California State University Chico
Office of the President

Executive Memorandum 23-013

June 8, 2023

From: Gayle E. Hutchinson, President

Subject: Approval of the New Option in Pre-Veterinary Science within the BS in Animal Science

Upon the recommendation of the Academic Senate and with the concurrence of the Provost, I approve the Option in Pre-Veterinary Science within the Bachelor of Science in Animal Science, College of Agriculture. The new option will require 33 units, will use CSU code 01041 with a related CIP code of 1.0901, and will be effective fall 2024.

Policy Title:	EM 23-013 Option in Pre-Veterinary Science
Contact:	College of Agriculture
Supersedes:	
Revision:	
Enabling Legislation or Executive Order:	

New Undergraduate Option

Program Name: Pre-Veterinary Science

Program named above is an option within:

Animal Science

(degree program name)

Department Contact(s) w/phone #(s):

Celina Phillips 530-898-4147; crphillips1@csuchico.edu

Required Signatures

The Department of Agriculture
has reviewed and approved this new program

Celina Phillips
Chair, Department Curriculum Committee — Date

Eric Hauk
Department Chair — Date

The College of Agriculture
has reviewed and approved this new program

Celina Phillips
Chair, College Curriculum Committee — Date

Susana Stock (Jan 16, 2023 16:21 PST)
College Dean — 12/15/22 Date

Send signature page with proposal attached to Curriculum Services at zip 128

Curriculum Review Completed — 3/23/2023 Date

Note: The department will be notified of the dates for EPPC, Academic Senate, WASC, and Chancellor's Office review.

Proposal for a New Option

I. Proposed title of new option and name of degree program under which the new option will be offered. *Pre-Veterinary Science Option in Animal Science*

II. Academic year of intended implementation. *AY 2024-2025*

III. Name of the department and college submitting the proposal.

A. Identify the unit which will have primary responsibility for the option. *College of Agriculture*

B. Identify the level of the option (i.e., undergraduate or graduate). *Undergraduate*

IV. Statements on questions of need and demand.

A. Relation of the program to the University Strategic Plan.

Over the past 10 years, the Animal Science program at Chico State has shown growth, even during the pandemic (AY 2020-21 and 2021-22; Figure 1). The incoming class of Animal Science students accounts for about 60% of the incoming College of Agriculture students (data from College of Agriculture Student Success and Retention Office). According to the 2022 Chico Facts, Animal Science is the tenth largest major in the University. As the Animal Science program has grown, the faculty involved in the program have strived to maintain a student-centered approach. The Animal Science program has developed first year learning experiences and programming to promote equity and inclusion in the classroom. Over the past decade, the faculty and staff in the Animal Science program have strategically been recruiting at various youth livestock events and via social media platforms. The Animal Science program has maintained a high percentage of female students (over 80%) during the past decade and between 60-70% first-generation students. Increases in the under-represented student population and students of color has increased dramatically over the past 10 years (Figures 3 and 4).

The Animal Science program embraces the strategic plan of the University and strongly believes in the following:

- *Providing high-quality undergraduate education through innovative pedagogy, experiential learning, and leading-edge scholarship. The Animal Science program is closely integrated with the University Farm and prioritizes experiential learning in the curriculum.*
- *Enriching student well-being and drive intellectual curiosity and engagement through caring and empowering relationships and co-curricular experiences. Through the addition of the proposed option, the Animal Science program believes that student engagement and empowerment will be increased.*
- *Enhancing and increasing distinctive research and creative endeavors. Undergraduate research experience is essential for students seeking professional school as a career option. Through the addition of the*

proposed option, the Animal Science program can better identify students that may be seeking research opportunities.

- *Improving academic, operational, and financial processes to ensure wise stewardship and enduring use of all resources to sustain as one University. Through the addition of a pre-veterinary science option in Animal Science, the College and program will be able to improve advising efficiency and track student retention and success within the program.*

