

Mt. San Antonio College Educational Master Plan 2008-2009 2015 Addendum: The Farm

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Mt. San Antonio College Educational Master Plan 2008-2009
2015 Addendum: The Farm

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Purpose

This addendum to the *Mt. San Antonio College Educational Master Plan 2008 – 2009* focuses exclusively on the instructional programs housed on the campus in the area collectively referred to as the Farm.

This document presents an analysis of the instructional units on two levels: (a) collectively, as they comprise the Agricultural Sciences Department as a whole and (b) individually, for each instructional unit. The evaluation of enrollment and labor market data provides the basis for projecting each unit’s potential for growth and the implications of those projections for improvements to the facilities on the Farm. This document concludes with four department-wide recommendations designed to contribute to the achievement of the growth projections.

This document was prepared in 2014 - 2015. In fall the Agricultural Sciences faculty, staff, and administrators participated in several meetings to critique drafts of the descriptions, analyze data, and develop plans for the future. In spring 2015 Agricultural Sciences faculty, staff, and administrators met over the course of the semester to fine-tune the descriptions and data analyses, and to develop department-wide recommendations.

Chapter 1. Agricultural Sciences Department

Description
Enrollment Data
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Chapter 1. Agricultural Sciences Department

Description

Agricultural Sciences is a broad term used to describe the multi-faceted study of farming. This field includes both the theoretical foundations and applied practices of the sciences that sustain and improve the production of animals and plants for human use.

At Mt. San Antonio College, the Agricultural Sciences Department offers coursework, laboratory work and practical, hands-on experience in animal science, horticulture, and veterinary technology.

All areas of specialization in the Agricultural Sciences Department collaboratively rely on the area of the College referred to on the campus map as “The Farm” as a living laboratory to provide demonstrations and hands-on experiences. These facilities offer students a unique opportunity for real-world experiences in the production, care, and marketing of farm animals and plants. Most of the 110 acres are dedicated to the production of feed for the animals raised by the College.

Based on the 2014 - 2015 College catalog, following completion of required courses students may earn one of nine associate degrees, one of eleven certificates of achievement, or one of three skills certificates.

Associate Degrees	Certificates of Achievement (18 units)	Skills Certificates (fewer than 18 units)
Agri-Technology	Horse Ranch Management – Level II	Animal Science Fundamentals
Equipment Technology	Interior Landscaping	Horse Ranch Management – Level I
Horse Ranch Management	Landscape/Park Maintenance	Livestock Production Management
Integrated Pest Management	Landscape Design – Level I	
Livestock Management	Landscape Equipment Technology	
Ornamental Horticulture	Landscape Irrigation	
Park/Sports Turf Management	Nursery Management	
Pet Science	Park Management	
Registered Veterinary Technology	Pet Science	
	Sports Turf Management	
	Tree Care and Maintenance	

Enrollment Data

The method for scheduling sections of work experience courses changed between 2009 - 2010 and 2013 - 2014. Therefore, to more clearly depict programmatic strengths and weaknesses, the enrollment data in the following table exclude sections of work experience. Work experience data

are included in the descriptions of the three units that offer work experience courses: Agriculture: General Subjects (AGAG), Agriculture: Animal Health Technology (AGHE), and Agriculture: Ornamental Horticulture (AGOR).

Agricultural Sciences Department

All courses other than work experience	2009 – 2010 Academic Year	2013 – 2014 Academic Year	% Change
Enrollment			
Total Department Enrollment	3,248	3,467	6.7%
Total Department Number of Sections	99	115	16.2%
Departmental Average Enrollment per Section	32.8	30.1	(-8.1%)
Productivity			
Fill Rate at Census	1.2	1.1	(-8.3%)
Total Department FTES	466.9	476.5	2.1%
Total Department FTEF	26.2	30.0	14.5%
Departmental WSCH/FTEF	562.7	493.2	(-12.3%)
Student Outcome			
Retention Rate	93%	94%	1.1%

Refer to Appendix A for a glossary of the terms and abbreviations presented in this table.

Enrollment: Strong

Over the past five years, enrollment in the Agricultural Sciences Department increased 6.7% due in part to a 16.2% increase in the number of sections offered.

The Departmental average enrollment per section decreased slightly between 2009 - 2010 and 2013 - 2014. A significant proportion of courses in this department are either laboratory or lecture/laboratory courses with enrollment maximums of 16 - 24 students per section. Given the preponderance of courses with enrollment caps of 16 - 24 students per section, a Departmental average enrollment of 30 students per section in both years in this comparison exceeds enrollment expectations and shows a pattern of balancing higher-enrolled lecture sections with lower-enrolled laboratory sections.

Productivity: Needs Attention

The Department's courses filled to slightly over capacity in both years of this comparison.

The Departmental FTEF increased because it offered 16 additional sections. However the increase in enrollment did not sufficiently raise WSCH, which caused the overall productivity (WSCH/FTEF) to decline by 12.3%.

Two reasons for the decline in productivity are:

1. The classrooms in which Agricultural Sciences Department courses were taught in 2009 - 2010 held more students than the classrooms in which these courses are now taught. As a result, the classroom-size factor is responsible in part for the reduction in productivity.

The lower productivity in 2013 - 2014 of 493.2 will be the revised baseline for this Department unless higher-enrolled courses are taught in classrooms that accommodate 45 or more students.

2. Ornamental Horticulture developed and implemented a course rotation system to ensure that students had access to all courses required for specialized certificates. The consequence of the course rotation plan has been that the total enrollment is distributed across a larger number of sections, which decreased productivity.

This reason for a reduction in productivity may or may not continue. Ornamental Horticulture will assess the effectiveness of the course rotation system in increasing the rate of student completion of certificates and will adjust the plan as needed based on those results.

Student Outcome: Strong

The Departmental retention rate is above 90% in both years of this comparison, which is comparable to the 90% statewide retention rate for Agricultural Sciences courses.

(<http://datamart.cccco.edu>)

Labor Market Data

Programs in the Agricultural Sciences Department prepare students for a range of occupations in both the business of and practical application of animal sciences, horticulture, and veterinary technology. Labor market data in this document project the number of occupations, the median hourly earnings, and the minimal entry level education for employers in four counties: Los Angeles, Riverside, San Bernardino, and Orange. In recent years this four-county region has shifted from land devoted to farms and orchards to land dedicated to housing and industrial use.

Despite this multi-county shift in land use, the Agricultural Sciences Department prepares students for many occupations projected to increase in number of jobs over the coming five years as shown in the following table.

Agriculture: Animal Health Technology								
SOC	Occupation	2013 Jobs (actual)	2018 Jobs (projected)	2013 - 2018 Change*	2013-2018 Openings**	Annual Openings	Median Hourly Earnings	Minimal Entry Level Education
29-2056	Veterinary Technologists and Technicians	3,317	3,947	630	821	164	\$16.27	AA/AS
Agriculture: Livestock Production								
19-4011	Agricultural and Food Science Technicians	1,163	1,203	40	261	52	\$13.46	AA/AS
39-2011	Animal Trainers	1,748	1,825	77	486	97	\$14.13	HS Diploma
13-1021	Buyers and Purchasing Agents, Farm Products	569	580	11	84	17	\$31.73	HS Diploma
Agriculture: Ornamental Horticulture								
37-1012	First-line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	8,198	8,642	444	945	189	\$17.09	HS Diploma
37-2021	Pest Control Workers	4,800	5,055	255	970	194	\$13.06	HS Diploma
37-3012	Pesticide Handlers, Sprayers, and Applicators, Vegetation	969	1,064	95	228	46	\$14.52	HS Diploma
37-3013	Tree Trimmers and Pruners	3,891	4,220	329	848	170	\$14.37	HS Diploma
45-4011	Forest and Conservation Workers	453	464	11	56	11	\$9.79	HS Diploma
49-3041	Farm Equipt Mechanics and Service Technicians	441	453	12	87	17	\$19.54	HS Diploma
49-3053	Outdoor Power Equipt and Other Small Engine Mechanics	612	639	27	110	22	\$15.62	HS Diploma
Agriculture: Pet Science								
39-2011	Animal Trainers	1,748	1,825	77	486	97	\$14.13	HS Diploma
33-9011	Animal Control Workers	645	668	23	98	20	\$22.66	HS Diploma

Source: QCEW Employees, Non-QCEW Employees and Self-Employed – EMSI 2014.3 Class of Worker
 Data from four counties: Los Angeles County, Orange County, San Bernardino County, and Riverside County

* Change means job growth or job loss

** Openings – new jobs created or job openings due to separations

Although most of the occupations in these labor market data indicate that a high school diploma is the minimal entry-level education, applicants who have earned a community college certificate or associate degree have a distinct advantage in being hired and promoted compared to applicants without evidence of postsecondary education.

