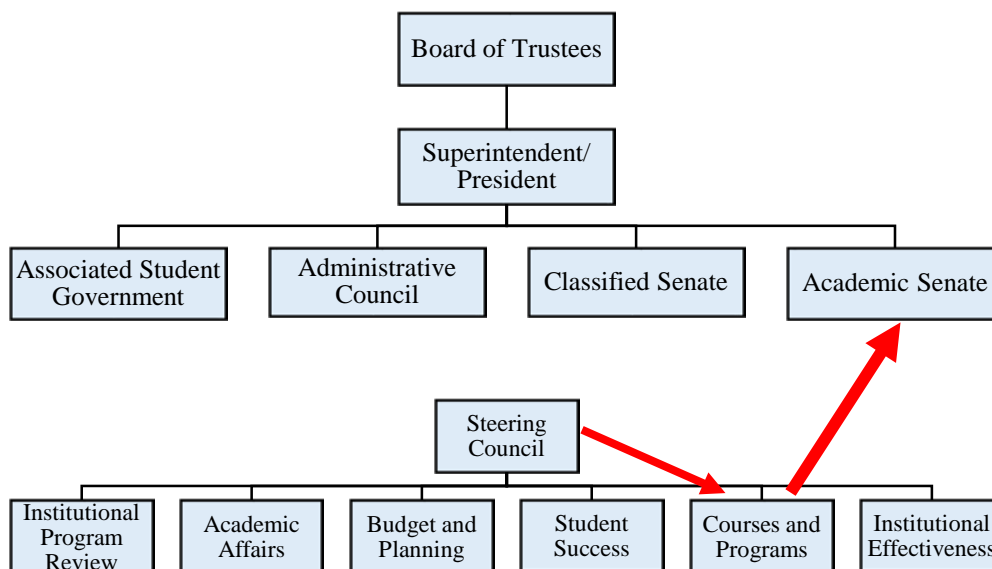


Figure 1. MiraCosta College Governance Structure

The CPCC work group considered the following criteria in making its recommendations:

- Non-duplication: Does CSU/UC have a degree with the same title? Does the degree have a scope that is not intended to be covered by CSU/UC?
- Unmet need (driven, in part, by labor market data): Do existing degrees not directly prepare students for these targeted careers? Will students and businesses in the region benefit from the program?
- Resources needed: Does this program build on existing programs?

The CPCC work group recommended the College develop the bachelor’s degree in biomanufacturing ([Appendix J](#)). The Academic Senate, in turn, voted unanimously to proceed with the bachelor’s degree proposal at its regular meeting on November 7, 2014 ([Appendix K](#): §VII.D).

This governance council decision was shared with the superintendent/president through the Cabinet, which recommended the proposal be forwarded to the board of trustees for approval ([Appendix P](#): §E).⁴ The board of trustees issued resolution number 9-14/15 at its December 10, 2014, meeting and unanimously approved the decision to apply to become a part of the California baccalaureate pilot ([Appendix L](#)). This broad participation of the appropriate governance groups was evident with the College’s deliberation and application process.

⁴ Standard IV.A and IV.C compliant.

D. Evidence that the institution has analyzed, has the capacity, and has provided for adequate human, administrative, financial, and physical resources and processes necessary to initiate, maintain, and monitor the baccalaureate program and to assure that the activities undertaken are accomplished with acceptable quality

MiraCosta College has evaluated and concluded it possesses the resources required to offer, support, and oversee the baccalaureate program.

Human Resources and Processes

MiraCosta has sufficient faculty, management, and staff to support the new biomanufacturing program. As of fall 2015, there are currently two full time faculty, six associate faculty, and two classified staff dedicated to the program. Management oversight is provided by the Dean of Math and Sciences. The new curriculum for the baccalaureate program is being developed by the full time faculty member who serves as chair of the Biotechnology Department.

MiraCosta has robust planning processes that integrate the planning for human resources along with the resource allocation process embedded in the governance structure. The *MiraCosta Community College District Staffing Plan 2015/16—2017/18* specifically tasks the College to invest in new and existing programs to increase student access, and it identifies the baccalaureate in biomanufacturing as a program with a potential need for additional faculty and staff ([Appendix Q](#): p. 1). The *Final Budget Fiscal Year 2015-16* already accounts for investments in this new program ([Appendix R](#)). The need for any additional faculty or staff positions will be addressed in the program review process such that the program will be maintained and supported as it grows.⁵

Specifically, the proposed biomanufacturing program will be led by the Biotechnology Department Chair, Mike Fino, who has been at MiraCosta College for more than ten years. The Biotechnology Department faculty also include Dr. Gail Baughman, who coordinated the program prior to Fino and managed the Southern California Biotechnology Center when it was housed at MiraCosta College. Professors Baughman and Fino built the current framework for the biotechnology certificate and degree programs and developed all of the industry-responsive and skill-based curriculum. The department is also supported by two instructional support staff who manage and prepare the biotechnology labs. MiraCosta College provides Fino with appropriate release time to provide program oversight and departmental leadership, and it will continue providing release time to support the development and implementation of the proposed biomanufacturing baccalaureate program.

⁵ Standard III.A compliant.

Administrative support of the program will be the responsibility of Carlos Lopez, dean of Math and Sciences, who will directly oversee the program's development and implementation. At the executive level, the program will be supported by Dr. Mary Benard, vice president of Instructional Services, Dr. Dick Robertson, vice president of Student Services, and Charlie Ng, vice president of Business and Administrative Services, who have more than 50 collective years of executive-level community college experience. Dr. Sunita V. Cooke, superintendent/president, has eight years' experience as a community college president and was recently appointed by Chancellor Brice Harris as the chair of the Task Force on Workforce, Job Creation, and a Strong Economy.

Administrative Resources and Processes

Technology

The Academic Information Services (AIS) Department is responsible for ensuring the College has the necessary hardware, software, and technical staff in place to support the needs of the new baccalaureate.⁶ AIS supports all administrative and instructional technology requirements for the District. The infrastructure includes two data centers that house servers and network equipment and more than 2,400 personal computers, 1,600 of which are dedicated for student use.

All learning spaces and classrooms are technology-enhanced with data projectors, computers, miscellaneous media equipment, and wireless connections accessible across all College sites by all registered students. Educational technology (e.g., Blackboard, Moodle, SPSS, Minitab, Microsoft Office, Adobe Creative Suite, and Turnitin) is in place and will be available to all baccalaureate students. MiraCosta uses the PeopleSoft Enterprise Resource Planning software as its student information system. This software also supports human resources and fiscal services.

AIS coordinates the evaluation of technology growth, upgrade, replacement, and sustainability. The department also systematically plans, acquires, maintains, upgrades, and replaces the technology infrastructure to meet MiraCosta's operational, instructional, and programmatic needs.

The *MiraCosta College Technology Plan 2015-2018* guides AIS's deployment of services and equipment for all technology at MiraCosta ([Appendix S](#)). The College's integrated planning model and institutional program review process ensure the technology plan is reviewed regularly and includes priorities for maintaining and purchasing needed instructional and administrative equipment and software. The baccalaureate program will benefit from these established resources and processes as AIS will purchase, install, and

⁶ Standard III.C compliant.

support any software identified by the baccalaureate program as dictated by curricular and programmatic needs.

Student Services Support

Baccalaureate students will have access to the full array of student support services and will receive service from staff members specifically designated for the biomanufacturing program in Admissions, Counseling, and Financial Aid.

In order to ensure students in the program have appropriate student support services to maximize student success, MiraCosta will provide support staff in the areas of financial aid and scholarships, career exploration and internships, disabilities and accommodations, and tutoring. Additionally, baccalaureate students will receive admissions, evaluation, counseling, and tutoring support throughout the program to provide critical elements to student success, such as matriculation process completion and educational plan development (including recommended semester-by-semester pathways), to realistically and efficiently complete the degree.

MiraCosta will designate a portion of a full-time faculty counselor to provide individualized counseling support for baccalaureate students. In addition, the College will contract with senior institution graduate students or alumni who can provide higher-level tutoring support for baccalaureate courses. Other departments, including Career Studies and Services, Veterans Services, Student Activities, Testing, Service Learning, Health Services, College Police, and Disabled Students Programs & Services, are preparing to support baccalaureate students.

The MiraCosta College Financial Aid Office has worked with the statewide bachelor's degree financial aid task force to assure that bachelor's-degree granting institutions are authorized by the federal government to provide federal financial aid to baccalaureate students. Financial Aid staff members are qualified and trained to serve the federal aid, state aid, and local scholarship needs of baccalaureate students.⁷

Financial Resources and Processes

MiraCosta College's strong current and projected financial position will provide sufficient financial resources to support baccalaureate program planning, implementation, curriculum development, and professional development. New curriculum will make use of the well-established curriculum development and approval process managed by the College's Courses and Programs Curriculum Committee, which ensures the academic integrity and quality of all new courses and programs ([Appendix O](#): BP/AP 4020).

⁷ Standard II.C compliant.

