

# COMPREHENSIVE INSTRUCTIONAL PROGRAM REVIEW

## Life Sciences Disciplines Moreno Valley College Round 3: 2011-2014



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### Web Resources:

<http://www.rccd.edu/administration/educationalservices/ieffectiveness/Pages/ProgramReview.aspx>

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**COMPREHENSIVE PROGRAM REVIEW  
LIFE SCIENCES DISCIPLINES  
2011-2014**

**A. Mission and Relationship to the College(s)**

The mission of the disciplines within the Life Sciences at Moreno Valley College is to provide the necessary pre-requisites for student entry into the various allied health programs, to prepare students for medical professions and to provide courses for students transferring to four-year universities as biological science majors. In addition, it is the mission of our unit to generate student discussion of current topics/events in the life science field.

The disciplines within the Life Sciences fulfill the missions of the Riverside Community College District as well as the individual mission of the Moreno Valley Campus by offering a variety of general education courses for non-science majors, allied health courses for pre-professional students in addition to UC and CSU transferable courses for our science majors.

As part of MVC's mission to provide "academic programs and support services which include baccalaureate transfer, professional and pre-collegiate curricula for all who can benefit from them", the disciplines within the Life Sciences have worked to increase student access to prerequisite courses required for professional programs. It is our goal to increase the number of prerequisite courses, as facilities and faculty resources allow. Moreover, consistent with the College's mission to provide "support services" to accompany academic programs, the disciplines within Life Sciences have begun to offer Supplemental Instruction (SI) in select courses as funds allow. Efforts are underway to expand the number of sections and courses that offer SI.

Since the 2008 Program Review, the MVC disciplines within the Life Sciences have done their part to meet the RCCD mission to "provide transfer programs paralleling the first two years of university offerings" by offering sections of the majors-level courses (Biology 11) but unfortunately the College has not been able to offer additional majors-level courses due to section cuts driven by economic conditions and the lack of laboratory and lecture classrooms.

The disciplines in Life Sciences have also created desired student learning outcomes for all Life Science courses offered by our college and has implemented an assessment process to measure these desired learning outcomes (see section E) in support of the district's strategic initiatives and mission to improve student learning outcomes. The disciplines in the Life Sciences at Moreno Valley College are Biology, Health Science, Microbiology, Anatomy and Physiology.

## **B. History**

Life Science courses have been consistently filled for the past five years. The extensive wait list for many of our courses including Anatomy, Microbiology, and Introductory Biology suggests that the College could double its section of offerings or offer more diverse Life Science courses such as Botany, and Field Biology that meet the laboratory course requirements for a successful transfer to a four-year university. Life Science faculty have steadfastly focused on ensuring the success of our students in these impacted courses in order to provide greater enrollment opportunities for those waitlisted students, some of whom have been waiting for over a year.

Faculty members have worked diligently to enhance and enrich students' learning of life science themes with use of supplemental instruction programs offered by the college, and by providing work experience in lab settings (activities describe in the "F" section: Collaboration with Other Units).

The Life Science faculty has actively pursued grant ventures with local universities such as California State University San Bernardino (CSUSB). Recently, a grant was awarded to the CSUSB in partnership with MVC from the California Institute of Regenerative Medicine (CIRM). This grant aims to provide training in cell culture techniques to students enrolled in the *Introduction to Cell and Molecular Biology* course (BIO-11).

Another grant awarded to the faculty member represents Community College Undergraduate Research Initiative sponsored by National Science Foundation (CCURI-NSF). Introduction to the Cell and Molecular Biology Honors course (BIO-11H) has been developed as a three-year pilot research course that is supported by this grant. The BIO-11H course involves research performed by students in collaboration with the University of California in Riverside.

The existing Biotechnology Program had been revised and restructured to become a Medical Biotechnology Program. This program, however, has been put on hold due to a lack of lab space, but it will be brought back as resources allow.

A faculty member from the Life Sciences was awarded a Fulbright Scholarship in the Fall of 2010 to teach and conduct research at the University of Concepcion in Chile. As a result of that experience, an international collaboration is being established between Moreno Valley College and the University in Chile in the form of a study abroad opportunity. (Activities describe in the "G" section: Outreach Activities).