B. Need for the proposed option.
   1. Identify other CSU campuses with the proposed option.
      a. *California State University, Fresno (http://www.fresnostate.edu/catalog/subjects/animal-sciences-ag-education/pre-vet.html)*
      b. *California Polytechnic, San Luis Obispo (https://animalscience.calpoly.edu/AboutUs/AreasOfStudy/prevet_medicine)*
      c. *California Polytechnic, Pomona https://www.cpp.edu/preprofessional/major-programs/prevet.shtml*
   2. Identify neighboring institutions with the proposed option.
      a. *University of California, Davis (science and management options within ANSC) (https://animalscience.ucdavis.edu/academics/undergrad)*
      b. *Oregon State University (https://anrs.oregonstate.edu/anrs/animal-biohealthpre-professional)*
      c. *University of Nevada, Reno (https://www.unr.edu/degrees/majors/veterinary-science)*
   3. Identify differences, if any, between these programs and the proposed program.
      Currently, Chico State is the only CSU agriculture program that does not offer an option for pre-veterinary science. Additionally, the majority of our out-of-state competitors offer multiple options within Animal Science, including a pre-veterinary science option. If we are to be competitive for students in the future, we need to provide a pre-veterinary science option within our program.

C. Identify other closely related curricula currently offered by the campus.
   1. Explain the impact the proposed option will have on these programs.
      Biological Sciences – Pre-Professional Program in Pre-Veterinary Medicine. Our proposed major may impact

enrollment in this program for Biological Sciences. The Animal Science program has consulted with Biological Sciences regarding possible change. The Animal Science program differs by offering large food-animal experience (classroom and on the University Farm) to the students. In the course catalog, Biological Sciences refers students interested in large animal medicine to the Animal Sciences program.

2. Explain how current programs do not meet the proposed option's objectives.
   The ANSC program has grown such that we are not able to efficiently serve our students without knowing how many are considering a pre-professional program such as veterinary schools. By developing this option, The ANSC program and College of Agriculture Student Success and Retention Office (SSRO) can be more efficient with our advising and improve services to support student success, with the ultimate goal of improving time to graduation and student success and retention.

D. Student demand for the program.
   1. Give evidence of serious student interest in the proposed option.
      The question was asked of incoming students during summer orientation of how many were interested in pre-veterinary science. The faculty and staff in the SSRO estimated at least 80% of the incoming students were interested in pre-veterinary science. This makes the implementation of this option important to be able to accurately recruit, retain, and support student interested in pre-veterinary science.
   2. Estimated number of students seeking the option
      a. in the year of initiation. *Estimate about 10 of the current students currently enrolled in ANSC program will switch to this option.*
      b. after three years. *Estimate approximately 100 students enrolled in the option.*
      c. after five years. *Estimate approximately 150 students enrolled in the option.*
      d. Describe methodology for developing these estimates.
         Estimates derived from advising notes and conversations with students. Currently approximately 70+% of incoming ANSC students indicate they are interested in pursuing veterinary school.
   3. Estimate the number of options awarded
      a. in the year of initiation. *Estimate none the year of initiation.*
      b. after three years. *Estimate at least 15 awarded per year, for 3 years (45 total).*
      c. after five years. *Estimate at least 15 awarded per year, for 5 years (75 total).*

d. Describe methodology for developing these estimates.
Estimates derived from advising notes and conversations with students. Annually, approximately 60 students earn a degree in ANSC, we estimate that about a minimum of 25% would earn a degree with the proposed option.

E. Identify professional uses for the proposed option.
The U.S. Bureau of Labor occupational outlook for veterinarian's projects that the job outlook from 2020-2030 will increase at 17%, considered "much faster than average" (https://www.bls.gov/ooh/healthcare/veterinarians.htm). Furthermore, the U.S. Census Bureau predicts a national shortage of about 15,000 veterinarians by 2025, most of those shortages in rural areas (https://www.ilfbpartners.com/farm/rural-vet-shortage/#:~:text=The%20U.S.%20Census%20Bureau%20anticipates,be%20needed%20in%20rural%20areas.). It is imperative that our rural communities have access to quality veterinary care and part of our CSU mission to develop this type of workforce.

V. Resources

A. List the faculty members for the required courses in the program
Please refer to the College of Agriculture Faculty list available at https://www.csuchico.edu/ag/about/faculty/index.shtml
Please refer to the Department of Biological Sciences Faculty list available at https://www.csuchico.edu/biol/about/people/index.shtml
Please refer to the Department of Chemistry and Biochemistry Faculty list available at https://www.csuchico.edu/chem/about-chem/faculty-staff/index.shtml

B. List the faculty members for the elective courses in the program
Please refer to the College of Agriculture Faculty list available at https://www.csuchico.edu/ag/about/faculty/index.shtml
Please refer to the Department of Biological Sciences Faculty list available at https://www.csuchico.edu/biol/about/people/index.shtml
Please refer to the Department of Chemistry and Biochemistry Faculty list available at https://www.csuchico.edu/chem/about-chem/faculty-staff/index.shtml

