

**Student Outcomes Assessment Plan  
Undergraduate Program – Animal Sciences  
Department of Animal Sciences and Agricultural Education  
California State University, Fresno**

**Revised February 2011**

**Mission Statement**

The mission of the Animal Sciences program is to prepare undergraduate students in the diverse disciplines of animal science. Emphasis is placed on critical thinking and communicative skills to solve production, processing, environmental and ethical problems and to prepare students for admission to programs of further scientific study. The program works closely with the animal industry and governmental agencies to integrate the student's education with industry experience and future employers to empower students for professional careers in modern agriculture.

**Specific Goals and Objectives**

**Goal 1.** Students must demonstrate knowledge of the various species of livestock, their traditional and non-traditional production systems, and the industries associated with the respective species.

**Objective 1.1** - Students identify, know characteristics of, and understand positive and negative attributes of the major breeds of livestock.

**Objective 1.2** - Students demonstrate knowledge of the traditional and non-traditional production systems of livestock species and the industries associated with those species.

**Objective 1.3** - Students understand the relationship between production and companion animals and society.

**Goal 2.** Students must understand the scientific principles of genetics, reproduction, nutrition, physiology, and environment and how these areas integrate in affecting animal production.

**Objective 2.1** - Students describe genetic principles and how inheritance impacts animal performance and production.

**Objective 2.2** - Students discuss reproductive principles and how reproduction impacts animal performance and production.

**Objective 2.3** - Students summarize nutritional principles, understand how nutrition impacts animal performance and production; and evaluate rations for appropriate ingredients for different livestock at various stages of production.

**Objective 2.4** - Students describe anatomical structure and explain physiological functions of farm animals.

**Objective 2.5** - Students characterize environments and how they influence animal performance.

**Goal 3.** Students must demonstrate competency in the areas of animal health, disease, welfare and handling and understand how these factors influence animal stress and production.

**Objective 3.1** - Students describe the metabolic diseases that impact animals and how these diseases affect animal health and performance.

**Objective 3.2** - Students identify animals with different diseases and properly administer appropriate treatments.

**Objective 3.3** - Students identify appropriate disease prevention techniques through proper bio security practices.

**Objective 3.4** - Students describe immunological principles and implement proper vaccine use.

**Objective 3.5** - Students handle animals in a proper manner and understand how animal handling impacts animal stress, performance and welfare.

**Goal 4.** Students must be able to identify current harvest and processing methods for the major species of food animals, and apply basic food safety and regulatory practices.

**Objective 4.1** - Students identify current methods used to harvest and process the major farm animal species.

**Objective 4.2** - Students further process carcasses into retail cuts and create value-added food products.

**Objective 4.3** - Students comply with food safety regulations while producing wholesale and retail products.

**Objective 4.4** - Students implement the various quality assurance programs used in the food animal industry.

**Goal 5.** Students must be able to critically evaluate livestock in terms of form, function and value.

**Objective 5.1** - Students critically evaluate breeding animals of the major farm animal species and verbally defend the relationship between conformation and animal performance in a production system.

**Objective 5.2** – Students analyze production and performance information in livestock and apply these analyses for genetic selection and improvement.

**Objective 5.3** - Students critically evaluate food animals including predicting logical harvest endpoints, carcass composition, and carcass value for different livestock species.

**Goal 6.** Students must be able to evaluate economic performance of livestock enterprises and explain how management decisions influence performance and profitability.

**Objective 6.1** - Students calculate economic performance of livestock enterprises.

**Objective 6.2** - Students formulate budgets, predict management impacts on economic performance, and assess market conditions.

**Goal 7.** Students must be competent with the use of technology and have abilities in the areas of critical thinking and decision-making. In addition, they must have strong oral and written communication skills, and a sense of the importance of responsibility and work ethic.

**Objective 7.1** - Students must be competent in the use of appropriate technology.

**Objective 7.2** - Students exhibit strong critical thinking and decision-making skills.

**Objective 7.3** - Students must be competent in communication skills.

**Objective 7.4** - Students understand the importance of responsibility and work ethic in affecting the level of success in their future careers.