The labor market data also project that the number of jobs in some agricultural occupations will decline over the next five years as shown in the following table.

SOC	Occupation	2013 Jobs (actual)	2018 Jobs (projected)	2013 - 2018 Change*	2013-2018 Openings* *	Annual Openings	Median Hourly Earnings	Minimal Entry Level Education
11-9013	Farmers, Ranchers, and Other Agricultural Managers	2,841	1,752	(1,089)	169	34	\$19.73	HS Diploma
19-4093	Forest and Conservation Technicians	1,221	1,211	(10)	245	49	\$18.44	AA/AS
45-1011	First-Line Supervisors of Farming, Fishing, and Forestry Workers	897	778	(119)	87	17	\$20.62	HS Diploma
45-2021	Animal Breeders	58	43	(15)	<10	--	\$20.68	HS Diploma

Source: QCEW Employees, Non-QCEW Employees and Self-Employed – EMSI 2014.3 Class of Worker
 Data from four counties: Los Angeles County, Orange County, San Bernardino County, and Riverside County

* Change means job growth or job loss

** Openings – new jobs created or job openings due to separations

Growth Projection

The Agricultural Sciences Department offerings are currently strong and have the potential to grow.

These instructional programs offer students unique opportunities for hands-on experiences with a variety of farm animals combined with instruction in the scientific foundations of agricultural practices. In this Departmental analysis of enrollment data, FTES earned, and student retention meet or exceed expectations. The decline in productivity is explained by two factors: movement of Agricultural Sciences classes to classrooms with lower student capacity and implementation of a course rotation system intended to increase the rates of students completing certificates in Ornamental Horticulture.

Based on labor market data, students are being prepared for a wide range of agricultural sciences occupations that are likely to expand.

Challenges and Solutions

Several Department-wide challenges were identified during dialogues that took place as the Agricultural Sciences Department faculty, staff, and administrators developed this *Mt. San Antonio College Educational Master Plan 2008 - 2009, 2015 Addendum: The Farm*. The four primary

challenges and preliminary ideas for addressing those challenges are summarized below.

1. To Remain Relevant

This career technical education program is challenged, as are all career technical education programs, to keep pace with innovations and changing standards in the field.

Matching the trends in the field of agriculture, the Mt. San Antonio College curriculum in 2015 is evolving toward a greater focus on the environment. Specific issues being addressed through new or revised courses and new or revised certificates are:

- Drought and water issues.
- Perceptions about animal care.
- Pesticides and fertilizer regulations.
- Organic production and sustainable agriculture/horticulture.
- Urban agriculture.
- Land use issues.

Sources that describe the status of these challenges are referenced in Appendix C.

The Agricultural Sciences Department intends to review all course content and certificates to ensure that the curriculum is aligned with the current national focus on the environment.

2. To Improve Marketing

In its evaluation of its effectiveness, the Department determined that an area in need of improvement was its communication with students, the public, and colleague educators about the opportunities offered by the Department.

To facilitate communication and improve marketing, in the coming year the Agricultural Sciences Department plans to totally revise the titles for the Department's curriculum, degrees, and certificates. After this revision, instead of the current six areas of specialization, the Agricultural Sciences Department will have four: Agricultural Business and Technology, Animal Science, Horticulture Science, and Veterinary Technology. This proposal is described in Appendix B.

3. To Increase Student Completion of Degrees and Certificates

In response to the national, state, and local emphasis on student completion of degrees and certificates, the Agricultural Sciences Department is committed to student success and fostering a greater rate of student completion of degrees and certificates.

The Department has taken and is in the process of taking an impressive set of steps to address this challenge:

- The Department is reviewing and revising all certificates and degrees to align with trends in the field and transfer institutions. These changes will improve communication with students and counselors.
- Ornamental Horticulture has revised all certificates to require 18 units.
- Two associate degrees for transfer will be developed by the end of fall 2015.

4. To Increase Student Enrollment

Based on the trends in the enrollment data and the labor market projections for Los Angeles, Riverside, San Bernardino, and Orange Counties, the Agricultural Sciences Department has the potential to increase enrollment and to thereby contribute to the College's sustainability and growth.

The steps that the Department intends to take to increase enrollment are:

- Maintain/expand the relevance of its curriculum.
- Improve/expand marketing.
- Expand the local communities' awareness and use of the Farm.

The Department's strategies for expanding the local communities' awareness and use of the Farm are to:

- Complete the Agricultural Literacy Trail to increase the number of K-12 students and teachers who visit the Farm.
- Build demonstration gardens to provide a resource for community members and businesses.
- Develop a rodeo team to engage students with extra-curricular activities and bring additional members of the public onto campus.

Chapter 2. Instructional Programs

AGAG	Agriculture: General Subjects
AGAN	Agriculture: Animal Science – General
AGHE	Agriculture: Animal Health Technology
AGLI	Agriculture: Livestock Production
AGOR	Agriculture: Ornamental Horticulture
AGPE	Agriculture: Pet Science

AGAG AGRICULTURE: GENERAL SUBJECTS

The AGAG Agriculture: General Subjects courses provide core curriculum to prepare students to complete programs of study in various disciplines of the Agricultural Sciences Department.

This area includes four courses. One of these, *Food Production, Land Use and Politics: A Global Perspective*, is a three-unit foundation course that transfers to both CSU and UC, and furthermore, is an elective that fulfills Area D in the general education requirements. This course is generally offered once each semester. The other lecture course in AGAG is *Agricultural Calculations*, which is generally offered once each academic year. The third course is work experience and several sections are offered each semester. The fourth course is special projects course that transfers to CSU but was not offered in either academic year reviewed in this document.

Courses in this area are required for the following associate degree majors:

- Agri-Technology.
- Equipment Technology.
- Livestock Management.
- Ornamental Horticulture.

Enrollment Data

AGAG courses other than work experience		2009 – 2010 Academic Year	2013 – 2014 Academic Year	% Change
Enrollment				
	Enrollment	98	110	12.2%
	Number of Sections	3	3	0%
	Average Enrollment per Section	32.7	36.7	12.2%
Productivity				
	Fill Rate at Census	0.9	1.1	22.2%
	AGAG FTES	10.4	11.5	11.1%
	AGAG FTEF	0.6	0.6	0%
	WSCH/FTEF	561	623	11.1%
Student Outcome				
	Retention Rate	94%	90%	(-4.3%)

Refer to Appendix A for a glossary of the terms and abbreviations presented in this table.

These data reflect two courses: *Food Production, Land Use and Politics: A Global Perspective* and *Agricultural Calculations*.

Enrollment: Meets Expectations

Although the number of sections remained the same in this comparison, student enrollment increased, reaching an average of 36.7 students per section. The average enrollment per section is slightly above the maximum enrollment of 35 students per section.

Productivity: Meets Expectations

The fill rate at census increased 22% between 2009 - 2010 and 2013 - 2014, resulting in a parallel increase in the FTES. Both enrollment and FTES increased while the FTEF remained the same, which increased productivity. The statewide standard of 535 for WSCH/FTEF is applicable to these AGAG lecture courses and AGAG courses exceed that standard in both years in this comparison.

Student Outcome: Needs Improvement

Student retention decreased. Efforts are being made in the current academic year to address this weakness.

Comparison of AGAG with Agricultural Sciences Department Totals

	AGAG		Agricultural Sciences Total		AGAG % of Total	
	2009 – 2010 Academic Year	2013 – 2014 Academic Year	2009 – 2010 Academic Year	2013 – 2014 Academic Year	2009 – 2010 Academic Year	2013 – 2014 Academic Year
Enrollment	98	110	3,248	3,467	3.0%	3.2%
FTES	10.4	11.5	466.9	476.5	2.2%	2.4%
Number of Sections	3	3	99	115	3.0%	2.6%

Excludes work experience

AGAG courses contribute about 3% of the total Agricultural Sciences Department enrollment and a little over 2% of the total departmental FTES. Over the past five years, the proportion of enrollment and FTES in the Department totals accounted for by AGAG courses increased slightly.

AGAG courses most recently account for a lower proportion of total Agricultural Sciences Department sections because the number of AGAG sections remained the same while the total number of sections offered by the Department increased.