C. List the resources needed to sustain the program for the first five years, including cost and funding source.
1. Faculty – *Current faculty have been sustaining the program. However, due to recent retirements and shifts in roles to administrative positions, continued growth will require the addition of 1-2 tenure track positions to continue to support the growth and applied experiential learning experiences that sets the Chico State Animal Science program apart from others.*
2. Staff – *Current staffing is adequate.*
3. Facilities – *Current facilities are adequate.*

4. Library resources; provide evidence of consultation with the Library Dean indicating that the program can be supported by the library. *See attached documentation, page 15.*
5. Equipment – *Current equipment is adequate.*
6. Specialized material – *N/A*

D. Additional support resources required, including source of support. *N/A*

VI. Curriculum

Note: Proposed curriculum should take advantage of courses already offered in other departments when subject matter would otherwise overlap or duplicate existing course content.

A. Total number of units required for option. *33 Units*
B. Special criteria for admission and/or continuation (if applicable). *N/A*
C. Explanation of any special program characteristics (e.g., terminology, credit units required, types of coursework, etc.). *N/A*
D. List all new courses for the proposed program.
   1. Course number and title: *ANSC 100 Introduction to Food Animal Systems*
      Units of credit: *3 units*
      Prerequisites: *None*
      Proposed catalog description: *Exploration of food animal systems and the role they play in animal agriculture and society. Discuss system structures and current issues relating to food animal systems.*
      Mode of course delivery if other than regular: *Lecture, in person*
   2. Identify the new courses needed to initiate the program. *ANSC 100*
   3. Identify the new courses needed during the first two years after implementation. *None*
E. List all required courses for the program along with a rationale for why each one should be required. If applicable, you can refer to the proposal's or program's learning outcomes.

Course	*Units*	*Prerequisites*	*Rationale*
ANSC 100 Introduction to Food Animal Systems	*3*	*None*	*Foundation course to provide key background and terminology to set up student success in the major.*
ANSC 101 Introduction to Animal Science	*3*	*None*	*Foundation course that covers key biological principles and counts as GE Area B2 for majors.*
ANSC 230 Animal Feeds and Nutrition	*3*	*None*	*Basics of developing rations for food and companion animals.*
MATH 105 Introduction to Statistics	*3*	*None*	*GE Area B4*
CHEM series (107/108 or 111/112)	*4 each*	*Varies*	*Foundation courses to basic science principles in the core classes for major. GE Area B1*

ABUS 101 Introduction to Agricultural Business and Economics	*3*	*None*	*Foundation course for understand food animal marketing and financial management. GE Area D*
BIOL 162 Principles of Cellular and Molecular Biology	*4*	*CHEM 107 or CHEM 111 or department permission*	*Required for numerous veterinary schools*
BIOL 163 Principles of Physiology and Development	*4*	*BIOL 162 or department permission*	*Required for numerous veterinary schools*
CHEM 270 Organic Chemistry I	*4*		*Required for numerous veterinary schools*
CHEM 370 Organic Chemistry II	*3*		*Required for numerous veterinary schools*
CHEM 451 Biochemistry 1	*3*		*Required for numerous veterinary schools*
AGRI 305 Agriculture Genetics	*3*	*CHEM 107 or 111*	*Meets programmatic goal*
AGRI 482W Agriculture Issues	*3*	*ENGL 130W or JOUR 130W*	*Writing course for agriculture majors that also double counts for GE upper division area D*
AGRI 490W Agriculture Experimental Research	*4*	*MATH 105*	*Writing course for science majors in College of Agriculture*
ANSC 330 Animal Nutrition	*3*	*ANSC 101, ANSC 230*	*Meets programmatic goal*
ANSC 340 Reproductive Physiology of Domestic Animals	*3*	*ANSC 101*	*Meets programmatic goal*
ANSC 360 Animal Health & Disease	*3*	*ANSC 101*	*Meets programmatic goal*
ANSC 440 Physiology of Domestic Animals	*3*	*ANSC 101, CHEM 107 or 111*	*Meets programmatic goal*

F. List all elective courses for the program along with a general rationale for why each should be included as such. If applicable, you can refer to the proposal's or program's learning outcomes.