Our current animal science courses are listed on page 4 and a matrix outlining the relationship between these courses and our learning objectives is depicted on page 5.

It is important to note that some of the listed learning objectives are covered in courses offered by other departments. These courses are additional requirements for our various options and are mainly offered in the following departments: Agricultural Economics, Biology, Chemistry and Plant Science.

## **Animal Science Courses**

A Sci 1	Introduction to Animal Science
A Sci 11	Livestock Selection and Evaluation
A Sci 12	Companion Animal Science
A Sci 21	Beef Cattle Production
A Sci 31	Swine Production
A Sci 35	Feeds and Feeding
A Sci 41	Sheep Production
A Sci 51	Horse Production
A Sci 56	Colt Training
A Sci 61	Dairy Cattle Production
A Sci 67	Animals and Society
A Sci 71	Meat Science
A Sci 81	Introduction to Livestock, Dairy and Meats Evaluation
A Sci 91	Poultry Production
A Sci 94	Agri Internship
A Sci 101	Environmental Management of Farm Animals
A Sci 121	Advanced Beef Management
A Sci 125	Animal Genetics
A Sci 131	Advanced Swine Management
A Sci 135	Animal Nutrition
A Sci 145	Anatomy and Physiology of Farm Animals
A Sci 146	Physiology of Lactation
A Sci 151	Advanced Horse Management
A Sci 152	Equine Nutrition
A Sci 153	Stable Management
A Sci 155	Animal Reproduction
A Sci 156	Artificial Insemination and Embryo Transfer
A Sci 161	Advanced Dairy Farm Management
A Sci 162	Dairy and Meats Systems Management
A Sci 163	Dairy Cattle Nutrition
A Sci 164	Dairy Challenge
A Sci 165	Infectious Diseases of Domestic Animals
A Sci 171	Advanced Meat Science
A Sci 172	Meat Technology
A Sci 180	Undergraduate Research
A Sci 181	Advanced Livestock and Dairy Evaluation
A Sci 182	Livestock Marketing and Show Management
A Sci 186	Animal Science Seminar
A Sci 190	Independent Study
A Sci 194	Agricultural Internship



## **Assessment Activities**

### **Assessment Activity # 1 – Laboratory Practicum – Lower Division Production Courses**

Lower division production courses exist in all six of our species areas and in the area of meat science (Beef – A Sci 21, Swine – A Sci 31, Sheep – A Sci 41, Horse – A Sci 51, Dairy – A Sci 61, Poultry – A Sci 91, and Meat Science – A Sci 71). The majority of the specific learning objectives for these courses are covered in laboratory as well as in the lecture portion of these courses. In some of these courses, laboratory practicum finals have already been developed. In the ones in which laboratory finals have not been given, they will be developed. These finals will be practical “hands-on” finals that will address the specific learning objectives of these lower division courses that are typically taken during the student’s sophomore or junior years. A summary rubric will be developed that will tie the student responses back to specific learning objectives.

### **Assessment Activity #2 - Senior Exit Survey**

Prior to outcomes assessment, our department had an exit survey that had been administered to students enrolled in Animal Science Seminar (A Sci 186). This survey was updated and has been administered to graduating seniors each spring semester via the Internet. The students are contacted, the results are submitted, and summarized all electronically. In addition to specific learning objectives, this survey gathers data as to the value of activities such as our internship program, judging and show teams, involvement at our animal production units, and the quality of advising provided by our department. The survey will be administered and data will be gathered each spring and the results will be summarized and analyzed on four year intervals.

### **Assessment Activity #3 - Employer Survey**

We already know and have contact with many of the major employers of our students. Through our alumni survey, we attempt to get names and addresses of employers. We will develop a survey that will be sent to these employers that will gather information as to the competency of training in the various areas of animal sciences. In addition, it will gather information as to the work ethic, responsibility, critical thinking, decision making skills, and written and oral communication skills of our graduates.

