

Peralta Community College District

UNIT PLAN UPDATE Template ~ September 2009

Each discipline will complete this form to update the unit plans developed in 2008. These will be reviewed at the college level and then forwarded to the district-wide planning and budgeting process. The information on this form is required for all resource requests – including faculty staffing requests – for the 2010-11 budget year.

I. OVERVIEW

		Date Submitted:	
Discipline	Biological Science	Dean:	Dr. Rebecca Kenney
Department Chair	Hank Fabian / Arja McCray		
Mission/History <i>Brief, one paragraph</i>	<p>A) Train students on cutting-edge equipment so as to provide access to fulfilling careers in high growth, high tech fields of microscopy, genomics, histopathology, EM and related fields.</p> <p>B) Develop financially self-sustaining programs that include opportunities for student research.</p> <p>C) Establish and maintain partnerships with local, national, and international institutions, agencies, and corporations that can provide employment and support.</p> <p>D) Develop production facilities which will generate income for the program.</p>		

II. EVALUATION AND PLANNING

Please review the program review data and the CSEP review criteria and complete the following matrix.

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ANNUAL TREND BASELINE DATA					
Year	Annual FTES	%FTES growth	FTEF in program	FTES /FTEF	Comments
2008/09	30.86		4.13	7.47	Our enrollment has not been properly input. Working on getting correct data from District.
2007/08	N/A	N/A	N/A	N/A	
2006/07	N/A	N/A	N/A	N/A	
2005/06	N/A	N/A	N/A	N/A	

FALL SEMESTER BASELINE DATA

	2004	2005	2006	2007	2008	CODE	Comments
1. Enrollment (duplicated)	N/A	N/A	N/A	N/A	201		Our enrollment has not been properly input. Working on getting correct data from District.
2. Sections (master sections)	N/A	N/A	N/A	N/A	9		
3. FTEF	N/A	N/A	N/A	N/A	2.07		
4. FTES	N/A	N/A	N/A	N/A	17.38		
5. FTES/FTEF	N/A	N/A	N/A	N/A	8.40		
7. Program Cost (Cost methodology is under development. Please complete the remaining items. This step to be completed later.)							

Qualitative Assessments	Narrative
8. Community and labor market relevance Present evidence of community need based on Advisory Committee input, industry need data, McIntyre Environmental Scan, McKinsey Economic Report, etc. This applies primarily to career-technical (i.e., vocational programs).	Program was developed with guidance from industry and academic partners (focus group, then Advisory Board), and in response to other market research, including data from EDD. Labor forecasts indicate a strong current and future demand. This is corroborated by feedback from the industry, as well as information gathered at several professional meetings this year.

9. College strategic plan relevance	Very relevant to innovation and advancement of technology based programs.
<p>Check all that apply</p> <p><input checked="" type="checkbox"/> New program under development Program that is integral to the college's overall strategy Program that is essential for transfer</p> <p><input checked="" type="checkbox"/> Program that serves a community niche. Programs where student enrollment or success has been demonstrably affected by extraordinary external factors, such as barriers due to housing, employment, childcare etc.</p> <p>Other _____</p>	

Action Plan Steps to Address CSEP Results

Please describe your plan for responding to the above data. Consider curriculum, pedagogy/instructional, scheduling, and marketing strategies. Also, please reference any cross district collaboration with the same discipline at other Peralta colleges.

10. ACTION PLAN -- Include overall plans/goals and specific action steps.

Overall requirements for Bioscience Department

We will continue to develop the Merritt Microscopy and Genomics programs as outlined in our strategic plans and in response to industry needs.

1. **Bioscience Coordinator** position is needed to oversee the goals, structure, marketing, grants, production labs, outreach, research, development, strategic planning, staffing, faculty recruitment, contract education, budget, and facilities of all Bioscience Programs within Merritt College. The Coordinator would also coordinate directors of the programs listed below and work in conjunction with directors to ensure optimum lab production and student success.
2. **Director positions** for each program are needed to manage the specific needs of each program, as outlined below.
3. **Facilities** needs are urgent and include: tissue culture lab, microscope rooms, and all genomics labs. Some of this will be accomplished through room renovations in building D, and through initial localization of equipment in the district-owned 860 Atlantic biotech building. The new Merritt College Science building will include genomics and microscopy facilities.
4. **Technical support** is vital to these programs. We are in need of full-time and part-time technicians in order to offer open lab time for student training and study and in order to maintain the equipment.
5. Creation of pedagogical **training pods** is planned, for appropriate lab courses. These pods would allow students to work in small groups with lab professionals for shadowing and ultimately hands-on proficiency training. Lab professionals will receive stipends and/or access to equipment.
6. Pedagogically, it is important for students to have **access** to the equipment at all times. The programs are based on hands-on training, and the students are required to spend many hours every day working on the equipment. Facility (e.g. extended building hours) and technical support (e.g. lab technicians) is essential in order to accomplish this training.
7. Development of **on-line courses** for appropriate lectures that would include discussions with leading scientists and technicians as well as animations as an outreach component of the program.
8. **Grant writer** is needed to assist in obtaining funding from numerous funding opportunities, including NSF

grants, NIH Bridges grants, MARC NIH funding, NIH Area grants, Genentech, CA State Chancellor's office Biotech funding, CTE funding and others.