Grant funds supported the purchase of lab equipment such as a portable autoclave, -70°C freezer, liquid nitrogen doer tank, growth chamber, CO<sub>2</sub> incubator, centrifuge, portable sterile hoods, two inverted microscopes and a thermocycler. Again, limited lab space hinders the utilization of this equipment for lab experiments performed by students. In fact, grant funds from The California Institute of Regenerative Medicine currently remain unused for lack of space, despite the funds secured for this valuable equipment. It is generally agreed that, as professors, we are not able to serve our students to the best of our abilities while we are bound by inadequate space, which is a significant hurdle to the academic advancement of our student population.

### **Course work:**

1. A new course, Human Biology, BIO-17, previously added to the curriculum, was offered in fall semesters of 2009 and 2012. This Human Biology course fulfills requirements in General Education for a Life Science course with a laboratory, and it is transferable to UC and CSU. In addition, AMY-2A, AMY-2B, BIO-1, BIO-11, BIO-12, and MIC-1 fulfill the CSU GE requirements in Area B-2, Life Sciences.
2. Regional Field Biology Studies, BIO-31 A, will be offered with field excursions as a two- week study abroad class in Katalapi Park in Southern Chile in Winter 2013 or 2014. This course will enrich our curriculum by addressing ecosystem and environmental issues such as interactions between organisms and their environment, including human impact. Instruction will be delivered using inquiry-based field activities, data collections and analysis.
3. Introduction to Molecular and Cellular Biology Honors course, BIO-11H, is being developed as a three-year pilot research course that is fully supported by the grant money including CCURI-NSF. This course involves research performed by students in collaboration with the University of California in Riverside.
4. Both BIO-11, Introduction to Molecular and Cellular Biology, and BIO-34, Human Genetics, are now consistently being offered each fall and spring semester.
5. Life Sciences faculty have added BIO-1 as a prerequisite for Anatomy and Physiology-2A in order to increase the currently low success rate in the AMY-2A course. Data provided by Institutional Research provides evidence of significantly higher success rates for those students who successfully complete BIO-1 prior to taking AMY-2A. Life Sciences is awaiting approval for the pre-requisite through the Curriculum process.

### **The life science discipline had three major goals listed in the last comprehensive program review (2008):**

- 1) **Increase the number of sections of high demand courses**
- 2) **Increase the number of sections of courses for Biology majors**
- 3) **Develop effective and efficient assessment strategies and student learning outcomes in all Life Science courses offered.**

These goals were created from the overall recommendation of the disciplines, which specifically suggested focus on supplying enough Anatomy and Physiology and Microbiology sections to meet the student demand and also on increasing the numbers and types of courses offered for Biology majors in preparation for accreditation as a separate college in 2010.

Obviously we have not been able to make progress on goals 1 and 2 since we are limited by the economic downturn and the reduction in sections due to budget cuts. We are also limited by the fact that we have no more laboratories to increase section offerings. MVC has no immediate plans to rectify this situation by adding needed facilities.

**We have completed goal 3.**

Our discipline has developed assessment plans and updated COR's for all Life Science courses offered at our college. Currently all of our courses are part of an ongoing assessment process in which each course is being assessed annually or biannually. Additionally, the assessment outcomes are being utilized to modify courses and assessments as needed.

The Moreno Valley campus became an independent college in 2010. As such, the need for increased sections of high demand courses and the need to increase offerings for science majors has become even more crucial. In order to operate as an individual college, the Life Sciences must be able to supply the courses necessary for degree transfer as science majors.

BIO-12, Introduction to Organismal and Population Biology, needs to be offered consistently, and new courses in Botany, Zoology and Ecology need to be developed and offered to fully function as a Life Science discipline (see full list in curriculum section). Currently the Life Sciences at MVC are only able to offer one course consistently each semester for Life Science majors, BIO-11. The Anatomy and Physiology courses are still highly impacted, and many students are waiting for several years to get into those courses. Any student who does not have priority registration will not be able to get into AMY-2A course at MVC, as those courses fill at least a week before general registration begins.

Unfortunately, budget cuts have forced a reduced number of Life Science sections rather than an increase. The lack of science laboratory rooms and an adequate science building have made the addition of courses for science majors impossible.

Since Life Science courses were already minimally offered because of a lack of facilities, the enforced section cuts across the disciplines has reduced the number of offerings to the point that some courses are filling in the first few days of priority registration, and no spaces are left for those students with high unit completion who register the first day of general registration. Needless to say, this has created a difficult and discriminatory situation for those students needing to meet a program prerequisite to enter a specialized program or transfer to another college.