### **Assessment Activity #4 – Culminating Project – Senior Seminar Course**

A Sci 186 – Animal Science Seminar is the culminating course in our department. Traditionally this course consisted of the following activities: development of resumes

and cover letters for specific positions, job interviewing skills, and culminated in the student's writing a paper and presenting an oral seminar on a topic of interest in the animal sciences industry. Resumes, cover letters and job interviewing skills are still part of this course. However, the paper and seminar that previously had been presented by individual students has been replaced by group presentations and papers. Starting in the Fall of 2009, we have used these group projects as assessment activities, Value rubrics were found that worked to assess student's communication and critical thinking skills.

For the first 3 semesters (Fall 2009, Spring 2010 and Fall 2010), students were evaluating real world production operations. This activity was patterned after The Dairy Challenge Team Contests in which our department participates. These contests involve student teams that actually visit an actual production operation, analyze production and financial records, and interview employees. The teams summarize the information and make a formal oral presentation consisting of strengths and weaknesses of the operation and suggestions for improvement consisting of the financial impact of those recommendations.

We have a group of three faculty members that have listened to basically all of these presentations and questioned speakers as part of this activity since the Fall of 2009. These presentations have served as excellent assessment measures of student's oral and written communication skills and critical thinking skills. However, in addition, we were attempting to use these presentations as an assessment of student abilities in the areas of animal physiology and management. The problem was that some of the students were working in species areas that were not their areas of expertise or in areas in which they had not taken an advanced management course. This created problems as the students simply did not have the background to answer the questions that were being asked of them.

We have refined this activity and in the Spring of 2011, these student groups are going to be debating a current industry issue or problem. This activity will continue to be used as an assessment of communication skills and critical thinking skills, however, the assessment of animal physiology and management will be assessed as course embedded assessment in the advanced management courses as described in Assessment Activity # 6.

### **Assessment Activity #5 – Alumni Survey**

Over time, our department has done a relatively good job of getting permanent addresses of students thus having the ability to contact them after graduation. The alumni survey that was used during some of our prior program reviews will be revised and refined to provide as much useful data as possible. This survey will be sent to students that will be working in industry and students that are pursuing advanced degrees either in graduate school or veterinary medicine programs. We believe the data that will be gathered after the students have been in industry or advanced study for a period of 3 to 4 years will be very valuable to our department.

## **Assessment Activity #6 – Course Embedded Assessment – Advanced Management Courses**

Advanced management courses serve as the culminating course in four of our species areas and in the area of meat science (Beef – A Sci 121, Swine – A Sci 131, Horse – A Sci 151, Dairy – A Sci 161, and Meat Science – A Sci 171). Examination questions will be developed that will assess student learning in a number of different areas. These questions will be real life production scenarios and will require students to use information that they have learned in many of our courses in developing their responses or answers to these production questions. These questions will comprise a portion of the final examination in these courses. A scoring rubric will be developed that will tie the student responses back to specific learning objectives.

Outlined on the following page is a matrix showing the relationship between assessment activities and specific learning objectives.



**Proposed Timeline  
for implementing Outcomes Assessment Plan**

<b><u>Year</u></b>	<b><u>Assessment Activity</u></b>
2010/11	Assessment Activity #2 – Senior Exit Survey Assessment Activity #4 – Senior Seminar Course
2011/12	Assessment Activity #1 – Laboratory Practicum Lower Division Production Courses Assessment Activity #2 – Senior Exit Survey
2012/13	Assessment Activity #5 – Alumni Survey Assessment Activity #6 – Course Embedded Assessment Advanced Management Courses
2013/14	Assessment Activity #2 – Senior Exit Survey Assessment Activity #4 – Senior Seminar Course
2014/15	Assessment Activity #2 – Senior Exit Survey Assessment Activity #3 – Employer Survey

**Plan for Incorporating Results  
of Assessment Activities**

A committee comprised of all interested faculty in the animal sciences program will develop the surveys, guidelines for course embedded assessment and the rubrics that will be used as part of these assessment activities. In addition, this committee will have the responsibility of gathering and evaluating the information generated through these assessment activities. Most importantly, this committee will have the responsibility of making recommendations to the department on how these findings will be incorporated to improve the animal sciences program.