AGAG Work experience only		2009 – 2010 Academic Year	2013 – 2014 Academic Year	% Change
Enrollment				
	Work Experience Enrollment	30	25	(-16.7%)
Productivity				
	AGAG Work Experience FTES	2.2	0.9	(-59.1%)
	DSCH	186.0	145.8	(-21.6%)
Student Outcome				
	Retention Rate	90%	84%	(-6.7%)

Refer to Appendix A for a glossary of the terms and abbreviations presented in this table.

Enrollment: Needs Improvement

Enrollment in AGAG work experience was lower in 2013 - 2014 compared to 2009 - 2010. Changes in College requirements for students to participate in work experience courses and to repeat work experience courses changed between 2009 - 2010 and 2013 - 2014. The net impact of these changes has been a reduction in enrollment in work experience courses.

Productivity: Needs Improvement

FTES generated by the AGAG work experience course is small. However, due to the decline in enrollment, AGAG FTES earned by work experience decreased by half from 2009 - 2010 and 2013 - 2014.

Student Outcome: Needs Improvement

Parallel to the pattern in the two AGAG lecture courses, student retention in the work experience course decreased. This weakness is being addressed in the current academic year by enforcing prerequisites for enrollment in work experience courses.

Labor Market Data

AGAG courses support majors in the Agricultural Sciences Department. Labor market data for the majors supported by AGAG courses are included in other sections of this document.

Projection: Revision and Growth

In the reorganization of the Agricultural Sciences Department, three of the four courses currently offered under the AGAG course identification will be offered in the Agriculture Business and Technology unit. The fourth course, work experience, will be offered in the Animal Science unit.

The revised Agriculture Business and Technology program is projected to grow, contingent on implementation of the following initiatives:

- Marketing the new Agriculture Business and Technology major.
- Collaborating with the Mathematics Department to revise the agricultural calculations class (currently *AGAG 51 – Agricultural Calculations*) so that it is equivalent to elementary algebra (*MATH 51 – Elementary Algebra*). MATH 51 is a prerequisite for *MATH 71 – Intermediate Algebra*, which is required to demonstrate mathematics competency for an associate degree.

Implications for Facilities

The core AGAG courses are lecture format and these classroom needs are currently satisfied.

AGAN AGRICULTURE: ANIMAL SCIENCE GENERAL

The AGAN Agriculture: Animal Science General courses provide core curriculum for transfer to senior institutions for undergraduate degrees in disciplines related to animal science, while providing students with the fundamental theory, concepts and practical skills for employment in animal agriculture careers.

This area includes four three-unit degree-applicable lecture courses in animal science. Two of these, *Animal Science* and *Animal Nutrition*, transfer to CSU and UC. A third course, *Animal Handling and Restraint*, transfers to CSU.

AGAN courses are support courses for majors in the Agricultural Sciences Department, serving as either requirements or electives for the following associate degree majors, certificates of achievement, and skills certificates.

Associate Degrees	Certificates of Achievement (18 units)	Skills Certificates (fewer than 18 units)
Agri-Technology	Horse Ranch Management – Level II	Animal Science Fundamentals
Horse Ranch Management	Pet Science	Horse Ranch Management – Level I
Livestock Management		
Pet Science		
Registered Veterinary Technology		

Enrollment Data

AGAN		2009 – 2010 Academic Year	2013 – 2014 Academic Year	% Change
Enrollment				
	Enrollment	687	833	21.3%
	Number of Sections	18	22	22.2%
	Average Enrollment per Section	38.2	37.9	(-0.8%)
Productivity				
	Fill Rate at Census	1.2	1.2	0.0%
	AGAN FTES	84.2	100.8	19.7%
	AGAN FTEF	4.1	5.0	22.0%
	WSCH/FTEF	666	623	(-6.5%)
Student Outcome				
	Retention Rate	93%	96%	3.2%

Refer to Appendix A for a glossary of the terms and abbreviations presented in this table.

Enrollment: Strong

Enrollment was strong in all AGAN sections, as reflected by the fact that enrollment in AGAN courses increased in proportion to the increase in the number of sections.

The average enrollment per section remained basically the same in both years of this comparison. The average enrollment in sections of the lecture courses was 44.3 in 2009 - 2010 and 41.6 in 2013 - 2014, both of which are above the maximum enrollment of 35 students per section.

The average enrollment per section in the lecture/laboratory course was 25.8 in 2009 - 2010 and 27.8 in 2013 - 2014, both of which are slightly above the 24 students per section maximum enrollment.

This pattern reflects a balance of higher-enrolled lecture classes with lower-enrolled lecture/laboratory classes.

Productivity: Meets Expectations

The fill rate at census is high, which is also reflected in the average enrollment per section. AGAN FTES increased proportionately to the increase in student enrollment. However, the increase in FTEF reduced the WSCH/FTEF measure of productivity. Even with this decrease in WSCH/FTEF, AGAN courses exceed the state standard of 525 WSCH/FTEF in this comparison.

Student Outcome: Strong

Student retention is high in AGAN courses and improved to above 95% between 2009 - 2010 and 2013 - 2014.

Comparison of AGAN with Agricultural Sciences Department Totals

	AGAN		Agricultural Sciences Total		AGAN % of Total	
	2009 – 2010 Academic Year	2013 – 2014 Academic Year	2009 – 2010 Academic Year	2013 – 2014 Academic Year	2009 – 2010 Academic Year	2013 – 2014 Academic Year
Enrollment	687	833	3,248	3,467	21.2%	24.0%
FTES	84.2	100.8	466.9	476.5	18.0%	21.2%
Number of Sections	18	22	99	115	18.2%	19.1%

Excludes work experience

AGAN courses contribute over 20% of the total Agricultural Sciences Department enrollment and FTES. In this two year comparison the proportion of enrollment, FTES, and number of sections in the Agricultural Sciences Department accounted for by AGAN courses increased, which reflects the growth in AGAN enrollment, FTES, and number of sections offered.

Labor Market Data

AGAN courses support majors in the Agricultural Sciences Department. Labor market data for the majors supported by AGAN courses are included in other sections of this document.

Projection: Revision and Growth

In the reorganization of the Agricultural Sciences Department, the four courses currently offered under the AGAN course identification will be offered in the Animal Science program.

The revised Animal Science program is projected to grow, contingent on implementation of these two plans:

- Revise the introductory Animal Science course (currently *AGAN 1 - Animal Science*) so that it fulfills a general education requirement.
- Develop new opportunities for students to participate in extra-curricular activities, such as showing, judging, and rodeo competition.

Implications for Facilities

Three of the four AGAN courses are lecture format and these classroom needs are currently satisfied. The Farm serves as the laboratory for the AGAN lecture/laboratory courses. The Farm is collaboratively shared with all specializations in the Agricultural Sciences Department.

AGHE AGRICULTURE: ANIMAL HEALTH TECHNOLOGY

The purpose of AGHE Agriculture: Animal Health Technology is to prepare students for a career as a veterinary technician.

This program consists of 12 degree-applicable courses in the science of animal health care. All courses in animal health technology are required for an associate degree major in Registered Veterinary Technology. Instruction includes the care and handling of all species of animals and the basic principles of normal and abnormal life processes. The curriculum integrates lecture classes with hands-on laboratory classes on the College's Farm. Students learn laboratory and clinical procedures under the supervision of a licensed veterinarian.

The American Veterinary Medical Association accredits the Registered Veterinary Technology program. Graduates become registered by successfully completing the Veterinary Technician National Examination and the California Registered Veterinary Technician Examination.

Enrollment Data

AGHE courses other than work experience		2009 – 2010 Academic Year	2013 – 2014 Academic Year	% Change
Enrollment				
	Enrollment	851	908	6.7%
	Number of Sections	24	31	29.2%
	Average Enrollment per Section	35.5	29.3	(-17.4%)
Productivity				
	Fill Rate at Census	1.3	1.2	(-7.7%)
	AGHE FTES	135.3	137.1	1.4%
	AGHE FTEF	7.1	8.7	22.5%
	WSCH/FTEF	589	478	(-18.9%)
Student Outcome				
	Retention Rate	96%	95%	(-1.0%)

Refer to Appendix A for a glossary of the terms and abbreviations presented in this table.