Riverside City College has completed a new science building with 10 new life science labs, new equipment and computers. Norco has built 2 additional life science labs and has remodeled the chemistry and physics labs since the 2008 program review. Moreno Valley still has no definite plans for building science labs or an adequate science building. The plans that were developed to modify the existing building and add additional labs were scrapped when funds were utilized elsewhere.

As a college with a Health Science emphasis, as stated in the MVC mission, it is imperative that the College place a priority on strengthening and increasing the science department first as the sciences are the foundation for the mission of the College.

## **C. Data Analysis and Environmental Scan**

The enrollment efficiencies for science courses remain high and this is expected to be a lasting trend. The majority of life science courses offered are necessary for acceptance to Nursing and Physician Assistant programs, as well as other medical fields such as pharmacy and medical school. Still other courses are required for successful transfer to universities.

We continue to observe low success rates in various Anatomy and Microbiology courses. All sections that are offered fill quickly and have long waitlists. These courses have been historically challenging to our students, and this is reflected in the high attrition rates as compared to some of our other Life Science courses.

The Survey of Human Anatomy and Physiology, AMY-10, course shows the lowest retentions and success rates. Discussions are ongoing among instructors and include the need for SI implementation and greater tutoring opportunities as part of the plan to help curb this trend. Discussions among instructors also include the need for improvement to computers in the lab. Educational software programs that may be beneficial to this group of students are not currently an option as our computers are inadequate and crash when running specific software.

Other trends show that courses taught during summer and winter, such as BIO-1 and HES-1 have better retention and corresponding success rates. This may suggest that courses with smaller caps may provide better learning opportunities. One reason may be greater student and instructor interaction in a condensed schedule with daily meeting opportunities.

An exception is seen in AMY-10 and AMY-2A where students seem challenged by the volume of information in a compact schedule. There does not seem to be a difference in retention and success rates between sections taught during shorter winter and summer sessions when compared with those taught in a regular, 16-week semester. A recent study of students who have taken AMY-2A dating from Fall 2007 to Fall 2011, shows those students who successfully completed BIO-1 had better grades and showed increased success rates compared to students without BIO-1 experience. Therefore, the introductory biology course (BIO-1) has been established as the pre-requisite for AMY-2A. This will likely increase the demand of BIO-1 sections, but should increase the retention and success rates of AMY-2A and AMY-2B. This request is going through the curriculum process in fall 2012.

Data from 2008-2012 years indicates that HES has a high overall fill rate (average 103%), retention averaging to 91%, and success rate around 72.12 %. The Health Science Program (HES-1 course) has historically high and stable efficiency (average 1,136.79), which is significantly higher than the state recommended efficiency of 525, indicating that the class sizes have increased significantly as fewer sections have been offered.

This observed significant change includes the number of students on wait lists that exceeds the capacity of the class, for example the class of 40 students has 40 students on a wait list. The wait lists do not accept more students, which prevents us from determining the total number of students who are trying to register for the class.

The goal of Health Science at MVC is to offer a sufficient number of sections for HES-1 to fulfill the demand, especially during the most popular hours, so the waitlists are decreased or eliminated. Growth of student numbers at MVC should be parallel to the increased number of HES-1 sections being offered, since HES-1 fulfills a general education requirement. However, because of section cuts, total student enrollment has been falling from the 2009-2010 high levels. Students also have other course options to fulfill the additional degree requirements for the A.A. and the CSU GE Lifelong Learning and Self-Development area requirements.

<u>Year</u>	<u>Course</u>	<u>ResFTE</u>	<u>WSCH</u>	<u>Efficiency</u>	<u># sections</u>	<u>Fill Rate {%}</u>	<u>Census</u>
Fall 2009	<b>BIO 17</b>	6.59	219.6	549	1.00	107%	
Fall 2009	<b>HES-1</b>	<u>40.45</u>	<u>1,321.26</u>	<u>1,187.65</u>	5.00	97%	36
Win2010		<u>19.95</u>	<u>642.70</u>	<u>1,057.94</u>	3.00	144%	
Spr10		<u>58.97</u>	<u>1,921.50</u>	<u>1,011.32</u>	8.00	99%	
Sum10		<u>17.28</u>	<u>559.88</u>	<u>1,119.76</u>	2.00	106%	
Fall2010		<u>49.28</u>	<u>1,598.00</u>	<u>1,229.23</u>	6.00	115%	
Win2011		18.31	589.51	1,179.02	2.00	90%	
Spr11		60.63	1,963.16	934.84	9.00	101%	
Sum11		10.27	337.29	1,124.30	1.00	102%	
Fall11		41.22	1,338.22	1,216.56	4.00	103%	