Each year, the Department of Animal Sciences and Agricultural Education has a two-day retreat during the summer months. The focus of part of this retreat in future years will be the recommendations from this committee on incorporating the findings from outcomes assessment. Each year at the retreat, the department will decide on a plan for incorporating changes that need to be made for program improvement. After this plan is developed each year, it will be given to our department advisory committee and their input will be considered before the plan is incorporated into our animal sciences program.

## Animal Science Courses and Learning Objectives

	Animal Science Courses																																					
	I	11	12	21	31	35	41	51	56	61	67	71	81	91	94	101	121	125	131	135	145	146	151	152	153	155	156	161	162	163	164	165	171	172	181	182	186	194
<b>Goal 1</b>																																						
1.1	I			R	R		R	R	R				R	R			A	A																		A		
1.2	I			I	I		I	I	I					I			R	R				R						R	A		A			R				
1.3			I					I			R																											
<b>Goal 2</b>																																						
2.1	I	I							I			R				A	I	R				I					R								R			
2.2				I				I								R	R				R			I	R	A	A		A									
2.3				I	I		I	I								I	R	R	R			I	R				R		A	R								
2.4							I				I										R	A	R	R			I					R						
2.5			I	I	I		I	I	I					I		A	R	R				R			R	R		I	R	R	A							
<b>Goal 3</b>																																						
3.1						I		I	I												R			R			R		R	A								
3.2			I	I	I		I	I	I				I			R	R					R					R				I							
3.3				I	I		I	I	I		I		I			R	R					I					R				R	R						
3.4																I	I				R	I					I			A								
3.5			I	I	I		I	I	I	R	I		I		R	R	R					R					R	R			R	A	R				R	
<b>Goal 4</b>																																						
4.1	I												R																				A	A				
4.2													I																					A	A			
4.3	I												R																				A	A				
4.4			I	I							I		I	I	I	R	R											R			I	A	A				R	
<b>Goal 5</b>																																						
5.1				I	I		I	I	I				I	I									I													R		
5.2													I			R	R											I								R		
5.3	I		R	R							R	R				R	R																R		R			
<b>Goal 6</b>																																						
6.1																A	R						I			A	R		A		R	R						
6.2																A	A							I			A	R		A		R	R					
<b>Goal 7</b>																																						
7.1		I	I	I	I	I	I	I		I	I					R	R					R				R		A	R		A	A		R	R			
7.2		I										R	I		I	R	R		R				R	R			A	R	R	A		R	A	A	R	R		
7.3										R	R				R	R	I													A		R	A	R	A			
7.4				I							I				I			R					R	R							A	A		A		R		

I = Introduced

R = Reinforced

A = Advanced Study

A Sci 180 and 190 - learning objectives depend on topic selected for further study.

**Matrix  
Assessment Activities and  
Learning Objectives**

	Assesment Activities					
	# 1	# 2	# 3	# 4	# 5	# 6
	Laboratory Practicum	Senior Survey	Employer Survey	Sr. Seminar Project	Alumni Survey	Course-Emb. Assess.
<b>Objectives</b>						
1.1	x					x
1.2	x			x		x
1.3						x
2.1		x	x		x	x
2.2		x	x		x	x
2.3		x	x		x	x
2.4		x	x		x	
2.5	x	x	x		x	x
3.1		x	x		x	x
3.2	x		x			x
3.3	x				x	x
3.4		x	x		x	x
3.5	x		x			x
4.1			x		x	x
4.2			x			x
4.3			x		x	x
4.4	x		x		x	x
5.1	x	x				x
5.2			x		x	x
5.3	x		x			x
6.1			x		x	x
6.2			x		x	x
7.1	x	x	x	x	x	x
7.2		x	x	x		x
7.3			x	x		x
7.4			x			
Specific learning objectives addressed by Assessment Activity #6 will differ by specific course.						