Enrollment: Meets Expectations

In this comparison of all AGHE courses except work experience, seven additional sections were offered in 2013 - 2014. The reason for this increase in the number of sections is the limit on enrollment due to the size of the classrooms in which these courses are now taught. Classrooms in the Department's new building are smaller than the classrooms in the building where the courses were previously taught. In 2009 - 2010, some AGHE sections were offered in a classroom with a capacity of 80 students. By 2013 - 2014, AGHE sections were offered in a building in which the classroom capacity is 40 students. Consequently, a greater number of sections of each of the five core courses were offered to accommodate student needs. Student

response was positive as evidenced by an increase in student enrollment. However, the net effect was a decrease in the average enrollment per section.

Two AGHE lecture courses have a section maximum of 35 students. In these sections, the average enrollment in sections of the lecture courses was 46.6 in 2009 - 2010 and 38.0 in 2013 - 2014, both above the maximum enrollment.

One AGHE lecture course has a section maximum enrollment of 30 students. In the sections of this course, the average enrollment was 29.0 in 2009 - 2010 and 21.0 in 2013 - 2014.

The average enrollment per section in lecture/laboratory courses was 32.7 in 2009 - 2010 and 26.8 in 2013 - 2014, both of which exceed the 16 to 24 students per section maximum.

The pattern of course offerings reflects a balance of higher-enrolled lecture classes with lower-enrolled lecture/laboratory classes.

Productivity: Needs Attention

AGHE FTEF increased in order to offer seven additional sections. However the increase in enrollment did not sufficiently raise FTES, causing the overall productivity (WSCH/FTEF) to decline by almost 20%. The classrooms in which AGHE courses are now taught limit the number of students enrolled and this classroom-size factor is responsible for the reduction in productivity. (Refer to the first paragraph in the **Enrollment** section.) In addition, most AGHE courses are laboratory based (83%) and therefore have a limit of 24 students per section to safeguard student safety when working with live animals.

Student Outcome: Strong

Student retention is high in AGHE courses and decreased slightly to 95% between 2009 - 2010 and 2013 - 2014.

Comparison of AGHE with Agricultural Sciences Department Totals

	AGHE		Agricultural Sciences Total		AGHE % of Total	
	2009 – 2010 Academic Year	2013 – 2014 Academic Year	2009 – 2010 Academic Year	2013 – 2014 Academic Year	2009 – 2010 Academic Year	2013 – 2014 Academic Year
Enrollment	851	908	3,248	3,467	26.2%	26.2%
FTES	135.3	137.1	466.9	476.5	29.0%	28.8%
Number of Sections	24	31	99	115	24.2%	27.0%

Excludes work experience

In 2013 - 2014, AGHE courses contributed 26% to 29% of the total Agricultural Sciences Department enrollment, FTES, and number of sections.

The proportion of enrollment and FTES in the Agricultural Sciences Department accounted for by AGHE courses is stable in this comparison. Given the increase in the number of AGHE sections

offered, sections in this program represented a greater percentage of the total sections in the Department overall.

AGHE Work experience only		2009 – 2010 <i>Academic Year</i>	2013 – 2014 <i>Academic Year</i>	% Change
Enrollment				
	Work Experience Enrollment	234	240	2.6%
Productivity				
	Work Experience FTES	8.0	8.5	6.0%
	DSCH	1,318.2	1,717.2	30.2%
Student Outcome				
	Retention Rate	92%	95%	3.3%

Refer to Appendix A for a glossary of the terms and abbreviations presented in this table.

Enrollment: Meets Expectations

Enrollment in AGHE work experience increased slightly between 2009 - 2010 and 2013 - 2014.

Productivity: Meets Expectations

Due to the slight increase in enrollment, AGHE FTES earned by work experience increased in 2013 - 2014 compared to 2009 - 2010.

Student Outcome: Meets Expectations

Student retention in the AGHE work experience course increased significantly in this comparison, reaching 95% in 2013 - 2014.

Labor Market Data

Agriculture: Animal Health Technology								
SOC	Occupation	2013 Jobs (actual)	2018 Jobs (projected)	2013 - 2018 Change*	2013-2018 Openings**	Annual Openings	Median Hourly Earnings	Minimal Entry Level Education
29-2056	Veterinary Technologists and Technicians	3,317	3,947	630	821	164	\$16.27	AA/AS

Source: QCEW Employees, Non-QCEW Employees and Self-Employed – EMSI 2014.3 Class of Worker

Data from four counties: Los Angeles County, Orange County, San Bernardino County, and Riverside County

* Change means job growth or job loss

** Openings – new jobs created or job openings due to separations

These labor market data project the job market for veterinary technologists and technicians, which is the labor market category for Registered Veterinary Assistants. The forecast is that the number of jobs for workers in this region is now strong and is projected to grow.

Projection: Growth

The area of Animal Health Technology is projected to grow.

Students completing required AGHE courses are prepared to take the examination required to become a Registered Veterinary Technician. Given that the labor market projections indicate continued growth in the demand for these skills, AGHE is projected to grow. Los Angeles Pierce College is the closest community college that also offers this program.

In addition to maintaining a strong program leading to an associate degree in veterinary technology, AGHE is exploring the feasibility of developing a veterinary assistant certificate. The labor market data in this occupational category are comparable to the labor market projections for veterinary technician.

Agriculture: Animal Health Technology								
SOC	Occupation	2013 Jobs (actual)	2018 Jobs (projected)	2013 - 2018 Change*	2013-2018 Openings**	Annual Openings	Median Hourly Earnings	Minimal Entry Level Education
31-9096	Veterinary Assistants and Laboratory Animal Caretakers	4,089	4,431	342	771	154	\$13.25	HS Diploma

Source: QCEW Employees, Non-QCEW Employees and Self-Employed – EMSI 2014.3 Class of Worker

Data from four counties: Los Angeles County, Orange County, San Bernardino County, and Riverside County

* Change means job growth or job loss

** Openings – new jobs created or job openings due to separations

A veterinary assistant certificate will meet local labor market needs as well as provide a safety net for students who are interested in this field but who are not academically prepared for the scientific rigor of the veterinary technician courses. Students who successfully complete the veterinary assistant certificate will be eligible to take the Certified Veterinary Assistant state examination.

Implications for Facilities

All areas of specialization in the Agricultural Sciences Department use the Farm’s facilities and animals collaboratively. The majority of AGHE courses require laboratory experiences, which are offered onsite at the College Farm. The Farm provides students with opportunities to interact with and provide care for a range of different animals. This diversity is central to the uniqueness of the College’s Animal Health Technology program, the usefulness of AGHE laboratory courses, and the program’s ongoing compliance with accreditation regulations.

To continue to support this strong program as well as develop a veterinary assistant certificate, this program’s needs for additional facilities include:

- A dog kennel.
- A greater number of animals.
- A small animal care unit.

AGLI AGRICULTURE: LIVESTOCK PRODUCTION

The AGLI Agriculture: Livestock Production courses prepare students for employment in animal agriculture production. The curriculum introduces students to various animal industries as well as similar disciplines of advanced study such as: breeding, genetics, nutrition, epidemiology, behavior, and reproduction. The primary livestock species housed on the Farm are cattle, horses, sheep, and swine.

This component of the Agricultural Sciences Department includes 11 courses with concentrations on specific livestock, disease control, and artificial insemination. Eight of these courses transfer to CSU; and of these eight, two also transfer to UC.

Courses in livestock production are required or serve as electives for the following associate degree majors, certificates of achievement, and skills certificates.

Associate Degrees	Certificates of Achievement (18 units)	Skills Certificates (fewer than 18 units)
Agri-Technology	Horse Ranch Management – Level II	Animal Science Fundamentals
Horse Ranch Management	Pet Science	Horse Ranch Management – Level I
Livestock Management		
Pet Science		
Registered Veterinary Technology		

Enrollment Data

AGLI		2009 – 2010 Academic Year	2013 – 2014 Academic Year	% Change
Enrollment				
	Enrollment	342	351	2.6%
	Number of Sections	11	11	0.0%
	Average Enrollment per Section	31.1	31.9	2.6%
Productivity				
	Fill Rate at Census	1.1	1.1	0.0%
	AGLI FTES	46.9	45.3	(-3.4%)
	AGLI FTEF	2.7	2.6	(-3.7%)
	WSCH/FTEF	562	575	2.3%
Student Outcome				
	Retention Rate	90%	95%	5.6%

Refer to Appendix A for a glossary of the terms and abbreviations presented in this table.

Enrollment: Meets Expectations

In this comparison of enrollment data in 2009 - 2010 and 2013 - 2014, enrollment in AGLI courses increased slightly while the number of sections remained the same. The result was an increase in efficiency as measured by a slight increase in the average enrollment per section.