Win 12						1.00		109%	
Spr12						9.00		104%	
Sum12						1.00			
				Average: 1,136.79				Average: 103.2%	
Fall2009	<b>AMY-10</b>	8.75	281.82	704.55		2.00		101%	
Win2010		4.73	152.39	761.95		1.00		105%	
Spr10		10.00	322.08	805.20		2.00		94%	
Sum10		5.35	172.27	861.35		1.00			
Fall2010		18.05	584.80	1,169.60		2.00			
Win2011		5.04	162.27	811.35		1.00		114%	
Spr11		22.38	720.80	1,029.7		3.00		101%	
Sum11		7.46	240.16	1,200.80		1.00		106%	
Fall11		18.01	583.58	1,167.16		2.00			
Fall2009	<b>AMY-2A</b>	44.54	1,434.72	705.61		4.00		108%	
Win2010		9.60	309.20	579.79		1.00			
Spr10		31.52	1,034.56	704.21		3.00			

Sum10		7.81	251.48	471.55		1.00		93%	
Fall2010		40.98	1,320.00	671.21		4.00		110%	
Win2011		9.24	297.45	557.75		1.00		106%	
Spr11		28.69	932.80	636.03		3.00		110%	
Sum11		8.69	279.95	524.94		1.00		107%	
Fall11		42.42	1,366.28	694.74		4.00		114%	
Fall2009	<b>AMY-2B</b>	22.12	712.48	759.33		2.00		107%	
Spr10		33.33	1,083.36	736.18		3.00		116%	
Fall2010		19.13	616.00	660.02		2.00		103%	
Spr11		26.51	853.60	595.55		3.00		101%	
Fall11		19.67	642.40	688.31		2.00		106%	
Fall2009	<b>MIC</b>	29.32	950.85	633.90		5.00		110%	
Spr10		27.72	893.04	595.36					
Fall2010		27.03	877.2	584.8		5.00		108%	
Spr11		26.62	870.4	580.27		5.00		105%	

Fall2009	<b>Bio-1</b>	33.86	1,098	2,694.48		11.00		107%	
Win2010		5.55	178.90	447.25		1.00		113%	
Spr10		46.37	1,493.28	709.40				97%	
Sum10		6.17	198.77	496.93		1.00		100%	
Fall2010		57.57	1,875.15	785.30		12.00		116%	
Win2011		5.24	175.25	438.13		1.00		113%	
Spr11		50.85	1,652.40	718.43		11.00		101%	
Sum11		4.84	155.78	389.45		1.00		80%	
Fall11		46.44	1,509.20	718.67		9.00		105%	
Fall2009	<b>Bio-11</b>	6.89	230.58	494.06		1.00		96%	
Spr10		6.89	239.12	512.36		1.00		100%	
Fall2010		6.09	210	449.97		1.00		83%	
Spr11		7.2	240	514.25		1.00		86%	
Fall11		5.43	174.8	374.54		1.00		77%	

## **D. Programs and Curriculum**

The disciplines within the Life Sciences offer a small variety of courses, designed for the non-science major, the science major, the pre-professional student, as well as providing transfer programs paralleling the first two years of a four-year college/university curriculum. The content of the Life Science courses require students to assimilate and master abstract concepts and theories. Courses offered focus on students learning the scientific method and applying the scientific method to solve problems, analyze data, develop critical thinking skills, form logical conclusions, and recognize the limitations of science. These courses give students background information requiring them to apply their knowledge to solve problems in the classroom, or to come up with answers to questions. By learning to think critically, students can apply the relevance of biological principles to their daily lives, to make informed decisions regarding personal choices, government and environmental issues, and toward their own health. Courses offered also facilitate the development of cultural and social awareness, critical and independent thought, and self-reliance.