9. **Counselor** for internship development and employment placement is needed.
10. Student **scholarships** are needed for internships, conferences, books, tuition and supplies, as well of cost-of-living stipends for select students.
11. **Finance officer** is needed to manage purchasing and budgets, including grant funds and funds obtained from lab production, contract education, and equipment usage.
12. **Administrative manager** and CTE specialist is needed to interface with Merritt College administration, Peralta district, other Peralta Colleges, state and nationwide community colleges, CA chancellors office.
13. **Intra-district collaborations** are in place with COA and with Laney College biomanufacturing program.
14. **Contract education** is planned: This will be a vital source of revenue and also a good marketing tool.
15. **Paid community use** of equipment is planned: This will be a strong revenue source, plus training and networking opportunity for our students.
16. **Partnerships** with local and international institutions include the California Academy of Sciences, SFSU and the MMP advisory board.
17. Recruitment of **international students** is underway.
18. **Marketing** efforts are underway in a variety of formats, including online, flyers, brochures, course catalogue, local listserves, professional conferences, open houses.
19. **Outreach** efforts include contact with a variety of local health organizations and biotech companies and with local Middle and High Schools.
20. Development of a **Histopathology Program** would be beneficial, due to the high demand for trained histopathologists. This would require hiring a director to develop the curriculum, industry partnerships, and to oversee the purchasing and marketing, and to recruit qualified faculty. Qualified and interested instructors have already been identified.
21. Likewise, development of an **Electron Microscopy Program** (EM) would be beneficial, due to the high demand in the Bay Area for qualified EM technicians. This would require hiring a director to develop the program. Qualified and interested instructors have already been identified for this program, too.
22. Trained operators of **high-throughput screening** (HTS) systems are in high demand in Bay Area biotech companies. This is another program that would be beneficial to develop, and would require the hiring of a specialized director. HTS systems use robotics and microscopy, so, like the aforementioned possible directions,

this possible program is also a natural fit for Merritt College.

23. Establish a district account that allows fast turnover of accounts payable and receivable. Our finance officer would deal directly with purchasing at the Peralta Community College District, bypassing the obstructionist Merritt business office. It is imperative that all bioscience programs function as businesses if they are to generate their own capital. Separate accounts for each program, perhaps as subaccounts of Fund 10 be established and transferred from the prevue of the Merritt College Business Office.

Summary: Genomics is high throughput genetics and the fastest growing area of biotechnology, encompassing cancer research, drug discovery, forensics, agriculture and horticulture, evolutionary biology, epidemiology, tracking and exploitation of endangered species and general health awareness. This area of science relies heavily on computational manipulation of DNA sequences and drives many areas of informatics. The Bay Area is the world's leader in both biotechnology and informatics. Hence, there is a great need in the Bay Area for training in Genomics. Developing a Genomics program at Merritt College launches our campus into the 21st century. At the time of this writing, our program is unique, unmatched by any community college world wide.

Merritt Microscopy Program

The MMP was launched in S'08. The first cohort of students has completed two semesters of instruction, along with a variety of summer internships. The program was extended for 3 months, due to a lack of facilities and supplies.

Program successes include:

- high retention rate
- high visibility in the Bay Area
- purchase and installation of major imaging systems
- negotiation of over \$600,000 in equipment discounts
- donation of ~\$160,000 in equipment and supplies
- student internships at UCB, UCSF, SFSU, Touro University, Gallo Center, and in Tennessee, Canada and Finland
- attendance and networking at ASCB conference, posters and chair duties at Advanced Imaging conference, Community Open Houses
- strong employment prospects (some students are already placed)
- intangibles of cohesive, hard-working, enthusiastic, driven, very diverse and highly motivated cohort of fantastic students

Immediate needs include:

- 1) Establish **Director** position for Microscopy-specific strategic planning, marketing, outreach, grant writing and administration, advisory board coordination and recruitment, contract education, paid equipment usage coordination, curriculum coordination, updating and scheduling, equipment management and maintenance, recruitment, scheduling and mentorship of faculty, student issues, budget, purchasing, staffing, internship development and coordination, job development, campus and community relations and communications, shared governance, organization of student and faculty

- 2) Hire a full-time **technician** or two part-time technicians to calibrate and maintain the equipment.
- 3) **Facilities:** tissue culture lab, IHC lab, microscopy rooms.