About half of the sections offered in these years are lecture courses with a maximum capacity of 35 students per section. The average enrollment in sections of the lecture courses was 42.5 in 2009 - 2010 and 39 in 2013 - 2014, both of which are above the maximum enrollment of 35 students per section.

The remaining AGLI courses are lecture/laboratory courses with a maximum capacity of 16 - 24 students per section. The average enrollment per section in the lecture/laboratory courses was 24.6 in 2009 - 2010 and 26.0 in 2013 - 2014, which is slightly above the 24 students per section maximum enrollment.

Productivity: Meets Expectations

The minor decrease in FTES is the result of a change in course offerings: a lecture course was offered in lieu of a lecture/laboratory course, which reduced the number of hours.

FTEF decreased slightly, which had the impact of increasing productivity as measured by WSCH/FTEF. AGLI courses exceed the state standard of 525 WSCH/FTEF in this comparison.

Student Outcome: Strong

Student retention is high in AGLI courses and improved to above 95% between 2009 - 2010 and 2013 - 2014.

Comparison of AGLI with Agricultural Sciences Department Totals

	AGLI		Agricultural Sciences Total		AGLI % of Total	
	2009 – 2010 Academic Year	2013 – 2014 Academic Year	2009 – 2010 Academic Year	2013 – 2014 Academic Year	2009 – 2010 Academic Year	2013 – 2014 Academic Year
Enrollment	342	351	3,248	3,467	10.5%	10.1%
FTES	46.9	45.3	466.9	476.5	10.0%	9.5%
Number of Sections	11	11	99	115	11.1%	9.6%

Excludes work experience

AGLI courses contribute about 10% of the Agricultural Sciences Department total enrollment, FTES, and number of sections. In proportion to the totals for the Agricultural Sciences Department, AGLI enrollment and FTES has remained relatively consistent in this comparison. Given that the total number of sections offered by the Agricultural Sciences Department increased and the number of AGLI sections remained the same, the proportion of sections accounted for by AGLI courses decreased.

Labor Market Data for Graduates with High School Diplomas, Certificates and Associate Degree

Agriculture: Livestock Production								
SOC	Occupation	2013 Jobs (actual)	2018 Jobs (projected)	2013 - 2018 Change*	2013-2018 Openings**	Annual Openings	Median Hourly Earnings	Minimal Entry Level Education
11-9013	Farmers, Ranchers, and Other Agricultural Managers	2,841	1,752	(1,089)	169	34	\$19.73	HS Diploma
19-4011	Agricultural and Food Science Technicians	1,163	1,203	40	261	52	\$13.46	AA/AS
45-1011	First-Line Supervisors of Farming, Fishing, and Forestry Workers	897	778	(119)	87	17	\$20.62	HS Diploma
45-2021	Animal Breeders	58	43	(15)	<10	--	\$20.68	HS Diploma
39-2011	Animal Trainers	1,748	1,825	77	486	97	\$14.13	HS Diploma
13-1021	Buyers and Purchasing Agents, Farm Products	569	580	11	84	17	\$31.73	HS Diploma
	Total	7,276	6,181	(1,095)	1,087	217	\$20.06	

Source: QCEW Employees, Non-QCEW Employees and Self-Employed – EMSI 2014.3 Class of Worker

Data from four counties: Los Angeles County, Orange County, San Bernardino County, and Riverside County

* Change means job growth or job loss

** Openings – new jobs created or job openings due to separations

These labor market data project the job market for a range of agricultural occupations related to the production and care of livestock that require a high school diploma or associate degree. The numbers of these jobs are projected to decrease significantly in the occupations of farmers, ranchers, and other agricultural managers, while the overall job openings in occupations related to livestock production are projected to increase.

Although most of the occupations in this analysis indicate that the high school diploma is the minimal entry-level education, applicants who have earned a community college certificate or associate degree have a distinct advantage over applicants without evidence of this postsecondary education.

Labor Market Data for Graduates with a Bachelor's Degree or Higher

Agriculture: Livestock Production								
SOC	Occupation	2013 Jobs (actual)	2018 Jobs (projected)	2013 - 2018 Change*	2013-2018 Openings**	Annual Openings	Median Hourly Earnings	Minimal Entry Level Education
45-2011	Agricultural Inspectors	532	544	12	92	18	\$24.60	BA/BS
25-9021	Farm and Home Management Advisors	127	148	21	28	6	\$23.66	MA/MS
19-1011	Animal Scientists	65	71	6	18	4	\$39.04	PhD
	Total	724	763	39	138	28	\$29.10	

Source: QCEW Employees, Non-QCEW Employees and Self-Employed – EMSI 2014.3 Class of Worker
Data from four counties: Los Angeles County, Orange County, San Bernardino County, and Riverside County

* Change means job growth or job loss

** Openings – new jobs created or job openings due to separations

These labor market data present the projected job market for agricultural occupations focused on animal production and care that require a bachelor's degree or higher. The numbers of jobs requiring a graduate degree specializing in livestock are projected to increase in the next four years within the region. AGLI prepares students to transfer to universities that offer advanced degrees in animal science.

In addition to the occupations listed in these data, students may also find employment in animal sales, marketing, or journalism.

Projection: Stable

The area of Livestock Production is projected to remain at its current size as a strong, viable program.

Labor market projections indicate that student interest in these courses may decrease as the number of jobs in related occupations decline. AGLI plans to implement the following changes to offset this projected decrease in occupations:

- AGLI will be an active participant in the Agricultural Sciences Department re-branding and marketing to inform students and the community about the opportunities to work with livestock at the College Farm.
- AGLI plans to develop new courses in horsemanship and equine breeding.
- AGLI plans to develop new opportunities for students to participate in extra-curricular activities, such as showing, judging, and rodeo competition.

Implications for Facilities

All areas of specialization in the Agricultural Sciences Department use the Farm's facilities and animals collaboratively. The majority of AGLI courses require laboratory experiences, which are offered onsite at the College Farm.

In order to highlight and expand the equine program, the needed facilities are:

- Upgrades to the equine arena.
- Additional horse stalls.

AGOR AGRICULTURE: ORNAMENTAL HORTICULTURE

The purpose of AGOR Agriculture: Ornamental Horticulture is to prepare students to breed, grow, and use ornamental plant varieties for commercial and aesthetic purposes.

Students completing this program will be able to explain concepts related to plant structure and function; describe climatic and microclimate interactions and how they influence plant growth; explain how different types of soils can be managed to improve plant growth; identify the nutrients required to correct nutrient deficiencies in plants; identify common landscape trees and woody shrubs and herbaceous plants; formulate and implement a complete integrated pest management program for a specific site; formulate and implement a complete turf management program for a specific site; and evaluate the soil conditions at an existing site and make specific recommendations for the immediate and long-term correction of identified problems. This program prepares students for careers in landscape construction, irrigation, nurseries, pest management, sports turf management, and park management.

This area includes 30 courses in various aspects of horticulture, including work experience. Twenty-one of the courses transfer to CSU and of these, four also transfer to UC. One of these, *Horticultural Science*, is a three-unit foundation course that fulfills the general education requirement in Area B.

Courses in ornamental horticulture are required or serve as electives for the following associate degree majors and certificates of achievement.

Associate Degrees	Certificates of Achievement (18 units)
Agri-Technology	Interior Landscaping
Equipment Technology	Landscape/Park Maintenance
Horse Ranch Management	Landscape Design Level I
Integrated Pest Management	Landscape Equipment Technology
Livestock Management	Landscape Irrigation
Ornamental Horticulture	Nursery Management
Park/Sports Turf Management	Park Management
Registered Veterinary Technology	Sports Turf Management
	Tree Care and Maintenance

In addition to College Certificates of Achievement, AGOR courses prepare students for many examinations required for industry certifications.

Organization	Certification
International Society of Arboriculture	Certified Arborist
California Assn. of Nurseries and Garden Centers	Nursery Pro
California Landscape Contractors Assn.	Landscape Industry Certified Technician
	Certified Water Manager

Irrigation Association	Certified Irrigation Designer
	Certified Landscape Irrigation Auditors
	Certified Golf Irrigation Auditors
	Certified Landscape Water Manager
	Certified Irrigation Technician
	Certified Agricultural Irrigation Specialists
California Department of Pesticide Regulation	Qualified Applicator License
	Qualified Applicator Certificate
	Pest Control Advisor License

Enrollment Data

AGOR courses other than work experience		2009 – 2010 Academic Year	2013 – 2014 Academic Year	% Change
Enrollment				
	Enrollment	1,010	1,067	5.6%
	Number of Sections	37	40	8.1%
	Average Enrollment per Section	27.3	25.4	(-6.9%)
Productivity				
	Fill Rate at Census	1.1	1.0	(-9.1%)
	AGOR FTES	160.3	159.3	(-0.6%)
	AGOR FTEF	10.5	11.9	13.3%
	WSCH/FTEF	495	428	(-13.5%)
Student Outcome				
	Retention Rate	91%	91%	0.0%

Refer to Appendix A for a glossary of the terms and abbreviations presented in this table.