Name of Course / Program

Date CORs Last Revised

### **Life Sciences List of COR's at Moreno Valley College**

<b>Course</b>	<b>Transfer</b>	<b>AA/AS</b>	<b>Cross-listed</b>	<b>Status</b>	<b>Sem. Offered</b>	<b>COR Last Reviewed</b>	<b>Curriculum Reviewed</b>	<b>Last Assessed</b>	<b>Assmt. Type</b>
AMY-2A	X	X	n/a	Active	F, W, S, Su	Spring 2012	Fall 2012	Spring 2012	Direct
AMY-2B	X	X	n/a	Active	F, S	Spring 2012	Fall 2012	Spring 2012	Direct
AMY-10	X	X	n/a	Active	F, W, S, Su	Spring 2012	Fall 2012	Spring 2012	Direct
BIO-1	X	X	n/a	Active	F, W, S, Su	Spring 2012	Fall 2012	Spring 2012	Direct
BIO-11	X	X	n/a	Active	F, S	Spring 2012	Fall 2012	Spring 2012	Direct
BIO-12	X	X	n/a	Non-Active	Never	Spring 2012	Fall 2012	Not offered	n/a
BIO-17	X	X	n/a	Active	F	Spring 2012	Fall 2012	Fall 2012	Direct
BIO-30	X	X	n/a	Active	S	Spring 2012	Fall 2012	Not assessed	n/a
BIO-31A	X	X	n/a	Non-Active	Never	Spring 2012	Fall 2012	Not offered	n/a
BIO-31B	X	X	n/a	Non-Active	Never	Spring 2012	Fall 2012	Not offered	n/a

BIO-34	X	X	n/a	Active	F, S	Spring 2012	Fall 2012	Spring 2012	Direct
HES-1	X	X	n/a	Active	F, W, S, Su	Spring 2012	Fall 2012	Spring 2012	Direct
MIC-1	X	X	n/a	Active	F, S	Spring 2012	Fall 2012	Spring 2012	Direct

The above courses all have updated COR's as completed by the Life Sciences discipline in the spring of 2012. At Moreno Valley College, we have been routinely assessing all of the courses that we offer during regularly scheduled Fall and Spring semesters. Courses that have not been assessed have either not been taught, or have only been taught by part-time faculty only.

#### **Life Sciences List of Courses That Need to be Included in the MVC Catalog**

<b>Course</b>	<b>Course Title</b>	<b>Transfer</b>	<b>AA/AS</b>
BIO-2A	General Zoology I, Invertebrates	X	X
BIO-2B	General Zoology II, Vertebrates	X	X
BIO-3	Field Botany	X	X
BIO-5	General Botany	X	X
BIO-6	Introduction to Zoology	X	X
BIO-7	Marine Biology	X	X
BIO-8	Principles of Ecology	X	X
BIO-9	Introduction to the Natural History of Southern California	X	X
BIO-10	Principles of Life Science	X	X
BIO-14	Soil Science and Management	X	X
BIO-15	Soil Science and Management Laboratory	X	X
BIO-36	Environmental Science	X	X

The listed courses need to be included in the Moreno Valley College Catalog so that we can be a fully operational department. Our students take these courses at other colleges since Moreno Valley college does not currently offer these courses. At this time, we lack laboratory space, funds, and faculty to add this curriculum to our course offerings. There are also courses that are listed in our existing curriculum in which we don't have the resources to teach.

## **E. Student Learning Outcomes Assessment**

Over the last four years we have engaged in ongoing assessments of our Life Science courses. Data collected from one of the assessment coordinators shows that 100% of the Life Science courses have been assessed at least once.

Currently the Mathematic, Sciences, and Kinesiology Department (MSK) is in assessment cycle 3, as we do have an ongoing assessment regimen for all of our courses. Our direct assessment approach consists of pre- and post-testing where students are given a pre-test on or around the first day of classes and then are given the same test when the course ends. With these tests we collect descriptive statistics and use this data to determine whether or not students are learning the fundamental ideas that we are presenting in our courses.

Below is a chart showing a list of the Life Science courses and the semesters/sessions for which they have been assessed. An X in the row next to the course title means that this course has been assessed. As shown in the chart, all of the Life Science courses have been assessed at least twice since the Spring of 2011, and several courses have been assessed three or more times. In addition, Human Biology course was assessed the first time in fall of 2012.