Plans for the program include:

- a) Establishment of the Bay Area Microscopy Consortium (**BAMC**): monthly talks that showcase our students, and local microscopists and their work. The BAMC is also a good networking opportunity and will result in increased student employment, collaborations and grant writing opportunities.
- b) Establish AS or AA **degree** in Bioscience Microscopy.
- c) Student **scholarships:** funds for conferences, internships, tuition, living expenses.
- d) **Grants**, if release time is obtained, or a grant writer is hired, we can complete the \$2 million Bridges to Baccalaureate grant, investigate and apply for other grants, including Area grants, NSF supplemental funds, Genentech, State Chancellor's Biotech grants.
- e) Continue to work with Advisory Board.
- f) Continue to develop curriculum.
- g) Continue to recruit and employ qualified adjunct faculty.
- h) Continue to teach many sections of biosci 1 ("feeder course"), plus program courses. Overlapping program cohorts may be scheduled.
- i) Continue to attend professional conferences with students.
- j) Continue to develop and oversee internships.
- k) Continue to maintain and manage equipment.
- l) **Outreach** will include 14 visits to local middle and High Schools, plus several on-site events ("Meet the microscopist") through the district-wide multimedia CTE grant.
- m) **Contract ed:** there is already a demand for contract courses using our equipment. We require a coordinator to activate this part of the program.
- n) **Equipment usage** by local scientists: there are already requests to use the imaging systems, but we require an imaging core coordinator to manage the scheduling, maintenance, and budget. Local recharge rates are \$100/hour for this kind of equipment.
- o) **Marketing** includes brochures, ads, websites, flyers, open houses.
- p) Develop local and international **sponsorships and partnerships**.
- q) Continue to solicit equipment donations.
- r) Develop student and faculty **research** using MMP resources.
- s) Continue to manage and maintain facilities, budget, equipment, and other MMP resources.
- t) Improve **facilities**, including remodeling of D building rooms and, if possible, space in 860 Atlantic biotech building (or portables, or leased space). Eventually, we will be located in the new Merritt Science Building.

Merritt Genomics Program

Establish **Director** position for Genomics specific strategic planning, marketing, outreach, grant writing and administration, advisory board coordination and recruitment, contract education, paid equipment usage coordination, curriculum coordination, updating and scheduling, equipment management and maintenance,

recruitment, scheduling and mentorship of faculty, student issues, budget, purchasing, staffing, internship development and coordination, job development, campus and community relations and communications, shared governance, organization of student and faculty research, development of sponsorships, donations and partnerships. In addition, we plan to work with higher educational institutions for student training and we will develop cooperative relationships to this end.

Hire full time and part-time technicians who will help to maintain instruments and laboratory conditions and potentially train students and faculty. In addition, one or more technicians will be involved in set up and maintenance of computer systems involved in data analysis and tracking of projects.

Develop and teach **courses** in data analysis, micro array, colony picking, capillary sequencing, next generation sequencing, Bac-library production and related areas. Inclusive in these courses will be training in good laboratory practices, data organization, tracking projects using bar-coding, scientific presentation, research and experimental design and scientific writing, grant writing, and scientific publication.

Genomics will also create a **production facility** which will help to pay for consumables, staffing, and equipment. This production facility will be driven by fee-based data analysis and collection from external sources as well as grants. This is a unique approach in industrial training because it mirrors industrial level biotechnology and government facilities to exemplify high-throughput data collection and management. We wish to establish this facility immediately to create an district fund that will help launch the Genomics Program prior to going to 860 Atlantic Avenue. We wish to establish a district account for this purpose, bypassing the obstructionism prevalent in the Merritt Business Office.

Pods will be taught by graduate students, post docs and scientists who wish to use our faculties but who will provide training to small groups of students in return.

Genomics will first establish itself at the district owned, **860 Atlantic Building**, which must be renovated to accommodate the equipment we current own and will potentially acquire. Ultimately, a new Genomics Center will be created at Merritt College as part of the overall campus renovation.

Online courses will use You Tube or similar resources that will be accessible only to Merritt students enrolled in the Genomics program.

Grants: Immediately apply for ABI consumables grant and rewrite NSF grant with San Francisco State University. Grants will be for consumables, travel, stipends, student and faculty research, equipment, and hiring of support staff such as lab techs and lab instructors.

Establish and maintain national and international partnerships with genome centers and universities. We currently have working relationships with a number of local, national and international institutions and corporations. These relationships will provide a variety of avenues for attracting potential students, graduate student trainers, and facilitating partnerships that may lead to grants for consumables and equipment.

Establish AS or AA **degree** in Bioscience Genomics.

Establish certification programs in sequencing, micro array, data management and Bac-library development.

Student scholarships: Funds for conferences, internships, tuition, living expenses.