The baccalaureate will build upon the existing associate degree program and will be funded by the District's revenue stream, with local property taxes expected to grow between 3 and 4 percent each subsequent year. The initial start-up program development cost is projected to be \$368,000 ([Appendix T](#)). The budget will fund faculty, equipment/facilities, and other operating expenses. The projected enrollment in the first year is 24 students with a total of 120 students over the five-year pilot program. The enrollment management plan, which is currently being updated, will guide budget allocation for the baccalaureate along with other programs as student needs change in the future.

The District receives approximately 87.5 percent of its unrestricted general fund monies from property taxes. For 2014/15, the District received approximately \$82,100,000 in property taxes (2014/15 budget), combined with student enrollment fees of \$12,700,000 and Proposition 30 revenues of \$1,100,000. Revenues for 2014/15 are \$41,800,000 more than the state's total computational revenue that would normally be allocated from the state to the District if MiraCosta did not have basic aid status. Furthermore, according to the November 2014 Legislative Analyst's Office Fiscal Outlook, the statewide average for property taxes is projected to increase 5.5 percent in 2015/16 and will grow approximately 6 percent each year through 2019/20. By potentially receiving up to \$5 million of additional property tax revenues each year through 2020, the District will be in a strong position to financially support the baccalaureate program ([Appendix U: FY2014 Final Budget](#)).

From a cost perspective, the District spends approximately 82 percent of its budget on wages and benefits. This relatively low "wages and benefits-to-total expenditure" ratio further enhances the District's ability to support the program. The District's unrestricted general fund ending balance for June 30, 2015 is expected to be \$14,100,000 (i.e., 14 percent of the District's expenditure budget), which is nearly three times the state's 5 percent minimum, ensuring sufficient cash flow to the District. The District routinely has unqualified audits and no findings dating back to at least 2010. These financial resources and strong internal controls support the planning and implementation of the baccalaureate program.⁸

Physical Resources and Processes

Biomanufacturing instructional activities at MiraCosta will be conducted primarily in a 3500 square foot dedicated teaching laboratory space, which features a traditional laboratory classroom, reagent weigh room, bioprocessing suite, and bioprocess support area. The laboratory classroom accommodates 30 students, and the lab benches have 30 sets of drawers containing a full complement of lab essentials and liquid handling tools. The remainder of

⁸ Standard III.D compliant.

the lab is equipped with all the equipment, instruments, and supplies for fundamental instruction in biotechnology methods.

The bioprocessing suite accommodates 24 students and, as a team-based environment, contains six sets of the lab essentials and liquid handling tools identified above. The flow of bioprocessing suite is designed to mimic the flow within the workplace. First, materials are cleaned and sterilized with an in-wall autoclave at one end of the room. Next, a set of biosafety cabinets and CO2 incubators allow for the establishment of seed cell cultures. From there the process moves into process-controlled bioreactors. The suite has the capacity for six, 3-L controlled reactors attached to Broadley-James BioNet, DeltaV systems. Finally, the process is completed with recovery and purifications with six sets of GE Healthcare Quixstand tangential flow filtration systems and GE AktaPrime column chromatography systems.

The lab is well-equipped for fundamental and advanced instruction in biomanufacturing. Additional equipment will be identified through the curriculum development process and discussions with the Industry Advisory Board.

The Biotechnology Department's associate degree and certificate programs are well equipped to meet the resource requirements for the biomanufacturing baccalaureate program without taking away from the existing program. The current biotechnology degree program has earned grant funds totaling more than \$209,245 for 2014-2016 ([Appendix T](#)). These funds were used to augment needed equipment for existing labs, and the equipment was specified such that it will be leveraged for future upper-division course work.⁹

E. Evidence that:

1. The institution has received all necessary internal and/or external approvals

Internal

On December 10, 2014, the MiraCosta Community College District Board of Trustees unanimously approved resolution 9-14/15, enthusiastically supporting the District's baccalaureate pilot program application ([Appendix L](#)). In addition to having strong commitment and support from the board, MiraCosta College possesses the capacity and technical expertise necessary to be responsive to the identified need for baccalaureate-trained workers in the life science area of biomanufacturing.

⁹ Standard III.B compliant.

External

MiraCosta College is accredited by the Accrediting Commission for Community and Junior Colleges (ACCJC), Western Association of Schools and Colleges. In 2012, ACCJC reaffirmed the College’s accreditation and removed a probation sanction from the previous year, noting MiraCosta had “done a thorough job responding to Commission recommendations.” The College is currently preparing its self-evaluation for a fall 2016 site visit as part of its regular cycle of quality review. MiraCosta is now filing this substantive change report with the Commission as the initial stage of securing accreditation for the baccalaureate program in biomanufacturing.

2. Verification the institution is authorized by its state/government to offer the proposed baccalaureate degree

At the March 16, 2015 California Community Colleges Board of Governors meeting, the members voted unanimously to approve MiraCosta College’s biomanufacturing baccalaureate program as one of the initial 12 community college pilot programs to be offered in the state ([Appendix M](#)).

3. There is sufficient demand for the program within the area served by the college

When the College’s Biotechnology Department surveyed 138 current and former biotechnology students, the results indicated 48 percent were very interested and an additional 34 percent were interested in the baccalaureate program, as illustrated in Figure 2, pending more detail on course work developed in partnership with industry.

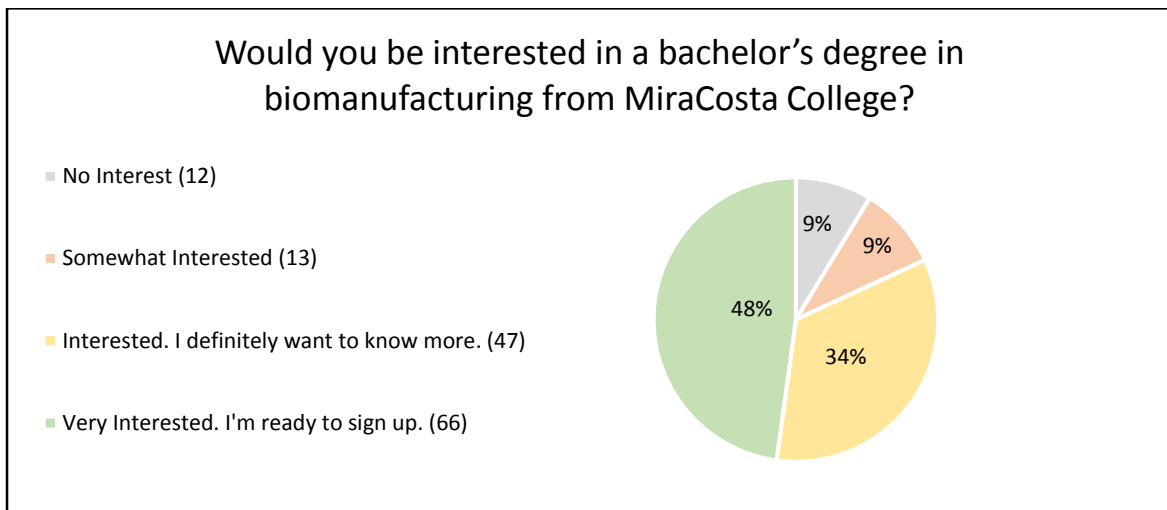


Figure 2. Biotechnology Department Student Interest Survey

Dr. Sandra Slivka, Statewide Sector Navigator for Life Sciences/Biotechnology (part of the California Community Colleges [Doing What Matters for Jobs and the Economy](#) framework), supports MiraCosta College’s proposed baccalaureate program in biomanufacturing. Further,

life sciences/biotechnology is a Priority Sector of great importance to the San Diego and Imperial County economy.

The College also has letters of support for the proposed bachelor's degree from several local biotech companies, including Genentech, MO BIO Laboratories, Gilead Sciences, Inc., Genomatica, Inc., Thermo Fisher Scientific, SAFC Pharma, Assure Controls, and Beckman Coulter ([Appendix I](#)).

In the [2014 Talent Report on California Workforce Trends in the Life Science Industry](#), quantitative survey data and data collected by Burning Glass Technologies confirm that most positions in the industry require a four-year degree (55 percent based on the survey; 62 percent based on online job postings) ([Appendix V](#): p. 6). Manufacturing positions in biotechnology were second only to research and development in hiring over the past two years and are projected to be among the highest in the next two years. Combined, this report's data substantiate the necessity of a four-year degree in biomanufacturing.

According to the San Diego Workforce Partnership's October 2014 [Life Sciences: Labor Market Analysis](#), San Diego is a regional hub for life sciences by business cost index, ranking third in the U.S. behind Boston and San Francisco ([Appendix W](#): p. 3).

According to the same study, San Diego will experience a 20 percent increase in average annual job openings between 2014 and 2018, which equates to 332 openings per year ([Appendix W](#): p. 10). Current associate degree completers total 269 per year for the region, leaving a gap of 63. The study concludes that employers will need a workforce that preferably has earned bachelor's degrees to meet the demand. Even if all associate degree completers enrolled in a bachelor's degree program in biomanufacturing, a gap for qualified workers would still exist. The projected starting hourly wage for students completing the baccalaureate is \$22.72. Experienced workers advancing into management have the potential of earning an hourly wage of \$59.08, which is well above the median living wage for the region of \$43.73 ([Appendix W](#): p. 29).