<u>Title</u>	<u>Course</u>	Spr 11	Sum11	Fall 11	Spr 12	Sum 12
<b><u>Anatomy &amp; Physiology 1</u></b>	<u>AMY-2A</u>	<u>X</u>				<u>X</u>
<b><u>Anatomy &amp; Physiology 2</u></b>	<u>AMY-2B</u>	<u>X</u>		<u>X</u>		<u>X</u>
<b><u>Survey of Human Anatomy and Physiology</u></b>	<u>AMY-10</u>				<u>X</u>	<u>X</u>
<b><u>General Biology</u></b>	<u>BIO-1</u>	<u>X</u>			<u>X</u>	<u>X</u>
<b><u>Intro. to Molecular and Cellular</u></b>	<u>BIO-11</u>	<u>X</u>			<u>X</u>	<u>X</u>
<b><u>Human Genetics</u></b>	<u>BIO-34</u>	<u>X</u>		<u>X</u>		<u>X</u>
<b><u>Health Science</u></b>	<u>HES-1</u>			<u>X</u>	<u>X</u>	<u>X</u>

In order to improve teaching and learning in our courses we use descriptive statistics. Using the data collected from the pre and post tests, we examine those SLO- based concepts that students seemed to have scored lower on and implement ways to improve the lecture and/or lab instruction on these topics. Examples of strategies employed to make improvements include modified lectures, group activities as part of lecture and lab exercises and homework assignments that focus on these challenging concepts/topics

## **F. Collaboration with Other Units Including Instructional, Student Services or Administrative Units (Internal)**

As indicated in the “B” section: History, Life Sciences faculty has collaborated with the STEM program at MVC. The STEM program at MVC is a long-term partner to the Life Science faculty for other initiatives as well. These activities include development of the special projects to provide our students with an opportunity to gain lab experience, either locally at MVC or with other, external institutions. We currently have one student worker who is acquiring valuable laboratory skills under the guidance of instructors.

The faculty have successfully utilized supplemental instructors (SIs) in a wide variety of courses including Anatomy and Physiology I, Anatomy and Physiology II, Microbiology, Introduction to Molecular and Cellular Biology, Survey of Human Anatomy and Physiology, General Biology, and Human Genetics. Initial data indicates the higher success rate for our students when additional instruction is available from their peers. More data will be collected to fully evaluate the SI effect on student learning in these courses. For now, professors actively search for outstanding students with leadership qualities to be recruited as SIs and potential laboratory assistants.

The MVC life science faculty is also involved in other initiatives and activities that are essential to our college such as College Seminars, Science Fair and sport clubs.

## **G. Outreach Activities**

The life science faculty is constantly searching for the possible placement of our MVC students for internships with other local educational institutions and business/industry. These outreach activities, often supported by the STEM internal grants, include research facilities such as the University of California in Riverside (UCR) and The Citrus Research Board of Riverside. These partnerships have provided valuable internship opportunities for advanced BIO-11 student seeking careers in various research fields. Four students placed in the UCR biology labs in the fall of 2009 and spring of 2010, successfully transferred and are currently continuing their further education at UC Berkeley, UC San Diego and UCR. Our department provided the internships at the Citrus Research Board to four of MVC students thanks to the productive collaboration with a Life Sciences faculty member.

The Life Science department is also welcoming UCR students to gain their teaching experience at our college. Faculty has served as mentors for Ph.D. students by providing them with an access to our classes, and also by allowing them to actively participate in a lab or lecture. To date, four UCR graduates have been trained by MVC biology faculty under this program.

Sharing the expertise with UCR students represents another form of outreach activities practiced by the life science faculty. One of our members has served as a Biology instructor for the FastStart program at UCR since 2007 until the present. FastStart is an intensive summer program (Sunday, July 29, 2012 through Friday, August 30, 2012) designed for incoming UCR freshmen (primarily disadvantaged students) who aspire to medical and other science based careers. The goal is to get these students off to a strong start in their critical science curriculum and to provide the academic and social support needed to help these students persist and succeed in their higher education goals.

Outreach activities also provide an opportunity to develop further initiatives. A Fulbright Scholarship served as a platform to adopt a Field Biology course (BIO-31 A) as a two-week study abroad class in Katalapi Park in Southern Chile that is projected to be offered in Winter 2013 or 2014. This course will enrich our curriculum by addressing ecosystem and environmental issues such as interactions between organisms and their environment, including human impact. Instruction will be delivered using inquiry-based field activities, data collections and analysis.

## **H. Long Term Major Resource Planning**

Significant long term resource needs that need to be addressed by Moreno Valley College in the next four years:

### **Facilities at Moreno Valley College are inadequate to meet current needs.**

1. The AMY lab classroom is being utilized continuously, with no time allotted for instructors to set up the room for practicums or other lab activities. Students are being turned away due to lack of Anatomy lab space to accommodate them. Another Anatomy laboratory classroom desperately needs to be constructed.