Course	*Units*	*Prerequisites*	*Rationale*
Production Electives:			
ANSC 250 Live Animal & Carcass Evaluation	*3*	*None*	*Meets programmatic goal*
ANSC 271 Principles of Beef Cattle Production	*3*	*None*	*Meets programmatic goal*

ANSC 274 Principles of Dairy Production	*3*	*None*	*Meets programmatic goal*
ANSC 276 Principles of Meat Science	*3*	*None*	*Meets programmatic goal*
ANSC 294 Principles of Rangeland and Livestock Management	*3*	*None*	*Meets programmatic goal*
ANSC 301 Intermediate Animal Systems	*3*	*ANSC 101*	*Meets programmatic goal*
ANSC 350 Meat and the Consumer	*3*	*None*	*Meets programmatic goal*
ANSC 370 Livestock and Companion Animal Behavior	*3*	*ANSC 101*	*Meets programmatic goal*
ANSC 374 Organic Dairy Production and Management	*3*	*ANSC 101*	*Meets programmatic goal*
ANSC 450 Food Sanitation and Quality Control	*3*	*ANSC 101, CHEM 107 or 111*	*Meets programmatic goal*
ANSC 470 Animal Welfare	*3*	*ANSC 360, ANSC 370 or Instructor Approval*	*Meets programmatic goal*
ANSC 471 Advanced Beef Cattle Management and Production	*3*	*ANSC 101, ANSC 271 or permission*	*Meets programmatic goal*
ANSC 474 Dairy Production and Management	*3*	*ANSC 101*	*Meets programmatic goal*
Ecological Electives:			
AGRI 331 Agricultural Ecology	*3*	*Completion of lower division core or department permission*	*Meets programmatic goal*
AGRI 432 Holistic Management	*3*	*AGRI 331 or faculty permission*	*Meets programmatic goal*
ANSC 394 Livestock Grazing Ecology and Management	*3*	*None*	*Meets programmatic goal*
PSSC 363 Forage Crops	*3*	*None*	*Meets programmatic goal*
General Electives (upper and lower division):			
Please refer to the listing of College of Agriculture courses in the course catalog available at https://catalog.csuchico.edu/courses/. Students can use any courses in AGRI, AGET, ANSC, ABUS, and PSSC.			

G. For undergraduate options, explain provisions for articulation of the proposed option with community college courses.

All courses are currently taught within the ANSC program, with the exception of proposed new course. Articulation agreements are already in place for many of these courses, therefore minimizing articulation issues.

H. For undergraduate options, will the new option be matched to an existing associate degree, as specified in SB 1440, and if so, is it certain that the new degree option will not require a student to repeat courses similar to those taken for the associate degree?
Yes – the proposed option will still articulate with the AS-T in Animal Science.

I. Writing Requirement
   1. For an undergraduate option, list the number and title of the Graduation Writing Assessment (GWAR) course for the option. List the GWAR course for the degree program if it is different from the GWAR course for the option.

      AGRI 482W Agricultural Issues

   2. For a graduate option, indicate how the graduate literacy requirement is met within the option and/or degree program. *N/A*
      For a graduate option, indicate the culminating activity for the option and/or degree program. *N/A*

J. Complete catalog copy, including full degree requirements (i.e., a catalog description of the full degree program, not just the option being proposed), and admission and completion requirements. See the current University Catalog for correct format; please follow it exactly. Before the proposal is submitted to Academic Affairs (for undergraduate options) or to the Office of Graduate Studies (for graduate program options), it may be helpful to review catalog copy with Academic Publications.
See attached marked up catalog copy.

K. For undergraduate programs, include a Major Academic Plan (MAP) with the proposal. If you have questions or need help, contact Academic Advising Programs.

Attach the Undergraduate Program Signature form or the Graduate Program Signature form to the front of the proposal and submit to Curriculum Services or the Office of Graduate Studies after all department and college reviews are complete.

Figure 1. Growth in the Animal Science Program at California State University, Chico over the past 10 years. Data expressed as number of students majoring in Animal Science at census during fall semester of each academic year. Data from Chico State Fact Book available online at https://www.csuchico.edu/ir/fact-book/.