F. Evidence that each Eligibility Requirement will still be fulfilled, specifically related to the change

MiraCosta College will continue to maintain compliance with all Eligibility Requirements when the College offers the proposed baccalaureate program and its related courses.

Authority

MiraCosta is authorized by the California Community Colleges Board of Governors to operate as an open-admission, public institution. As such, the College is authorized to provide workforce training, basic courses in English and math, certificate and degree programs, and preparation for transfer to four-year institutions. The board of governors

approved the College to offer a baccalaureate program in the specific area of biomanufacturing. In addition, MiraCosta is accredited by the Accrediting Commission for Community and Junior Colleges (ACCJC), Western Association of Schools and Colleges (WASC).

The College's authority to operate will continue when MiraCosta offers a baccalaureate in biomanufacturing.

Operational Status

MiraCosta has been in full and continuous operation since 1934. Students are actively pursuing associate degree programs offered by the College. In 2014/15, MiraCosta enrolled more than 19,000 credit students (unduplicated and annualized) in a wide variety of disciplines and awarded 1,255 associate degrees.

MiraCosta's operational status will continue when the College offers the baccalaureate in biomanufacturing.

Degrees

As a comprehensive community college, MiraCosta currently has 858 active credit courses in its curriculum inventory, 95 percent of which are transferable, and 64 educational programs that lead to an associate degree. More than 70 percent of MiraCosta College students identify transfer or associate degree completion as their primary objective. MiraCosta's Biotechnology Department offers an Associate in Arts in Research and Development.

The proposed baccalaureate will build explicitly upon the Biotechnology Department's current foundational curriculum.

Chief Executive Officer

MiraCosta College's chief executive officer is Dr. Sunita V. Cooke. The chief executive officer is appointed to her role as superintendent/president by the board of trustees, and she serves as secretary of the board. The superintendent/president's primary responsibility is to the institution. The board delegates to the superintendent/president the authority to administer board policies for the College via Board Policy 2430 ([Appendix X](#)). The superintendent/president oversees all programs and support services implemented at the College, including the new proposed Bachelor of Science in Biomanufacturing.

The addition of the baccalaureate program will not alter this responsibility.

Financial Accountability

As required by law, MiraCosta undergoes regular financial audits conducted by external certified public accountants. The College has had unqualified audits for the past five years.

The MiraCosta Community College District Board of Trustees reviews the annual audit reports to ensure the financial stability of the College ([Appendix Y](#): 1/14/15 minutes, §IV.A). The annual audit reports are also publicly displayed on the College website. Approved as a Title IV institution, MiraCosta complies with all federal requirements to award financial aid ([Appendix Z](#)).

MiraCosta meets this Eligibility Requirement by ensuring it has a balanced budget that supports all of MiraCosta's educational programs.

Mission

The College mission provides the foundation for all of MiraCosta's programs and services as well as for the creation of institutional goals. The institutional objectives and action plans designed to benchmark progress on the institutional goals are contained in the College's strategic plan ([Appendix H](#)). The mission guides all planning processes and decision making at MiraCosta, including program review and resource allocation.

MiraCosta evaluates and revises its mission every three years or as deemed necessary as part of the 10-year comprehensive master planning process and per District policy ([Appendix A](#)). The board has regularly reviewed the mission under the *Integrated Planning Manual* and most recently read the proposed change to the mission to offer bachelor's degrees on August 26, 2015 and again on September 9, 2015, wherein the revised statement was unanimously approved ([Appendix F](#): §IX).

The MiraCosta College mission statement is displayed in the board of trustees meeting room, most campus offices, and all classrooms. It is published on the College website as well as in the College catalog, student planner, annual report, final budget report, all planning documents, and various governance committee handbooks.

Offering the baccalaureate in biomanufacturing enhances MiraCosta College's mission to provide access to higher education and training in a career and technical education field and to support the economic development of the biotechnology sector in San Diego County.

Governing Board

The seven elected members of the board of trustees govern the College. The board's specific fiduciary duties and responsibilities are defined in Board Policy 2200 ([Appendix AA](#)), which is published on MiraCosta's website. Representing the public interest, establishing policies for and approving current long-range academic and facilities plans and programs, and promoting orderly growth and development of the College are among the board's primary responsibilities.

The MiraCosta Community College District Board of Trustees is sufficient in size and composition to fulfill all board responsibilities. The seven trustees are elected by qualified

voters to represent each of the seven areas of the District, and each trustee resides in the area of the District he or she is elected to represent.

In addition, the board adheres to a conflict of interest policy that prohibits members from holding “an incompatible office” during their term ([Appendix BB](#)). Offering the proposed baccalaureate in biomanufacturing will not alter MiraCosta’s continuing adherence to the Governing Board Eligibility Requirement.

Administrative Capacity

MiraCosta has sufficient staff with appropriate preparation and experience to provide the administrative duties necessary to support the College mission and purpose. MiraCosta’s administrators (vice presidents, deans, and directors) are hired through an open, competitive employment process and are evaluated according to board and administrative policies.

Each of the College’s three divisions—Business and Administrative Services, Instructional Services, and Student Support Services—is led by a vice president ([Appendix CC](#): Organization and Functional Charts). All three vice presidents participate in the College’s shared governance process by serving on various governance committees and advisory councils.

The Instructional Services Division, led by the vice president of Instructional Services, has six experienced instructional deans who oversee a number of academic departments within their respective schools, including the courses and programs that are offered through those departments. The dean of Math and Sciences provides administration for the Biotechnology Department where the proposed baccalaureate program will be housed. The supervising dean carefully considers faculty preparation when assigning faculty to teach biotechnology courses based on recommendations made by the department chair.

The administrative capacity of the College sufficiently supports the addition of the baccalaureate in biomanufacturing.

Educational Programs

MiraCosta’s associate degree programs and bachelor’s degree in biomanufacturing are congruent with the College mission to offer educational opportunities that students need to be successful. When the College’s curriculum committee reviews proposals for new programs, reviewers are directed to concentrate “on the overall academic integrity of the proposals and their function within the College and its mission” ([Appendix DD](#) and [EE](#)). In November 2014, the Courses and Programs Curriculum Committee formed a work group to review proposals from departments that were interested in developing a bachelor’s degree. The work group recommended to the Academic Senate that MiraCosta develop the baccalaureate in biomanufacturing ([Appendix J](#)).

All of MiraCosta's associate degree programs are based on recognized higher education fields of study. The College catalog's description of these programs includes their course and unit requirements as well as their potential application to careers and/or four-year university majors. Similarly, the baccalaureate in biomanufacturing is based on a recognized field of study in higher education and will be included in the College catalog along with all course and unit requirements.

MiraCosta's associate degree programs meet California Code of Regulations, Title 5 requirements and represent two years of full-time academic work. In addition, all have been approved by the California Community Colleges Chancellor's Office as required by law. MiraCosta's Bachelor of Science in Biomanufacturing has been authorized by the California Community Colleges Board of Governors as part of the baccalaureate pilot project ([Appendix M](#)). This new degree program will represent four years of full-time academic work, and it will comply with all relevant state and federal laws and regulations as well as with all local policies and procedures. The baccalaureate program will also culminate in identified student outcomes.

The inclusion of the baccalaureate into the College's curriculum inventory complements MiraCosta's mission to offer educational opportunities that students need to be successful.

Academic Credit

MiraCosta's degree-applicable credit courses conform to the criteria and standards specified in Title 5, sections 55002.5 and 55062, of the California Code of Regulations, including the relationship between units and required lecture and/or laboratory contact hours. The College's definition of credit hour is consistent with applicable federal and state regulations as they apply to community college districts ([Appendix O: BP/AP 4020](#)). The College's standards for awarding course credit will be the same for courses within the Bachelor of Science in Biomanufacturing as it is for current courses.

The addition of the baccalaureate program meets generally accepted practices in degree-granting institutions of higher education.

Student Learning and Student Achievement

The proposed baccalaureate will adhere to all established College practices and requirements related to course, program, and institution-level student learning and achievement outcomes. Student learning outcomes for the new program will be published on the MiraCosta College website as well as in the catalog, course outline of record, relevant literature, and internal reports. Student progress on course, program, and institutional outcomes will be published in standard reports produced by the Student Learning Outcomes and Assessment Committee in cooperation with the Office of Institutional Effectiveness and Institutional Effectiveness Committee.

The reporting of student learning and achievement outcomes will parallel the reporting for all other College programs, degrees, and certificates.

General Education

All degree programs offered by MiraCosta College require a general education (GE) component that introduces the content and methodology of major areas of knowledge. As required by law (Title 5 §55061), District policy, and Accreditation Standards, the College's GE program is designed to ensure breadth of knowledge and to promote intellectual inquiry ([Appendix FF](#): BP 4025).¹⁰

All courses designated for GE at MiraCosta ensure students achieve comprehensive learning outcomes, which are published in the College catalog ([Appendix GG](#)). The College's GE courses also fulfill the following universal criteria:

- **Rigor:** Each GE course treats subject matter with a level of intellectual intensity that requires independent study.
- **Scope:** Each GE course introduces the student to a wide range of principles, perspectives, and knowledge within the discipline.
- **Autonomy:** Each GE course is a whole unto itself and not primarily part of a sequence of courses; i.e., each course provides exposure to foundations and fundamental tenets of the discipline.
- **Breadth:** Each GE course provides a generalizing rather than specializing experience within the subject matter of the discipline. It relates knowledge within the discipline to other fields and disciplines, as well as to contemporary society.
- **Critical thinking:** Each GE course develops the student's aptitude for conceptualizing, applying, analyzing, synthesizing, and evaluating information.
- **Communication and literacy:** Each GE course provides opportunities for the student to develop and demonstrate both orally and in writing the ability to read, comprehend, and evaluate college-level material.
- **Relevancy:** Each GE course relies upon current knowledge, technology, and instructional materials to achieve its objectives, as appropriate.