Develop an Advisory Board.

Continue to develop curriculum.

Continue to recruit and employ qualified adjunct faculty.

Continue to teach many sections of biosci 1 (“feeder course”), plus program courses. Overlapping program cohorts may be scheduled.

Attend professional conferences with students to stay on the leading edge of technology and provide student training in presentation of scientific results.

Develop and oversee internships.

Continue to maintain and manage equipment.

Outreach will include on line courses as well as facility tours to local high schools.

Contract education: There is already a demand for contract courses using our equipment through UC extension. We require a coordinator to activate this part of the program.

Equipment usage by local scientists: There is the potential for renting time on our equipment to other institutions and bio tech firms thus providing access to academic researchers who have grant funding that could utilize this resource, hence attracting potential trainers for our students and helping the facility to pay for itself by bringing in revenue.

Marketing includes brochures, ads, websites, flyers, and open houses. Develop local and international **sponsorships and partnerships.**

Continue to solicit **equipment donations** from the Department of Energy (DOE), Bayer and other resources. We have already obtained significant donations for the DOE and Bayer.

Histopathology

Histopathology director to supervise and design labs and develop courses in histopathology. Will work closely with microbiology and genomics.

Part time or Full time technician to prepare histopathology labs and maintain the equipment and supplies.

Histopathology laboratory for slide preparation and teaching. This lab will require an up to date microtome as well as staining equipment. A functional hood should also be provided.

This program will work closely with bay area hospitals which have already expressed interest and will mirror the development of Genomics and Microscopy.

Additional Planned Educational Activities

11. Health/safety/legal issues:	We offer courses in Good Laboratory Practices and Lab Safety and Ethics. Safety and bioethical issues are strongly emphasized in all our courses. Also there are biohazardous waste issues for the genomics and histopathology programs.
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Student Learning Outcomes (SLOs) 2008/09		
12. Have you completed Student Learning Outcomes (SLO's) for all your courses?	YES <u> X </u>	NO _____
12a. If you answered no to question 12 then, what percentage have you completed?		
13. What are you assessing this year? Please attach your assessment results and action plan. List needed resources in Section III of Unit Plan.	<u> X </u> course outcomes <u> X </u> program outcomes _____ institutional learning outcomes	

BUDGET			
Budget Categories	Allocated 08/09	Expended 08/09	Requested 09/10
Fund 1			\$0
Fund 14			\$0
Fund 17			\$0
Measure A			\$2.6 Million
VTEA			\$40,000
Total			\$2.64 Million

ADDITIONAL REVENUE: GRANTS, PRIVATE SALES, AND DONATIONS			
Name of Grant/Donation/Sale	Awarded/Generated 08/09	% Expended 08/09	Comments
			Grant pending.

PERSONNEL NEEDS 09/10									
Personnel DATA	CD Enrl F2008	Tot FTES F2008	Contract FTEF F2008	Ext Srv FTEF F2008	Tmp FTEF F2008	Total FTEF F2008	Contract %	FT/PT	FTES /FTEF
		201	17.38	.95	0.0	1.12	2.07	45%	
Comments									
<i>Current</i>				<i>If filled</i>	<i>If not filled</i>	<i># FTE (faculty assigned)</i>			
<p><i>Narrative: Are PT faculty available? Can FT faculty be reassigned to this program? Implications if not filled</i></p> <p>Yes, PT faculty are available and FT faculty can teach many of the courses.</p>									
<p><i>Faculty Staff Requests 2010-2011:</i></p> <p>Once the 860 Atlantic Building is completed for the Genomics site, we will need a full time technician for the Genomics program; we will also need one for the Microscopy program once it is running. Part of the salary should be generated by the production center for Genomics and microscope rental for Microscopy. We are developing a relationship with Biocare, Inc. for the Histology program. Negotiations are still pending.</p>									

FACULTY ETHNICITY F2008			
Ethnicity	Contract	Adjunct	Total
Asian		1	1
African American			
Filipino			
Hispanic/Latino			
Native American		1	1
Other			
White	1	1	2
Unknown			
Total	1	3	4

**FACULTY GENDER
FALL 2008**

Gender	# of Contract	# of Adjunct	Total
Male		1	1
Female	1	2	3
Not Supplied			
Total	1	3	4

RESOURCE NEEDS

Equipment/Material/Supply/ Classified/Student Assistant Needs:

Please describe any needs in the above categories.

One Helicose sequencer.
 One Illumina sequencer.
 One 4-well ABI Capillary sequencer
 One liquid handler
 We will add to this list for 2012.

Facilities Needs (Items that should be included in our Facilities master Plan) for Measure A funding:

Please describe any facilities needs.

Wet laboratory for production immediately.
 Laboratory and classrooms as designed for the 860 Atlantic Building in Alameda.