Enrollment: Meets Expectations

In comparison to 2009 - 2010, three additional sections of AGOR courses were offered in 2013 - 2014. This addition resulted in a 5.6% increase in enrollment but a 6.9% decrease in the average enrollment per section.

Two of the five AGOR lecture courses have a maximum enrollment of 35 students. The average enrollment in these courses was 38.2 in 2009 - 2010 and 35.4 in 2013 - 2014.

All other lecture and lecture/laboratory courses in AGOR have an enrollment maximum of 24 students per section. The average enrollment per section in these lecture and lecture/laboratory courses was 23.8 in 2009 - 2010 and 23.3 in 2013 - 2014, which is slightly below the 24 students per section maximum enrollment.

Productivity: Needs Attention

The addition of three sections necessitated an increase in FTEF. Since the increase in enrollment did not raise FTES proportionately, the overall productivity (WSCH/FTEF) declined.

The AGOR curriculum includes the largest number of courses in the Agricultural Sciences Department and offers the largest number of certificates. To ensure student access to the courses required for specialized certificates, a course rotation plan was developed and implemented. This rotation is necessary to provide students access to courses required to complete certificates, but the result has been that the total enrollment in this area is distributed across a larger number of sections, which decreases productivity.

Over the next three years AGOR will assess whether the course rotation plan has been successful in increasing the number of students who complete certificates.

The majority of AGOR courses are laboratory based. Of the 24 unique AGOR courses, only 5 are lecture courses and 19 (79%) AGOR courses limit student enrollment to 24 students per section. Given the preponderance of laboratory courses in this discipline, productivity ratios will be lower when compared to lecture courses that limit student enrollment to 35 students per section.

Student Outcome: Meets Expectations

The retention rate in AGOR courses is 90% in both years presented in this comparison.

Comparison of AGOR with Agricultural Sciences Department Totals

	AGOR		Agricultural Sciences Total		AGOR % of Total	
	2009 – 2010 Academic Year	2013 – 2014 Academic Year	2009 – 2010 Academic Year	2013 – 2014 Academic Year	2009 – 2010 Academic Year	2013 – 2014 Academic Year
Enrollment	1,057	1,105	3,248	3,467	31.1%	30.8%
FTES	163.2	161.1	466.9	476.5	34.3%	33.4%
Number of Sections	37	40	99	115	37.4%	34.8%

Excludes work experience

In 2013- 2014 AGOR courses contributed about 1/3 of the total Agricultural Sciences Department enrollment, FTES, and number of sections.

All enrollment metrics for the Agricultural Sciences Department increased between 2009 – 2010 and 2013- 2014. Although AGOR increased in enrollment and the number of sections, these increases were not proportionate to the Departmental increases. Consequently, there is a slight decline in the proportion that AGOR courses contribute to the Agricultural Sciences Department total enrollment, FTES, and number of sections.

AGOR Work experience only	2009 – 2010 Academic Year	2013 – 2014 Academic Year	% Change
Enrollment			

	Work Experience Enrollment	47	38	(-19.5%)
Productivity				
	Work Experience FTES	2.8	1.7	(-39.3%)
	DSCH	289.7	178.2	(-38.5%)
Student Outcome				
	Retention Rate	81%	90%	11.1%

Refer to Appendix A for a glossary of the terms and abbreviations presented in this table.

Enrollment: Needs Improvement

Enrollment in AGOR work experience was lower in 2013- 2014 compared to 2009 – 2010. Between 2009 – 2010 and 2013 – 2014 the requirements for students to participate in work experience courses and the conditions under which students are allowed to repeat work experience courses changed. The net impact of these changes was a reduction in enrollment in AGOR work experience courses.

Productivity: Needs Improvement

Due to the decline in enrollment, FTES earned by AGOR work experience decreased in 2013-2014 compared to 2009 – 2010.

Student Outcome: Meets Expectations

Student retention in AGOR work experience sections increased significantly in this comparison.

Labor Market Data for Graduates with High School Diplomas, Certificates and Associate Degrees

Agriculture: Ornamental Horticulture								
SOC	Occupation	2013 Jobs (actual)	2018 Jobs (projected)	2013 - 2018 Change*	2013-2018 Openings **	Annual Openings	Median Hourly Earnings	Minimal Entry Level Education
37-1012	First-line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	8,198	8,642	444	945	189	\$17.09	HS Diploma
37-2021	Pest Control Workers	4,800	5,055	255	970	194	\$13.06	HS Diploma
37-3012	Pesticide Handlers, Sprayers, and Applicators, Vegetation	969	1,064	95	228	46	\$14.52	HS Diploma
37-3013	Tree Trimmers and Pruners	3,891	4,220	329	848	170	\$14.37	HS Diploma
19-4093	Forest and Conservation Technicians	1,221	1,211	(10)	245	49	\$18.44	AA/AS
45-4011	Forest and Conservation Workers	453	464	11	56	11	\$9.79	HS Diploma
49-3041	Farm Equipt Mechanics and Service Technicians	441	453	12	87	17	\$19.54	HS Diploma

49-3053	Outdoor Power Equipt and Other Small Engine Mechanics	612	639	27	110	22	\$15.62	HS Diploma
	Total	20,585	21,748	1,163	3,489	698	\$15.30	

Source: QCEW Employees, Non-QCEW Employees and Self-Employed – EMSI 2014.3 Class of Worker
 Data from four counties: Los Angeles County, Orange County, San Bernardino County, and Riverside County

* Change means job growth or job loss

** Openings – new jobs created or job openings due to separations

These labor market data project the job market for a range of agricultural occupations related to plant propagation and care that require a high school diploma or associate degree. The numbers of these jobs are projected to increase across a range of related occupations.

Although most of the occupations in this analysis indicate that the high school diploma is the minimal entry-level education, applicants who have earned a community college certificate or associate degree have a distinct advantage over applicants without evidence of this postsecondary education. AGOR certificates are also attractive to students who are currently employed and want to provide evidence of training in a related specialization.

Labor Market Data for Graduates with a Bachelor’s Degree

Agriculture: Ornamental Horticulture								
SOC	Occupation	2013 Jobs (actual)	2018 Jobs (projected)	2013 - 2018 Change*	2013- 2018 Openings **	Annual Openings	Median Hourly Earnings	Minimal Entry Level Education
45-2011	Agricultural Inspectors	532	544	12	92	18	\$24.60	BA/BS
19-1013	Soil and Plant Scientists	562	639	77	178	36	\$30.71	BA/BS
17-1012	Landscape Architects	1,124	1,143	19	189	38	\$30.66	BA/BS
10-1031	Conservation Scientists	245	264	19	60	12	\$33.60	BA/BS
	Total	2,463	2,590	127	519	104	\$29.89	

Source: QCEW Employees, Non-QCEW Employees and Self-Employed – EMSI 2014.3 Class of Worker
 Data from four counties: Los Angeles County, Orange County, San Bernardino County, and Riverside County

* Change means job growth or job loss

** Openings – new jobs created or job openings due to separations

The numbers of jobs for students who earn bachelor’s degrees are similarly projected to increase. AGOR prepares students to transfer to universities that offer advanced degrees in plant science.

Projection: Growth

The area of Ornamental Horticulture is projected to grow.

This growth is projected based on the following three factors:

- Labor market data project continued growth in the demand for the skills taught in AGOR courses.

- AGOR is in the final stages of completing curricular revisions that include three additional certificates and a course rotation system, both of which are designed to increase student completion of certificates.
- AGOR plans to develop three new certificates in emergent fields.

Curricular revisions in the past two academic years reduced the number of units required to complete AGOR certificates of achievement. If these changes have the desired impact of increasing the number of students seeking to complete the certificates, then student enrollment will increase.

This program-wide curricular revision includes the addition of three certificates for immediate industry employment and an associate degree for transfer. These are currently moving through the approval processes. The certificates will be available to students beginning in the 2015 - 2016 catalog and the associate degree for transfer the following year.