Students who complete a general education program at MiraCosta are systematic, critical, creative thinkers and clear communicators who are intellectually curious, culturally and scientifically literate, civic-minded, and aesthetically appreciative. These students are able to demonstrate a broad understanding of mathematics, science, social science, humanities, and the arts; effective communication in oral and written form; a multicultural, global perspective; critical thinking skills that apply analytical and creative approaches to problem

¹⁰ Standard II.A.11 and II.A.12 compliant.

solving; the ability to adapt to new environments and technologies; and social awareness and responsibility as a participating member of society.

Students pursuing the baccalaureate program in biomanufacturing will complete both the local GE pattern as well as 9 units of upper-division GE course work that will integrate biotechnology concepts within the context of the College's broadly defined GE outcomes.

Academic Freedom

Per board policy, "the superintendent/president and the Board of Trustees of MiraCosta Community College District demonstrate their support for the principles of academic freedom by actively and openly working toward a climate that will foster this freedom" ([Appendix HH](#)). The College defines academic freedom in the classroom as the right of faculty members to interpret their fields and to communicate conclusions without being subjected to interference or penalty because these conclusions may be at variance with those of constituted authorities, organized groups, or individuals. The academic freedom of students is the freedom to express and to defend their views, to question, and to differ with the views of their instructors or the District without penalty.

The College's academic freedom policy for faculty and students is published in the College catalog ([Appendix II](#)), on the College website, and in faculty evaluation handbooks ([Appendix JJ](#): pp.2, 10).

The biomanufacturing faculty's ability to engage in free and open inquiry about the field will remain paramount.

Faculty

MiraCosta College has a substantial core of qualified and experienced full- and part-time faculty to support all of the College's educational programs. The Biotechnology Department currently has two full-time faculty members and six part-time faculty. All faculty assigned to teach in the baccalaureate program will meet or exceed the Minimum Qualifications for Faculty in California Community Colleges; thus, all will possess at least a master's degree. All full- and part-time faculty are responsible for assessing SLOs. Full-time faculty members work with part-time faculty in developing and reviewing curriculum.

The number and quality of faculty in the baccalaureate program sufficiently support the development and implementation of the biomanufacturing degree.

Student Support Services

MiraCosta provides a comprehensive array of student services to meet the needs of all enrolled students. The services are consistent with MiraCosta's mission and size as well as the characteristics of the College's diverse student population. Student services are organized to best support as well as encourage student learning, development, and achievement.

The College's 16 student services departments engage in a thorough program review each year and assess both program performance and service area outcomes. Point-of-service data are a part of the annual program review process.

Student services and programs are described in the catalog and may be accessed from the College website ([Appendix KK](#)). Students enrolled in the proposed baccalaureate in biomanufacturing will have access to sufficient and appropriate student services to meet their needs toward program completion.

Admissions

MiraCosta strictly follows admissions policies that are consistent with the mission of the California Community Colleges as well as California Code of Regulations requirements for open enrollment and participation (Title 5 §51006). MiraCosta's admissions policy specifies the qualifications necessary for admission to the College. The baccalaureate program in biomanufacturing will adhere strictly to the admission criteria as published in the College catalog and on the College website ([Appendix LL](#)). The 2017/18 catalog will include admission process information specific to the baccalaureate program.

Additionally, the College's Admissions and Records Office will work with other baccalaureate-degree granting community colleges to provide a supplemental application in addition to the CCC-Apply general application for admission. Admissions and Records staff members are trained and will assure that admission policies are promulgated and followed. Thus, the addition of the baccalaureate program in biomanufacturing will not alter MiraCosta's ability to meet this Eligibility Requirement.

Information and Learning Support Services

Per board policy, the MiraCosta College Library and instructional support services are an integral part of supporting the College mission ([Appendix MM](#)). The Academic Information Services (AIS) Department is charged with the planning, evaluation, acquisition, implementation, development, maintenance, and support of new and existing technology in accordance with the District's comprehensive master plan and program review process. As such, AIS is responsible for administrative systems, network and telecommunications, servers and Web applications, media services, classroom technologies, computer labs and desktop computing, helpdesk, technology training, user support services, instructional Library Department, and Library operations. AIS works collaboratively within the District governance structure to implement, sustain, and extend technologies in support of teaching and learning ([Appendix NN](#): AP 4041). These resources will be available to biomanufacturing baccalaureate students.

The MiraCosta Library currently maintains a website dedicated to biotechnology and biomanufacturing resources. Library databases have approximately 75 full-text journals (subscription and open access) covering bioengineering, biotechnology, and

biomanufacturing. The dedicated website will be expanded to include resources requested by faculty that support upper-division biotechnology and general education curriculum. These resources will be identified when faculty enter their new course information in the College's curriculum management system (CurricUNET Meta).

In keeping with good practices recommended by the California Community Colleges Chancellor's Office, a MiraCosta librarian checks all new course proposals to ensure appropriate and adequate library materials and services are available at the College to support new curriculum. The faculty author initiates the library check-off process during the proposal development stage by completing the Library Resource Support Form online. A link to the form is available on the Library page of the CurricUNET Meta proposal. This form must be submitted to the Library prior to launching the course into the review process. AIS will use Physical Plant and Instructional Support funds to purchase additional library resources that are identified by the biomanufacturing faculty.

The Library identifies its holdings and resources on its website, including its collection of more than 65,000 titles maintained between two campus locations available to support students enrolled in the biomanufacturing baccalaureate program. An additional 35,000 titles are available as eBooks through various College subscriptions. The Library's interlibrary loan agreement with Online Computer Library Center facilitates student access to more than 20 million titles. MiraCosta also has an agreement of reciprocity with Palomar College and California State University San Marcos libraries.

Many Library services, including access to the catalog, tutorials, and live research assistance, are available online. Additionally, the Library is continually expanding its eBook collection, article databases, multimedia holdings, and online resources. The Library is also one of the key campus locations where students have access to computers and support staff.

MiraCosta provides academic support services through the Tutoring and Academic Support Center, the Math Learning Center, and the Writing Center at the Oceanside Campus, San Elijo Campus, and Community Learning Center. These services will be extended to students enrolled in the bachelor's degree program.

The addition of the baccalaureate in biomanufacturing will not alter MiraCosta's ability to meet the Information and Learning Support Services Eligibility Requirement.

Financial Resources

The College has sufficient financial resources to support student learning programs and services and to improve institutional effectiveness. Planning takes place through collegial governance and is evaluated and modified as needed. Financial resources support the mission and provide financial stability.

The College's Budget and Planning Committee reviews programmatic needs each year based on program review and academic master planning for the purpose of recommending a final budget to the College superintendent/president consistent with MiraCosta's mission. The committee ensures the final budget recommendation includes support for all services and functions that result in student success across all instructional programs, including the baccalaureate program in biomanufacturing.

MiraCosta College has identified funding to support the biomanufacturing baccalaureate program starting in the 2014/15 year. This funding coupled with the additional tuition fee will allow the College to fund the program at the appropriate level and make it sustainable. Thus, the addition of the baccalaureate will not alter MiraCosta's ability to meet this Eligibility Requirement.

Institutional Planning and Evaluation

MiraCosta has a robust planning model comprised of a 10-year comprehensive master plan, three-year strategic plans, and an annual institutional program review process. The seminal document of the plan is the *MiraCosta Community College District 2011 Integrated Planning Manual*, currently being updated, which guides development of the institutional mission statement, the comprehensive master plan, strategic planning, program review, resource allocation, and the assessment of these processes ([Appendix OO](#)). The Institutional Planning website includes recent documents and important links regarding these planning areas ([Appendix PP](#)).¹¹

In addition to the planning processes and procedures, MiraCosta has a mature governance system of committees and councils that assures sufficient participation from faculty, staff, students, and administration. Governance committees develop and update plans, board policies, and administrative procedures and recommend them to the governance councils. Comprised of members from all four constituent groups (faculty, staff, administration, and students), committees have subject-matter purview and are advisory in nature to the councils ([Appendix QQ](#): BP/AP 2510; *Governance Manual*). Councils, on the other hand, represent homogenous constituent groups; each council's members belong to the same group. They review and approve recommendations and committee proposals but do not expressly create plans, board policies, or administrative procedures.

The institutional planning and evaluation processes at the College will continue to drive decision making and resource allocations, including any plan priorities identified from the program review process by faculty leads in the biomanufacturing program.

¹¹ Standard I.A and I.B compliant.

Integrity in Communication with the Public

MiraCosta provides an annual electronic catalog with precise, accurate, and current information about the College's mission, accreditation status, operations, services, requirements, major policies as well as where additional policies can be found, and instructional programs.