2. A larger Microbiology laboratory is required to address fire safety issues repeatedly documented in Annual Program Reviews and provide for future growth. Inadequate ventilation of the autoclave in the microbiology prep room still has not been addressed. A plan to correct the situation in the near future involves remodeling the basement of the existing Science and Technology building, which would add an additional Anatomy and Physiology lab with prep room and a larger Microbiology laboratory/Prep Room with a properly vented autoclave.
3. In 2009, the science faculty at Moreno Valley College, working with an architect, developed a conceptual plan for the remodel. This project was delayed indefinitely due to a change in funding allocation.
4. There is also an urgent need for more prep room space and storage space for all of the disciplines as well as for work space for all lab techs. The available space is inadequate to the needs of the department, and significantly less than what other RCCD colleges have for Life Sciences.
5. Resources are inadequate to meet the needs of students and faculty. Equipment will need to be purchased for a second Anatomy lab and several other science courses, including a classroom set of microscopes, models and laptop computers needed to utilize previously purchased Physiology software. The equipment in the existing labs is old and needs to be replaced. For example, the microscopes in all three labs purchased 15 years ago can no longer be repaired due to unavailable parts. The visualizer in the anatomy lab is old and poor quality so cannot be utilized to display specimens on the screen as intended.
6. All laboratory classes require an annual 5% increase in base budget to accommodate the 5% inflationary increase in supply costs for purchases from scientific supply companies. Anatomy & Physiology and Biology need to have a budget increase to permanently reflect an increase in sections offered. Additionally, Moreno Valley College does not have a budgetary process that is linked to the current program review process making the future appear quite grim.
7. Improvement or development of Moreno Valley College STEM Center – Considering the 21st Century economy, studies and careers in science, technology, engineering, and mathematics are critical. Each educational institution should provide means to support this path. The overall goal of the STEM Center at a college is to be a catalyst for STEM education. The existing MVC STEM Center because of its size, location, etc. is underdeveloped as compared to STEM Centers at other community colleges. There is a growing need to have a Center at MVC that serves as a vital resource and source of support for STEM students, a Center that involves both professional development experiences for educators and STEM enrichment experiences for students. It is envisioned that the MVC STEM Center will become a significant force for preparing MVC students for careers in math and science by improving student achievement outcomes in those areas and by providing outside of classroom enriching learning environment.

**Summary:**

Growth of Life Science course offerings and programs requiring Life Sciences courses as part of the program or prerequisites to the program is impossible without addressing facility

and equipment needs of the disciplines within Life Sciences. We have been limited in our offerings for science majors. We currently offer courses to provide prerequisites for the

Dental Hygiene, and Physician Assistant programs and are exhausting all of our resources on such courses. We will not be able to offer courses necessary for science majors to transfer until more science labs are built. We have been asking for a science building or, at the least, more science labs for over a decade. The District should be aware that, in contrast, Riverside City College has a new science building with 10 Life Science labs, including all new equipment and computers, and Norco College has built a new Anatomy lab and Microbiology lab and is currently renovating their Physics and Chemistry labs. The Norco lab also received 64 new microscopes. The RCCD resources need to be directed toward supporting the College with the Life Sciences mission.

Moreno Valley College has no immediate plans to expand the science facilities even though MVC is designated as an “allied health science” college. We support the idea of having an allied health campus at MVC but feel it is foolish to believe that students will not be going elsewhere for their science courses if we cannot accommodate them. No more allied health programs should be added to our college without first building the foundation for those programs by constructing an adequate science facility.

The development and implementation of plans to increase the useable space for Life Sciences is imperative in order to meet current and future demand and needs to be addressed immediately

## **I. Summary**

- 1) Secure more laboratory space in order to fulfill our mission and to keep up with student demand for majors, and allied health prerequisite course needs.
- 2) Increase the diversity of our course offerings in the life sciences so that we are meeting the global student population needs and not strictly the prerequisite needs of future bio majors and allied health students.
- 3) Secure financial resources in order to replace aging equipment such as microscopes essential in microbiology, anatomy and all biology courses.
- 4) Update our technology equipment in the labs.

*(see part H. for more detail on all aspects of part. I.)*

## **K. Recommendations to the Program Review Committee**

(none at this time)