Associate Degrees for Transfer	Certificates of Achievement (18 units)
AST-Plant Science	Horticulture Science
	Landscape Construction
	Landscape Design Level II

To keep pace with the changes in this field, AGOR plans to add three additional career technical education certificates in the near future: urban sustainable agriculture, landscape water management and organic production. These areas of specialization reflect the Agricultural Sciences Department’s analysis of current and future trends and research recently completed by the Center of Excellence (www.coecc.net).

- **Urban Sustainable Agriculture**
 A little over half of the world's population currently lives in cities and 15% of the world's food is grown in cities. According to UN projections, 2/3s of the world's population will be living in cities by 2030. More urban farmers are needed to meet the growing need for food and to ensure local food security.
- **Landscape Water Management**
 Landscaping enhances the beauty of homes and businesses and has been an essential component of California’s identity. In the context of the statewide drought a current challenge is to balance the need for water to sustain landscaping with the need to conserve water. This certificate will prepare students to successfully meet that challenge and is supported by labor market data that project the continued need for conservation technicians and workers.

Labor Market Data Related to Conservation

SOC	Occupation	2013 Jobs (actual)	2018 Jobs (projected)	2013 - 2018 Change*	2013-2018 Openings	Annual Openings	Median Hourly Earnings	Minimal Entry Level Education

					**			
19-4093	Forest and Conservation Technicians	1,221	1,211	(10)	245	49	\$18.44	AA/AS
45-4011	Forest and Conservation Workers	453	464	11	56	11	\$9.79	HS Diploma

- **Organic Production**
 Environmental concerns have led to the development of a number of strategies to reduce the use of synthetic pesticides in Integrated Pest Management. In the agricultural sciences, the challenge is to sustain landscaping and grow food safely while minimizing damage to the environment or consumers through reducing exposure to conventional pesticides. This certificate will introduce students to methods for controlling pests through means that are more environmentally friendly. This certificate is supported by labor market data that project the ongoing need for pesticide workers.

Labor Market Data Related to Organic Production

SOC	Occupation	2013 Jobs (actual)	2018 Jobs (projected)	2013 - 2018 Change*	2013-2018 Openings **	Annual Openings	Median Hourly Earnings	Minimal Entry Level Education
37-2021	Pest Control Workers	4,800	5,055	255	970	194	\$13.06	HS Diploma
37-3012	Pesticide Handlers, Sprayers, and Applicators, Vegetation	969	1,064	95	228	46	\$14.52	HS Diploma

Implications for facilities

The majority of AGOR courses require laboratory experiences, which are offered onsite at the College Farm.

In order to expand the offerings the needed facilities are:

- Demonstration spaces to provide students with hands-on practice and for the Agricultural Literacy Trail.
- Space for composting to provide students with hands-on practice as well as produce natural organic fertilizer.
- Container gardens to provide students with hands-on practice in organic gardening.

AGPE AGRICULTURE: PET SCIENCE

The purpose of AGPE Agriculture: Pet Science is to prepare students for work in the care, breeding, and marketing of household pets, such as dogs, cats, fish, reptiles, and birds.

This component of the agricultural sciences program includes six degree-applicable courses with concentrations on specific pets as well as pet shop management.

Courses in pet science are required for the associate degree and the certificate of achievement in pet science. In addition, these courses are electives for the associate degree in registered veterinary technology.

Enrollment Data

AGPE		2009 – 2010 Academic Year	2013 – 2014 Academic Year	% Change
Enrollment				
	Enrollment	260	165	(-36.5%)
	Number of Sections	6	5	(-16.7%)
	Average Enrollment per Section	43.3	33.0	(-23.9%)
Productivity				
	Fill Rate at Census	1.4	1.1	(-21.4%)
	AGPE FTES	29.8	18.9	(-36.6%)
	AGPE FTEF	1.2	1.0	(-16.7%)
	WSCH/FTEF	653	460	(-29.6%)
Student Outcome				
	Retention Rate	96%	94%	(-2.1%)

Refer to Appendix A for a glossary of the terms and abbreviations presented in this table.

Enrollment: Needs Attention

Enrollment data for AGPE courses decreased between 2009-2010 and 2013-2014. Although the number of sections decreased by one, this is not a sufficient decrease to account for the 36.5% decrease in enrollment. Enrollment in each section decreased between 2009 - 2010 and 2013 - 2014, reducing the average enrollment to 33 students per section, which is slightly below the enrollment limit of 35 students per section.

The enrollment decline is attributed to the 2011 retirement of the lead full-time faculty member for this area of specialization and the lack of a pet science advisory committee.

Productivity: Needs Attention

Productivity of AGPE decreased between 2009 – 2010 and 2013- 2014. The decrease in enrollment created a decline in the fill rate at census and a parallel and significant decline in

FTEs, which is also reflected in the 30% decrease in productivity (WSCH/FTEF). FTEF decreased corresponding to the reduction of one section.

Student Outcome: Meets Expectations

Student retention in AGPE courses is high, although it declined slightly between 2009-2010 and 2013- 2014.

Comparison of AGPE with Agricultural Sciences Department Totals

	AGPE		Agricultural Sciences Total		AGPE % of Total	
	2009 – 2010 Academic Year	2013 – 2014 Academic Year	2009 – 2010 Academic Year	2013 – 2014 Academic Year	2009 – 2010 Academic Year	2013 – 2014 Academic Year
Enrollment	260	165	3,248	3,467	8.0%	4.8%
FTEs	29.8	18.9	466.9	476.5	6.4%	4.0%
Number of Sections	6	5	99	115	6.1%	4.3%

Excludes work experience

AGPE courses contribute between 4% and 5% of the total Agricultural Sciences Department enrollment and FTEs in 2013 - 2014. This is a significant decline compared to the 8% to 6% contributions of this area in 2009-2010.

Labor Market Data

Agriculture: Pet Science								
SOC	Occupation	2013 Jobs (actual)	2018 Jobs (projected)	2013 - 2018 Change*	2013-2018 Openings**	Annual Openings	Median Hourly Earnings	Minimal Entry Level Education
39-2011	Animal Trainers	1,748	1,825	77	486	97	\$14.13	HS Diploma
33-9011	Animal Control Workers	645	668	23	98	20	\$22.66	HS Diploma
45-2021	Animal Breeders	58	43	(15)	<10	--	\$20.68	HS Diploma
	Total	2,451	2,536	85	574	117	\$19.15	

Source: QCEW Employees, Non-QCEW Employees and Self-Employed – EMSI 2014.3 Class of Worker

Data from four counties: Los Angeles County, Orange County, San Bernardino County, and Riverside County

* Change means job growth or job loss

** Openings – new jobs created or job openings due to separations

These labor market data project the job market for occupations focused on domestic animal care. The forecast is that the number of jobs for workers who specialize in pet care, such as animal trainers and animal control workers, will increase.

Although the occupations in this analysis indicate that the high school diploma is the minimal entry-level education, applicants who have earned a community college certificate or associate degree have a distinct advantage over applicants without evidence of postsecondary education.

Projection: Decline

The area of Pet Science is projected to decline.

Over the past five years student interest in these courses has declined. Given this decline, AGPE plans to revise the program to replace the current pet science associate degree and certificate of achievement with a 12-unit skills certificate.

Implications for Facilities

Most of the AGPE courses are lecture format and these classroom needs are currently satisfied. The only AGPE lecture/laboratory course relies on dogs for laboratory activities. Similar to the facilities needs for AGHE courses, the AGPE area would benefit from an expanded dog kennel and greater variety in the small animal collection.

Chapter 3. Recommendations

Chapter 3. Recommendations

The recommendations in this chapter are grounded in an analysis of current programs, the emergent issues in agriculture today, and the College faculty’s visions for the future of the Agricultural Sciences Department.

Based on enrollment data and labor market data presented in the previous chapter, most specializations in the Agricultural Sciences Department are projected to grow or remain stable. The only area projected to decline, Pet Science, contributes a small percentage of the Agricultural Sciences Department total enrollment.

	% of total Agricultural Sciences Department enrollment	Projection
AGAG – Agriculture General	3.2%	Growth contingent on new Agriculture Business and Technology major
AGAN – Animal Science General	24.0%	Growth contingent on new Animal Science major
AGHE – Animal Health Technology	26.2%	Growth
AGLI – Livestock Production	10.1%	Stable
AGOR – Ornamental Horticulture	30.8%	Growth
AGPE – Pet Science	4.8%	Decline
Agricultural Sciences Department	100%	Growth

Growth for the individual units and the Department as a whole is contingent on the implementation of the following recommendations. It is further recommended that the tasks be completed in the following order.