The 2017/18 catalog will include baccalaureate program information, including admission processes, program requirements, expected learning outcomes, and upper-division general education and biotechnology course descriptions.¹²

Integrity in Relations with the Accrediting Commission

MiraCosta College has embraced accreditation as an ongoing process designed for institutional improvement. Evidence of the College's progress and efforts to continually improve, including an Accreditation Scorecard, Midterm and Self-Study Reports, letters to and from the Commission, and several years' worth of supporting documentation, is provided on MiraCosta's Accreditation website. Both the website and College catalog include a general statement of MiraCosta's accreditation ([Appendix RR](#)).

A signed letter from the superintendent/president assuring the District's compliance with the Commission's Eligibility Requirements, Accreditation Standards, and policies is on file with the Commission and in the College superintendent/president's office. Relations with the Commission would not be impacted as a result of this substantive change.¹³

G. Evidence that each Accreditation Standard will still be fulfilled specifically related to the change and that all relevant Commission policies are addressed

Standard I: Mission, Academic Quality and Institutional Effectiveness, and Integrity

I.A Mission

The MiraCosta College mission demonstrates the institutional commitment to student learning and establishes the College's institutional goals. The institutional goals in turn provide the foundation for identifying the strategic institutional objectives and action plans through which MiraCosta assesses progress on its College-wide goals.

MiraCosta's governance councils and committees discuss and analyze changing student needs and advances in instructional technology to ensure the College becomes a vanguard

¹² Standard I.C compliant.

¹³ Standard I.C compliant.

institution (Institutional Goal I) where student success is maximized (Institutional Goal II). The proposed substantive change will enhance the College's ability to fulfill its mission by offering a degree that meets a growing community and regional economic need and builds on already existing programs in biotechnology.

Annual integrated program review uses outcomes assessment findings, student success results, and program efficiency metrics to drive College planning via MiraCosta's governance structure to meet the mission. Institutional-level learning outcomes born out of the mission provide the overarching learning goals for all students who attend MiraCosta, regardless of their educational objective.

In spring 2015, the Institutional Effectiveness Committee (IEC) voted to recommend to all four governance councils that MiraCosta remove the word "associate" in the College mission statement to be more inclusive of the new degree ([Appendix D](#): §VI.B). In August 2015, the four councils considered and approved IEC's recommendation ([Appendix E](#): AS §VII.C; AC §VI.B; CS §2.B; ASG §VII.B). The councils' recommendation was tendered to the President's Cabinet for further consideration, and the superintendent/president submitted the change to the board of trustees for action. The board decided to replace the word "associate" with "undergraduate" and unanimously approved the modified mission statement on September 9, 2015 ([Appendix F](#): §IX). The current mission statement sets forth the College's present educational purposes, intended student population, and commitment to student learning in light of the baccalaureate.

In fall 2015, as part of its regular planning cycle, the College will review the mission statement for both currency and accuracy. In addition, the College will consider creating an institutional vision and set of core values to complement the mission statement.¹⁴

I.B Assuring Academic Quality and Institutional Effectiveness

MiraCosta demonstrates its effectiveness by collecting evidence of student learning and success, assessing how well learning and achievement are occurring, and making changes to improve outcomes for students through the College's integrated planning model, which is explained in depth in MiraCosta's *2013 Midterm Accreditation Report*.

The integrated planning model to improve institutional effectiveness organizes key decision-making processes and allocates human, technological, fiscal, and physical resources to support improvement in student outcomes ([Appendix N](#)).

¹⁴ Standard I.A.4 and ER 6 compliant.

Three institutional goals in the comprehensive master plan address the College's commitment to offering a baccalaureate as a way to be a vanguard institution, maximize student success, and be a conscientious community partner.

Tactical efforts to meet these institutional goals are set forth in the College's strategic plan, which contains institutional objectives that address MiraCosta's inclusion of a baccalaureate program ([Appendix H](#)).

Progress on the institutional objectives is measured in part via program review. Program review authors focus on how well programs advance MiraCosta's mission and improve student achievement and learning. This process includes reflection and planning pieces that provide program leaders the opportunity to mold faculty and staff dialogue into specific steps to meet the institutional objectives and improve program effectiveness.

Program review standards include student learning outcomes and their associated counterparts: administrative unit outcomes and service area outcomes. Each division uses a rubric to evaluate and prioritize the proposed plans against the College's larger goals and objectives and forwards its prioritized plans to the Budget and Planning Committee (BPC). The committee in turn examines the division-set priorities, uses a rubric to further prioritize the cross-divisional needs, and uses a norming process to assure reliable scoring; it then sends a prioritized list of the scored plans to the superintendent/president for review. ([Appendix SS](#): BPC and Divisional Evaluation Rubrics).

The Institutional Program Review Committee conducts its own evaluation of the program review process, and the Student Learning Outcomes and Assessment Committee began evaluating its process in 2013 as part of attaining sustainable, continuous quality improvement status. The College added an Institutional Effectiveness Committee to further connect the dialogue and decisions being made in the governance committees and councils.

MiraCosta evaluates its processes and procedures for both its planning processes and cycles. In 2012/13, BPC generated an evaluation of the effectiveness of resource allocations made for previous years ([Appendix TT](#)). BPC also produced an evaluation of the planning processes and suggested improvements to operations based on qualitative and quantitative data ([Appendix UU](#)). BPC shared both reports with the College's constituencies and board of trustees. Regularly scheduled evaluations of the College's planning efforts are part of the integrated planning model and are contained in the *MiraCosta Community College District 2011 Integrated Planning Manual* ([Appendix OO](#)).

MiraCosta's integrated planning model continues to mature from its inception in 2010. In July 2014, the College crafted the second three-year strategic plan of the ten-year comprehensive master plan cycle with a new set of institutional objectives and action plans using an internal scan of College operations and perceptions as well as an external scan of community data and perspectives. A strategic planning team consisting of representatives

from all constituent groups analyzed and interpreted the evidence and shared the findings with the College as a whole. In addition, the College continues to evaluate not only progress on the institutional goals and strategic plan objectives, but also of the planning processes and cycles.

The baccalaureate will be incorporated into outcomes assessment, program review, and planning processes and practices and will receive due consideration for resource allocation enhancements and decision-making improvements in the same fashion as the existing programs and certificates at the College once it is established.

I.C Institutional Integrity

MiraCosta demonstrates integrity in all policies, actions, and communication. The MiraCosta College Catalog, updated and published by the Office of Instruction electronically each year, is the most complete source of information about the College's courses and programs, student support services, required fees, and major policies and procedures affecting students. All information included in the catalog is also available on the College website.

MiraCosta's administration, faculty, staff, and governing board members act honestly, ethically, and fairly in the performance of their duties. The College's commitment to the free pursuit and dissemination of knowledge and support of intellectual freedom are codified in its academic freedom and institutional code of ethics policies ([Appendix HH](#) and [VV](#), respectively).

MiraCosta will continue to comply with the Commission's regulations, statutes, and reporting requirements as well as with those of the College's external agencies with the addition of the baccalaureate.

Standard II: Student Learning Programs and Support Services

II.A Instructional Programs

MiraCosta College meets the Standard by ensuring educational quality is the same for all of its courses and programs; all courses and programs undergo the same rigorous review and approval process to ensure educational integrity.

The review of all additions, modifications, or deletions of courses and programs is exclusively delegated to MiraCosta's Courses and Programs Curriculum Committee (CPCC). This committee of full-time faculty, part-time faculty, and one administrator concentrates on the overall academic integrity of all course, certificate, and degree proposals and their function within the College and its programs, student learning outcomes, and mission. Moreover, CPCC members are responsible for being familiar with and applying the rules and regulations governing curriculum from the California Code of Regulations (Title 5), California Education Code, the Commission, and the College's board policies and administrative procedures.

Student learning outcomes are embedded in the culture of the College. Mechanisms are in place to facilitate faculty understanding of the purpose and process of outcome development, evaluation of assessment data, and budget and planning. Faculty clearly recognize the relationship among outcomes, assessment, planning, resource allocation, and continuous improvement of student learning and achievement.

The Instructional Services Division has been successful in assisting students in achieving their learning outcomes by following through with action plans that ensure program quality and compliance, access and equity by ensuring support in all aspects of teaching and learning. The Student Services Division has been successful in assisting students in achieving their learning outcomes by assessing and designing action plans for improvement related to tutoring, library services, matriculation, and financial aid, and by improving service to veterans and disabled students.

Program reviews for all departments and programs are conducted annually, and the program review process is fully integrated with budgeting and planning.

The addition of the biomanufacturing baccalaureate will enhance the College's degree and certificate offerings and, by way of MiraCosta-established processes, policies, and procedures, the program will be fully supported.

II.B Library and Learning Support Services

Program directors, faculty chairs, and administrators associated with library and learning support services are involved in the development of this new baccalaureate program. Program faculty have been consulted regarding the availability of appropriate resources for the students who will be enrolled in the program. From their evaluations and recommendations, these services are comprehensive and sufficient to support student learning in this degree program and thus enhance the mission. Annual evaluation of the library and learning support services occurs through the process of program review. Reports generated from program review provide evidence that each contributes to the attainment of student learning outcomes.¹⁵

Library

The MiraCosta College Library provides instructional support for all students through 24/7 access to online resources, including general academic and specialized databases, more than 150,000 eBooks, and streaming media. The full-text of approximately 35,000 e-journals and other periodicals are available through the Library's collection. Library databases have

¹⁵ Standard II.B compliant.

approximately 75 full-text journals (subscription and open access) covering bioengineering, biotechnology, and biomanufacturing.

The Library's website dedicated to biotechnology resources will be expanded to include resources that support upper-division biotechnology and general education curriculum. Needed resources for upper-division courses in the new program will be identified through the curriculum development process when faculty members enter their new course information in the College's curriculum management system and are required to complete a Library Resource Support Form online. Librarians check all new course proposals to ensure appropriate and adequate library materials are available to support new curriculum. The Library will continue using Physical Plant and Instructional Support Funds to purchase the resources identified by the biomanufacturing faculty as necessary for the baccalaureate curriculum.

Learning Support Services

The Counseling Center is adequately prepared to assist students to enroll and complete the proposed program. One or more counselors will be designated to provide guidance to students while in the program, ensuring that they are progressing successfully through the program and graduating.

Career Center staff members are prepared to assist students in developing a college and career plan. Career counselors are already seeing students who are interested in pursuing the bachelor's degree at MiraCosta. The Career Center will also assist with outreach to local industry partners when internship placement of students is required.

The Tutoring and Academic Support Center (TASC) currently provides on-ground and online tutoring in many disciplines, including many courses that are required in the general education component of the baccalaureate. On-ground tutoring is available on two District sites. MiraCosta participates in the Western eTutoring Consortium of colleges and universities to provide live and email-based tutoring support. The director of TASC anticipates that some new tutors will be needed to support specific biotechnology and upper-division courses. Recruitment of appropriately qualified tutors for these courses will occur both internally and through outreach to partner Biotech companies and local universities.

Academic Information Services (AIS) provides computers with adaptive software/hardware for student use at all three District sites as well as wireless network accessibility for registered students and current staff/faculty members who wish to use their own laptops or personal devices. The College has more than 30 computer labs on campus, including a wide variety of software, operating systems, and peripherals. All faculty teaching at MiraCosta College have access to the online course management system (Blackboard) for each of their courses, enabling interaction with students in various ways.

II.C Student Support Services

MiraCosta assures that baccalaureate candidates will have access to student support services that meet the individual needs of upper-division students comparable to those services offered to students pursuing the biotechnology research and development associate degree. All student services departments have websites that provide students with information and forms appropriate for that respective department, and most departments provide services in an online format.

MiraCosta publishes its catalog, class schedule, and board policies and administrative procedures on the College website. Policies include those regarding academic freedom, student rights and responsibilities, due process, harassment, discrimination, and grievances. MiraCosta also posts information about admission requirements and policies, student fees, and degree and graduation requirements on the Student Services Division's webpages, which are reviewed and updated at least once per semester to ensure the information's currency and accuracy. These pages will be updated to include student services information that is relevant to baccalaureate students.

All student services departments within the division systematically assess services provided to students through an annual program review as well as goals established for the division based on student needs. Each department has clear SLOs and/or service area outcomes (SAOs). SLOs, SAOs, and their assessments are housed in TracDat, and a report is available each year to the departments for program review.

Standard III: Resources

III.A Human Resources

MiraCosta employs qualified certificated and classified employees through formal hiring processes that follow the District's equal employment opportunity policies ([Appendix WW](#)). The employment screening process includes a requirement that all candidates meet local and State of California minimum qualifications for their respective positions. Faculty and administrators, regardless of location or assignment, meet minimum qualifications recommended by the Academic Senate for California Community Colleges and established by the California Community Colleges Board of Governors. In addition, MiraCosta's Human Resources Office verifies that all degrees listed by candidates for certificated and classified positions have been earned from accredited institutions.

All classified and certificated staff at MiraCosta are evaluated on a regular basis. Faculty are evaluated based on established board policies. The Human Resources Office implements the District's Equal Employment Opportunity Program and oversees adherence to federal and state regulations. The College's Equal Employment Opportunity Advisory Committee is a standing committee that assists the District to achieve understanding and support of equal opportunity policies and programs.

MiraCosta is committed to providing multiple opportunities for faculty to develop and improve their skills in designing, supporting, and offering courses. Formal professional development opportunities such as Flex workshops are approved through the College's Professional Development Program. Both faculty and staff in the biomanufacturing program are supported in professional development opportunities on and off campus. MiraCosta has increased the funds available for faculty and staff professional development in the 2015/16 budget; thus, the District has sufficient resources to support new training for members of the Biomanufacturing Department ([Appendix R](#)).

Integrating human resource planning with institutional planning, MiraCosta establishes priorities, makes decisions, and allocates resources based on information and evidence garnered from program review. Like all resource allocation requests, human resource requests for new and replacement personnel are the result of program review and are included in the resource allocation request process. The *MiraCosta Community College District Staffing Plan 2015/16—2017/18* specifically directs the College to invest in new and existing programs to increase student access, and it identifies the bachelor's degree in biomanufacturing as a program with a need for added faculty and staff ([Appendix Q](#): p. 1).

III.B Physical Resources

The institution provides safe and sufficient physical resources that support the quality of its programs and services, regardless of location. The size of the facilities is a major aspect of the physical resources of the District. MiraCosta College District currently has 73 buildings and occupies 522,085 gross square feet. The three locations that make up this combined space are the Oceanside Campus on Barnard Drive, the San Elijo Center on Manchester Avenue in Cardiff-by-the-Sea, and the Community Learning Center on Mission Avenue in Oceanside. The District also offers classes at facilities that are under the management of other agencies. These include area high schools, churches, and hospitals.

The current biotechnology program has sufficient facilities, equipment, and supplies to support the baccalaureate program within the existing biotechnology building located at the main Oceanside campus. The training facility consists of an instructional laboratory area and a bioprocessing suite. Supporting these are faculty offices, a common lab, a gowning room, bioprocess support areas, and a compressed gas and utilities area. The bioprocessing suite is designed to accommodate lab-scale mammalian and microbial culture.

III.C Technology Resources

MiraCosta College has the necessary hardware, software, and technical expertise already in place to support the needs of the baccalaureate. The College supports all instructional programs through many key technologies and facilities, such as open computer labs for student use and computers for all MiraCosta staff and faculty who need one. More than 2,400 personal computers are available for use by students, faculty, and staff, 1,600 of which are

exclusively for student use. All learning spaces and classrooms are technology-enhanced with data projectors, computers, miscellaneous media equipment, and wireless connections accessible across all College sites by all registered students. Educational technology (e.g., Blackboard, Moodle, SPSS, Minitab, Microsoft Office, Adobe Creative Suite, and Turnitin) is in place and will be available to all baccalaureate students.

All three College campuses are wired with fiber optics, allowing for wireless connections anywhere on any campus. MiraCosta has adopted the PeopleSoft platform for Human Resources Administration, Student Records Administration, and Finance and Budget Administration. PeopleSoft is used by many higher education institutions in the United States and abroad. The College uses TracDat to track and assess student learning outcomes as well as administrative unit objectives, EDDI as an enrollment management system, and CurricUNET Meta for curriculum development.

Technology training is available to faculty and staff for most hardware and software maintained by the District through a variety of modes, including workshops, one-on-one training, drop-in labs, multimedia tutorials, and self-help materials on the Web. Technology support is fully integrated within MiraCosta's technology infrastructure used across all instructional and administrative areas of the College.

Academic Information Services (AIS) supports the College's operational systems, all of which are accounted for in the *MiraCosta College Technology Plan 2015–2018* ([Appendix S](#)). AIS coordinates the evaluation of technology growth, upgrade, replacement, and sustainability using a total cost of ownership framework. In this way, the College systematically plans, acquires, maintains, upgrades, and replaces technology infrastructure to meet MiraCosta's operational, instructional, and programmatic needs.

The College's integrated planning model and institutional program review process ensure the technology plan is reviewed regularly and includes priorities for maintaining and purchasing needed instructional and administrative equipment and software. The baccalaureate program will benefit from these established resources and processes as AIS will purchase, install, and support any software identified by the baccalaureate program as dictated by curricular and programmatic needs.

III.D Financial Resources

The District has strong management and fiscal leadership. In the last seven years, MiraCosta's unrestricted general fund reserves were an average of 21 percent of expenditure that ranged from 15 to 29 percent.

The College has a history of financial stability to support student learning programs and services. Overall, the College relies primarily on the District's local property taxes in the general unrestricted fund which is 80 to 84 percent of total unrestricted revenues; the

remaining 16 percent of revenues are from state categorical/grants, student fees, community education, and other local revenues. Salaries and benefits are 82 percent of unrestricted funds and the remaining 17 percent are for departmental operating expenses and equipment/facilities maintenance operating costs.

The District's policy to reserve a minimum of 10 percent of the general fund reserves provides continued fiscal sustainability should revenues decline from local economic conditions and state funding allocations. The District routinely has unqualified audits and no findings dating back to at least 2010. MiraCosta's strong management and fiscal leadership ensure the baccalaureate budget resource requirements will be part of the annual budgeting process and will be sustainable for the long term.