1. Revise titles of programs, degrees and certificates in the Agricultural Sciences Department to facilitate more effective marketing and greater alignment with universities

The current titles and course identifiers for specializations in Agricultural Sciences are confusing to students and counselors. The planned revision will improve recognition of the Department’s courses, degrees, and certificates within the College and aligns the Department’s titles with transfer institutions. The following table presents the current and the planned revision.

Current titles and course identifiers for concentrations in Agricultural Sciences	Revised titles for areas of concentration in Agricultural Sciences
AGAG – Agriculture General	Agriculture Business and Technology

AGAN – Animal Science General	Animal Science
AGHE – Animal Health Technology	Veterinary Technology
AGLI – Livestock Production	<i>Included in Animal Science</i>
AGOR – Ornamental Horticulture	Horticulture Science
AGPE – Pet Science	<i>Included in Animal Science</i>

2. Review and revitalize associate degrees

Currently the Agricultural Sciences Department offers associate degrees in nine areas of specialization. The Department plans to review and revise each of these as summarized in the table below.

As with the changes to the Department’s certificates, these changes to the associate degrees simplify and clarify the areas of specialization, which will thereby contribute to increased student completion of associate degrees.

Current Associate Degrees	Proposed Associate Degrees
Agri-Technology	Animal Science
Equipment Technology	Agriculture Business and Technology
Horse Ranch Management	Integrated Pest Management
Integrated Pest Management	Horticulture Science
Livestock Management	Veterinary Technology
Ornamental Horticulture	Park/Sports Turf Management
Pet Science	
Registered Veterinary Technology	

3. Develop new career education certificates of achievement (18 units or higher) to match today’s marketplace

Stimulated by the analysis of enrollment and labor market data, the Agricultural Sciences Department plans to review and revitalize its career technical education certificates. New certificates are planned in the following areas:

Agriculture Business and Technology

- Agriculture Education and Communication
- Agriculture Business and Economics
- Agriculture Systems Technology

Animal Science

- Livestock Production
- Equine Science

Horticulture Science

- Urban Sustainable Agriculture/Organic Production
- Landscape Water Management

4. Use the Agricultural Sciences Department to increase the connection between the College and local communities

The Farm is a unique feature of Mt. San Antonio College and a unique resource for the surrounding communities. In addition to offering courses, degrees, and certificates, the Farm could expand the ways it provides the College's partners with opportunities to use those resources by creating living laboratories and enhancing the beauty of the campus. Examples are:

- The Agricultural Literacy Trail would provide a resource for K-12 students and the public to increase their awareness of the role of agriculture in California and the world.
- Demonstration gardens could be a teaching resource for business and industry partners.
- A rodeo team would bring the community to campus to watch events and competitions.

Implementation of these three recommendations capitalizes on the Agricultural Sciences Department current strengths and provides a foundation for its continued relevance and future growth.

Implications for Facilities

Facilities needs are identified for each area of specialization in the previous chapter and in some cases are necessary in order to implement these recommendations.

Overall the facilities planning at the next step would include the following:

- Initiate new projects in support of linking the Agricultural Sciences Department to the community, such as the rodeo arena and the Agricultural Literacy Trail.
- Complete unfinished projects that support existing viable instructional programs, such as the dog kennel.

- Renovate existing facilities where possible, such as converting the Raptor Center to a small animal unit.
- Repurpose land in support of linking the Agricultural Sciences Department to the community, such as converting the land currently used to grow a significant number of palm trees for growing new crops that are in higher demand as well as for composting and developing demonstration gardens.
- Remove aging or temporary facilities that have outlived their usefulness, such as the propagation house/greenhouse, the vivarium and the equipment shop.
- Modernize existing buildings to address safety, accessibility, and maintenance needs,
- Renovate spaces to meet the needs of programs currently being developed, such as the new certificate in organic production, develop a retail nursery center, and develop facilities to support the livestock show team.

Appendix A: Glossary of Enrollment Data Elements

Enrollment

- Enrollment: The total number of enrollments for all courses with the same course identifier. *This is a count of enrollments, not student headcount. One student may have more than one enrollment in courses with the same course identifier.*
- Number of Sections: The number of sections scheduled in an academic year with this course identifier.
- Average enrollment per section: The product of dividing total enrollment by the number of sections.

Productivity

- Fill rate at census: Ratio comparing enrollment in a section with the capacity of that section. *A number of 1 indicates that the number of enrollments equals the capacity of that section.*
- FTES: The number of FTES (full-time equivalent students) earned by the courses with the designated course identifier. *FTES is the state metric for measuring workload and is the basis for state apportionment to the District.*
- FTEF: The number of FTEF (full-time equivalent faculty) assigned to courses with the designated course identifier.
- WSCH/FTEF: Ratio comparing the number of hours faculty are with students in class each week (Weekly Student Contact Hours) with the number of equivalent full-time faculty (FTEF). *The product of this ratio is best understood when compared to some other standard, such as the state 525 benchmark. The number 525 represents one faculty member teaching five three-unit classes per semester with 35 students in each class as shown in the formula below.*

$$35 \text{ students} \times 3 \text{ hours per week} = 105$$

$$105 \times 5 \text{ classes} = 525$$

$$525 \text{ divided by } 1 \text{ FTEF} = 525 \text{ goal}$$

Student Outcome

- Retention rate: Ratio comparing the number of students enrolled in a section at census with the number of students who receive any grade in that section.

Appendix B: Agricultural Sciences Department Revised Organization

The Mt. San Antonio College Agriculture Department will consist of four primary areas of study:

- Animal Science.
- Agriculture Business and Technology.
- Horticulture Science.
- Veterinary Technology.

Animal Science (ANSC):

Students planning to concentrate on animal science may earn degrees and certificates in the following programs.

Associate of Science:

- Animal Science

Certificates of Achievement (18 units or more):

- Equine Science
- Livestock Production

Skills Certificates (fewer than 18 units):

- Animal Science Fundamentals
- Pet Science

The Associate of Science degree requires 33 units of General Education combined with 35 - 38 units of ANSC courses.

Agriculture Business and Technology (AGBT):

Students planning to pursue professions in agriculture extension/education, agriculture communications, agriculture business/ economics, systems technology and/ or agriculture may earn degrees and certificates in the following programs.

Associate of Science:

- Agriculture Business and Technology

Certificates of Achievement (18 units or more):

- Agriculture Education and Communication
- Agriculture Business and Economics
- Agriculture Systems Technology

The Associate of Science degree requires 33 units of General Education combined with 36 - 40 units of AGBT, HORT, VETT, and ANSC as well as other courses outside the Mt. San Antonio College Agriculture Department.

Horticulture Science (HORT):

Students planning to concentrate in horticulture may earn degrees and certificates in the following programs.

Associate of Science:

- Horticulture Science
- Integrated Pest Management
- Parks and Sports Turf Management

Certificate of Achievement (18 units or more):

- Horticulture Science
- Interior Landscaping
- Landscape Construction
- Landscape Design I
- Landscape Design II
- Landscape Equipment Technology
- Landscape Irrigation
- Landscape/Park Maintenance
- Landscape/Water Management
- Nursery Management
- Organic Production
- Park Management
- Sports Turf Management
- Tree Care and Maintenance
- Urban Sustainable Agriculture

The Associate of Science degrees require 33 units of General Education combined with 42 - 49 units of HORT courses.

Veterinary Technology (VETT):

Mt. San Antonio College will continue to offer an Associate of Science degree in Veterinary Technology. The curriculum integrates lecture classes with hands-on laboratory classes on the 110-acre working farm.

Proposed Changes to Course Identifiers:

Current Course Identifier	Proposed Course Identifier
AGAG 1, AGAG 91, AGAG 99	AGBT
AGAN, AGAG 59, AGLI, AGPE	ANSC
AGHE	VETT
AGOR	HORT

Appendix C: Sources Documenting Contemporary Challenges in Agricultural Sciences

The following resources provide information on the contemporary challenges in the field of Agricultural Sciences.

- American Society of Animal Science
www.asas.org
- Certified Crop Advisors
www.certifiedcropadviser.org
- Federation of Animal Science Societies (FASS) responds to these concerns
www.fass.org
- Journal of Animal Science
www.animalsciencepublications.org/publications/jas
- Pest Control Advisors
www.cdpr.ca.gov/docs/license/adviser.htm
- Seedstock
seedstock.com
- United States Department of Agriculture
www.usda.gov