MiraCosta's institutional planning and resource allocation processes are rooted in the College's mission and institutional goals in order to assure that financial resources are sufficient to support all instructional programs and services. The efficacy and sufficiency of budget allocations are reviewed annually through program review, the results of which are linked to the annual District budget development process per board policy ([Appendix XX](#)).

The College's Budget and Planning Committee reviews programmatic needs each year based on program review and academic master planning. The committee is responsible for ensuring its final budget recommendation to the District superintendent/president includes support for all services and functions that result in student success

Per board policy, the District's books, records, and internal controls are compliant with Generally Accepted Government Auditing Standards and/or Generally Accepted Accounting Principles ([Appendix YY](#)). Annual audit reports of financials and supplemental information are reviewed by the board of trustees, most recently in spring 2015 ([Appendix Y](#): §IV), and are available on the Business and Administrative Services' webpage. The College's resource allocation processes are assessed biennially and annually as prescribed by the *MiraCosta Community College District 2011 Integrated Planning Manual* ([Appendix OO](#)).

Standard IV: Leadership and Governance

IV.A Decision-Making Roles and Processes

MiraCosta College has benefitted from having formalized governance structures, policies, and processes since 2009. The governance structure is embodied in the *MiraCosta Community College District Governance Manual* ([Appendix QQ](#)). In 2014, the College merged the Governance Organization into the Institutional Effectiveness Committee in an effort to better institutionalize decision making at the College. The governance structure's effectiveness is evaluated annually and serves as the foundation for proposed improvements based upon constituent feedback, reflection, and dialog.

The College's Steering Council, co-chaired by the Academic Senate president and superintendent/president, routes governance issues to the appropriate committees for deliberation and councils for the development of recommendations to the superintendent/president. The Steering Council routes issues related to educational program development, degree requirements, and curriculum to the Academic Senate.

The Academic Senate considered the pursuit of a bachelor's degree and voted unanimously to proceed with the proposal at its regular meeting on November 7, 2014 ([Appendix K: §VII.D](#)). The senate's recommendation was tendered to the President's Cabinet for further consideration, and the superintendent/president submitted the recommendation to the board of trustees for action. On December 10, 2014, the board of trustees unanimously approved a resolution to apply to become a part of the California Baccalaureate Degree pilot with the California Community Colleges Board of Governors ([Appendix L](#)).

The governance system at MiraCosta College is robust and will capably handle the additional requirement of supporting and granting a bachelor's degree.

IV.B Chief Executive Officer

The MiraCosta Community College District Board of Trustees delegates to the superintendent/president the executive responsibility for interpreting and administering board-adopted policies and executing all board decisions that require administrative action ([Appendix X: BP 2430](#)). Because MiraCosta is a single college district, the superintendent/president has the full-time responsibility as chief executive officer with the requisite authority and responsibility to assure quality of instructional programs and student and administrative services provided to students and the College community.

The superintendent/president has supported the development of the baccalaureate program at every stage, and she has provided regular reports to the board of trustees and the community about the purpose and progress of the application to participate in the pilot baccalaureate program.

The superintendent/president, in consultation with the Academic Senate and Administrative Council, assures the College has appropriate staff, faculty, facilities, and budget resources available to fully support the new program.

IV.C Governing Board

The seven elected members of the board of trustees each represent and reside in a specific area of the District. The term of office is four years, and members are elected by the registered voters of the same trustee area ([Appendix ZZ: BP 2100](#)). A student trustee elected by the student body also sits on the board. The board's fiduciary duties and responsibilities include delegating power and authority to the superintendent/president, establishing policies for and approving current long-range academic and facilities plans and programs, promoting

orderly growth and development of the College, and establishing policies for and approving courses and educational programs ([Appendix AA](#): BP 2200). Board policies and procedures for District operations are published on the College website.

The board of trustees participates in an annual evaluation of its performance by measuring progress towards established board goals via a self-assessment and by soliciting College constituent feedback through a survey tool ([Appendix AAA](#): BP 2745). The board dedicates a special workshop each year to reflect on all components of its annual evaluation as it sets goals for the coming year. In addition, the board of trustees participates in professional development for ongoing improvement ([Appendix BBB](#): BP 2740). The board has an established code of ethics that it reviews annually for currency and relevancy ([Appendix CCC](#): BP 2715).

This substantive change proposal was presented to the District board of trustees on August 26, 2015 for comments and discussion ([Appendix DDD](#): §VI); the board approved the proposal on September 9, 2015 ([Appendix F](#): §VIII.D).

H. Evidence that the baccalaureate program meets the minimum requirements for the degree (120 semester units or equivalent)

The Biotechnology Department currently provides students with the opportunity to attain an associate in arts (60 units), which is comprised of major, general education, and required elective courses. The associate degree will serve as the foundation for the proposed Bachelor of Science in Biomanufacturing; students completing the associate degree can proceed to upper-division course work to complete the baccalaureate.

Table 3 details the category of courses and unit distribution for the required lower-division and proposed baccalaureate program course work.

Table 3. Baccalaureate Program Requirements

Associate in Arts, Research and Development, Lower-Division Course and Unit Distribution (total units vary depending on course selection)	
Required Courses	Unit Distribution
Major courses	40 to 44 units
General education courses	28 units
<i>Subtotal major and GE</i>	<i>68 to 72 units</i>
<i>Subtract units that can be double-counted for major and GE</i>	(13 to 16 units)
<i>Subtotal major and GE (adjusted)</i>	<i>55 to 59 units</i>
Elective courses	1 to 5 units
Associate Course Work Subtotal:	60 units

Baccalaureate Course Work Unit Distribution	
Upper-division major courses	34 units
Upper-division general education courses	9 units
Elective courses	17 units
Baccalaureate Course Work Subtotal:	60 units
Baccalaureate Total:	120 units

The lower-division general education requirements are based on MiraCosta’s local general education pattern.

I. Evidence that the baccalaureate program meets the minimum baccalaureate level General Education requirements

1. 36 semester units or equivalent

Students completing the biomanufacturing degree following the local general education pattern will complete 28 units of lower-division and 9 units of upper-division general education courses. In addition to the local GE pattern, students completing an associate degree at MiraCosta have the option of completing the California State University (CSU) transfer general education pattern or the University of California (UC) transfer general education pattern. Students selecting these options will complete 39 (IGETC) to 41 (CSU-GE) units of lower-division general education courses and 9 units of upper-division general education courses.

2. Distributed across the major areas for General Education (arts/humanities, natural science, mathematics, social science, and oral/written communication)

Consistent with Title 5 requirements and accreditation standards, the MiraCosta general education program provides students with the opportunity to develop a broad understanding of mathematics, science, social science, humanities, and the arts as well as effective oral and written communication skills.¹⁶ Recognizing the need for cultural competency, technical literacy, self-development, and an informed citizenry, MiraCosta faculty expanded the lower-division general education program to include required course work in the areas of technology and information fluency, self-development, cultural competency, and American institutions and history.

Students complete courses in each of these general education categories, which allows them to experience the breadth of MiraCosta’s curriculum offerings, to explore the connections among various disciplines, and to investigate subjects different from their identified major.

¹⁶ Standard II.A.12 compliant.

The intended result is engagement in intellectual discussion, enhanced skills to apply to major and upper-division course work, and preparation as productive citizens in a global environment.

3. Integrated throughout the curriculum (distributed to both lower and upper division courses)

The interdisciplinary lower-division and upper-division general education component of the biomanufacturing degree will provide students with both introductory and specific subject areas that will focus on the development of the MiraCosta general education outcomes: effective communication, critical thinking, global awareness, information literacy, and productive work habits.

Supported by the foundational knowledge gained through completion of the lower-division general education requirements, students will be provided with an upper-division general education curriculum designed to be integrative, relevant, and contextualized to the major and global workplace. The further development of writing, leadership, and teamwork skills and an enhanced understanding of applying biotechnical procedures in a public health environment will provide students with a skill set that employers in the biotechnology industry seek and value in their employees.

Table 4 details the course and unit distribution for lower- and upper-division general education requirements using the local general education pattern, which is the most commonly used pattern for the Associate in Arts in Research and Development.

Table 4. General Education Course Work

Lower-Division General Education		
Course (local GE pattern)	General Education Category	Units
ENGL 100, Composition and Reading	Area A1, Language and Reasoning, English Communication	4 units
BTEC 180, Biostatistics	Area A2, Communication and Analytical Thinking	4 units
CHEM 110, General Chemistry	Area B, Natural Sciences	5 units
Choice of one approved humanities course	Area C, Humanities	3 units
Choice of one approved social and behavioral science course	Area D, Social and Behavioral Sciences	3 units
CSIT 110, Computer Applications, or choice of one approved technology and information fluency or self-development course	Area E, Lifelong Learning, E-1 Technology and Information Fluency <i>or</i> E-2, Self-development	3 units

Course (local GE pattern)	General Education Category	Units
Choice of an approved cultural diversity course	Area F, Cultural Diversity	3 units
Choice of an approved history or political science course	American Institutions and History	3 units
Lower-Division General Education Subtotal:		28
units		
Upper-Division General Education		
Proposed Course	Proposed General Education Category	Proposed Units
Advanced Technical Writing for Regulated Environments	Area A1, Language and Reasoning	3 units
Public Health/Principles of Epidemiology	Area B, Natural Sciences	3 units
Leadership Skills and Team Dynamics	Area D, Social and Behavioral Sciences	3 units
Upper-Division General Education Subtotal:		9
units		
Baccalaureate General Education Requirement Total:		37
units		

J. Evidence that the library and learning resources are sufficient in quality, currency, variety, quantity, and depth to support the baccalaureate program

The MiraCosta library maintains a website dedicated to biotechnology and biomanufacturing resources as a focal point where associate and baccalaureate students can find information and support for their area of study. Library databases have approximately 75 full-text journals (subscription and open access) covering bioengineering, biotechnology, and biomanufacturing. The dedicated website will be expanded to include resources that support upper-division biotechnology and general education curriculum. These resources will be identified when faculty enter their new course information in the College's curriculum management system (CurricUNET Meta).

In keeping with good practices recommended by the California Community Colleges Chancellor's Office, a MiraCosta librarian checks all new course proposals to ensure appropriate and adequate library materials and services are available at the College to support new curriculum. The faculty author initiates the library check-off process during the proposal development stage by completing the Library Resource Support Form online. A link to the form is available on the Library page of the CurricUNET Meta proposal. This form must be submitted to the Library prior to launching the course into the review process. AIS will use

Physical Plant and Instructional Support funds to purchase additional library resources that are identified by the biomanufacturing faculty.

Librarians provide research support to all students at the reference desks and through customized instruction to meet the research needs of individual classes and departments. An online chat reference service is provided 24/7 by MiraCosta College librarians in coordination with academic librarians throughout the United States. Additionally, the Library offers two courses in research skills and the use of resources. All services provided by the Library and other support areas are evaluated through direct and indirect assessment methods.

As needs are identified by the biotechnology faculty, the Library will incorporate the requests into the already existing procedures and processes to assure baccalaureate students have the resources they need to be successful.

K. Evidence that faculty qualifications are rigorous and appropriate in regard to:

1. Discipline expertise

The proposed biomanufacturing program will be led by Biotechnology Department Chair and Professor Mike Fino. Fino has been at MiraCosta College for more than ten years and currently serves as the Academic Senate president. Prior to MiraCosta College, he spent eight years working in various bioprocess engineering capacities from research, product development, and manufacturing support for tissue-engineered medical products. Fino is currently a co-principal investigator on a National Science Foundation Advanced Technology Education grant to promote the development of a national biomanufacturing educational infrastructure.

Biotechnology Department faculty also includes Dr. Gail Baughman, who coordinated the program prior to Fino and managed the Southern California Biotechnology Center when it was housed at MiraCosta College. Dr. Baughman conducted and published research related to biochemistry, molecular biology, and gene expression in various academic settings for 20 years prior to joining the faculty at MiraCosta. Professors Baughman and Fino built the current framework for the biotechnology certificate and degree programs and developed all of the industry-responsive and skill-based curriculum.

The department is also supported by two instructional support staff who manage and prepare the biotechnology labs. MiraCosta College provides Fino with appropriate release time to provide program oversight and department leadership, and it will continue providing release time to support the development and implementation of the proposed biomanufacturing baccalaureate program.

Carlos Lopez, dean of Math and Sciences, will directly oversee the program's development and implementation. At the executive level, the program will be supported by Dr. Mary Benard, vice president of Instructional Services, Dr. Dick Robertson, vice president of Student Services, and Charlie Ng, vice president of Business and Administrative Services, who have more than 50 collective years of executive-level community college experience ([Appendix CC](#)).

Superintendent/President Dr. Sunita V. Cooke has eight years' experience as a community college president. Chancellor Brice Harris appointed Cooke as chair of the Board of Governors Task Force on Workforce, Job Creation and a Strong Economy due to her experience in higher education and workforce and economic development.

2. Level of assignment (at least one degree level above the baccalaureate degree for faculty assigned to baccalaureate degree courses or equivalent)

The Biotechnology Department currently has two full-time faculty members and six part-time faculty. All faculty assigned to teach in the baccalaureate program will meet or exceed the Minimum Qualifications for Faculty in California Community Colleges; thus, all will possess at least a master's degree.

APPENDICES

[Appendix A](#): Board Policy 1200: District Mission

[Appendix B](#): Board of Trustees 2/19/14 meeting minutes

[Appendix C](#): Senate Bill 850 and California Education Code §78042(b)

[Appendix D](#): Institutional Effectiveness Committee 5/8/15 meeting minutes

[Appendix E](#): Council minutes of mission statement approval (August 2015)

[Appendix F](#): Board of Trustees 9/9/15 meeting minutes

[Appendix G](#): Biotechnology Program (from the *MiraCosta College 2015-2016 Catalog*)

[Appendix H](#): *MiraCosta Community College District Strategic Plan 2014-2017*

[Appendix I](#): Biotechnology Advisory Board member letters

[Appendix J](#): CPCC Work Group Report

[Appendix K](#): Academic Senate 11/7/14 meeting minutes

[Appendix L](#): Board of Trustees Adoption of Resolution 9-14/15: Support for MiraCosta Community College District Baccalaureate Degree Pilot Program Application

[Appendix M](#): Board of Governors' approval of MiraCosta College's baccalaureate program

[Appendix N](#): MCCCCD Integrated Planning Model and Cycle

[Appendix O](#): Board Policy/Administrative Procedure 4020: Program, Curriculum, and Course Development

[Appendix P](#): Cabinet 10/14/14 meeting minutes

[Appendix Q](#): *MiraCosta Community College District Staffing Plan 2015/16—2017/18*

[Appendix R](#): *Final Budget Fiscal Year 2015-16*

[Appendix S](#): *MiraCosta College Technology Plan 2015-2018*

[Appendix T](#): Baccalaureate Degree Budget Overview 2015-16

[Appendix U](#): *MiraCosta College FY2014 Final Budget*

[Appendix V](#): *2014 Talent Integration: California Workforce Trends in the Life Science Industry*

[Appendix W](#): *Life Sciences: Labor Market Analysis San Diego County*

[Appendix X](#): Board Policy 2430: Delegation of Authority to the Superintendent/President

[Appendix Y](#): Board of Trustees 1/14/15 meeting minutes

[Appendix Z](#): USDE Eligibility and Certification Approval Report

[Appendix AA](#): Board Policy 2200: Board Duties and Responsibilities

[Appendix BB](#): Board Policy 2710: Conflict of Interest

[Appendix CC](#): MCCCCD Organization Chart and Functional Charts

[Appendix DD](#): *MiraCosta College 2015-2016 Courses and Programs Committee Handbook*, page 12

[Appendix EE](#): Administrative Procedure 4022: Course Approval Process

[Appendix FF](#): Board Policy 4025: Philosophy and Criteria for Associate Degrees and General Education

[Appendix GG](#): General education outcomes (from the *MiraCosta College 2015-2016 Catalog*)

[Appendix HH](#): Board Policy 4030: Academic Freedom

[Appendix II](#): Academic freedom policy (from the *MiraCosta College 2015-2016 Catalog*)

[Appendix JJ](#): Academic freedom in the *Tenured Faculty Professional Growth and Evaluation Handbook* (p. 2) and *Tenure Candidate Handbook* (p. 10)

[Appendix KK](#): Student services (from the *MiraCosta College 2015-2016 Catalog*)

[Appendix LL](#): Admissions criteria (from the *MiraCosta College 2015-2016 Catalog*)

[Appendix MM](#): Board Policy 4040: Library and Other Instructional Support Services

[Appendix NN](#): Administrative Procedure 4041: Technology-Enhanced Learning

[Appendix OO](#): *MiraCosta Community College District 2011 Integrated Planning Manual*

[Appendix PP](#): Institutional Planning website

[Appendix QQ](#): Board Policy and Administrative Procedure 2510: Collegial Governance and Participation in Local Decision Making; *MiraCosta Community College District Governance Manual*

[Appendix RR](#): *MiraCosta College 2015-2016 Catalog* accreditation statement; Accreditation website

[Appendix SS](#): Budget & Planning Committee Rubric for Program Development Plan Funding Requests; Divisional Evaluation Rubric for Program Development Plan Funding Requests

[Appendix TT](#): *2011-2012 Resource Allocations Effectiveness Review*

[Appendix UU](#): *Integrated Planning Cycles, Processes, and Timelines Assessment Report*

[Appendix VV](#): Board Policy 3050: Institutional Code of Ethics

[Appendix WW](#): Board Policy/Administrative Procedure 7100: Commitment to Diversity

[Appendix XX](#): Board Policy 6200: Budget Preparation

[Appendix YY](#): Board Policy 6300: Fiscal Management

[Appendix ZZ](#): Board Policy 2100: Board Elections

[Appendix AAA](#): Board Policy 2745: Board Self-Evaluation

[Appendix BBB](#): Board Policy 2740: Board Education

[Appendix CCC](#): Board Policy 2715: Code of Ethics/Standards of Practice

[Appendix DDD](#): Board of Trustees 8/26/15 meeting agenda



MIRACOSTA COMMUNITY COLLEGE DISTRICT

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