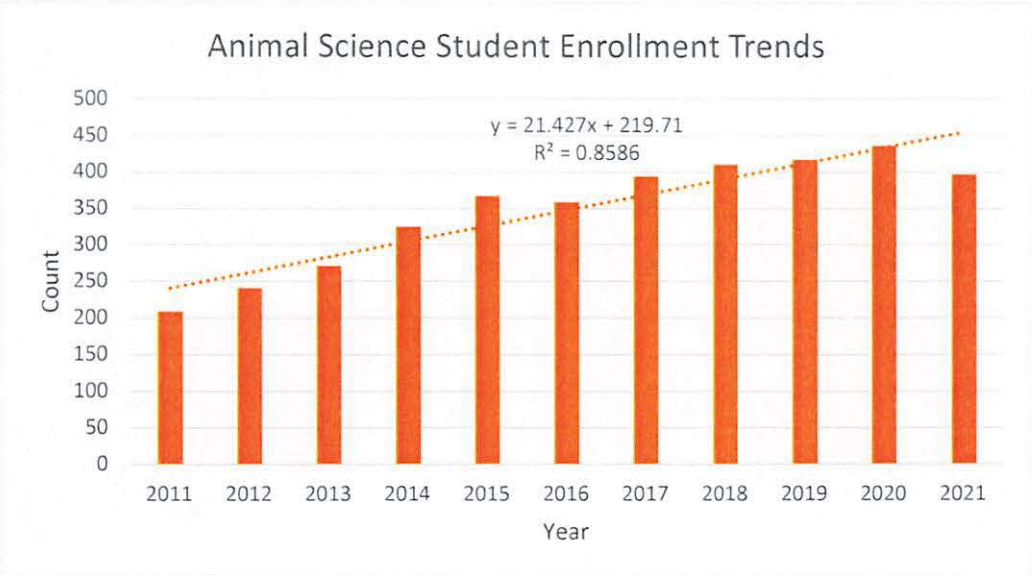


Figure 2. Percentage of females in the Animal Science Program at California State University, Chico over the past 10 years. Data expressed as percentage of students majoring in Animal Science at census during fall semester of each academic year. Data from Chico State Fact Book available online at https://www.csuchico.edu/ir/fact-book/.

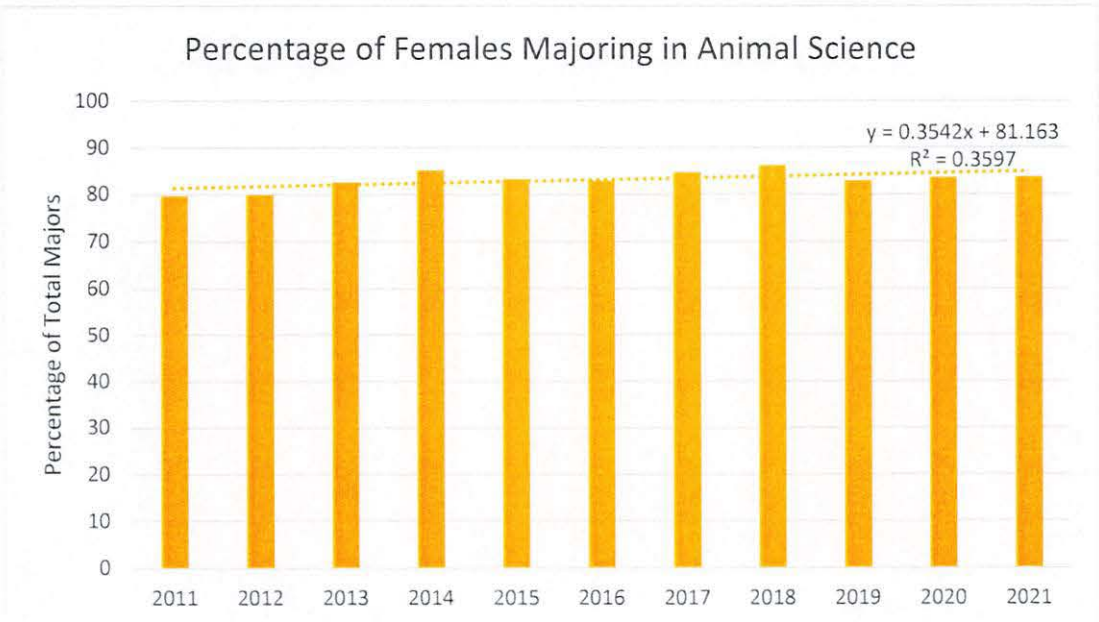


Figure 3. Percentage of under-represented minorities (URM) in the Animal Science Program at California State University, Chico over the past 10 years. Data expressed as percentage of students majoring in Animal Science at census during fall semester of each academic year. Data from Chico State Fact Book available online at https://www.csuchico.edu/ir/fact-book/.

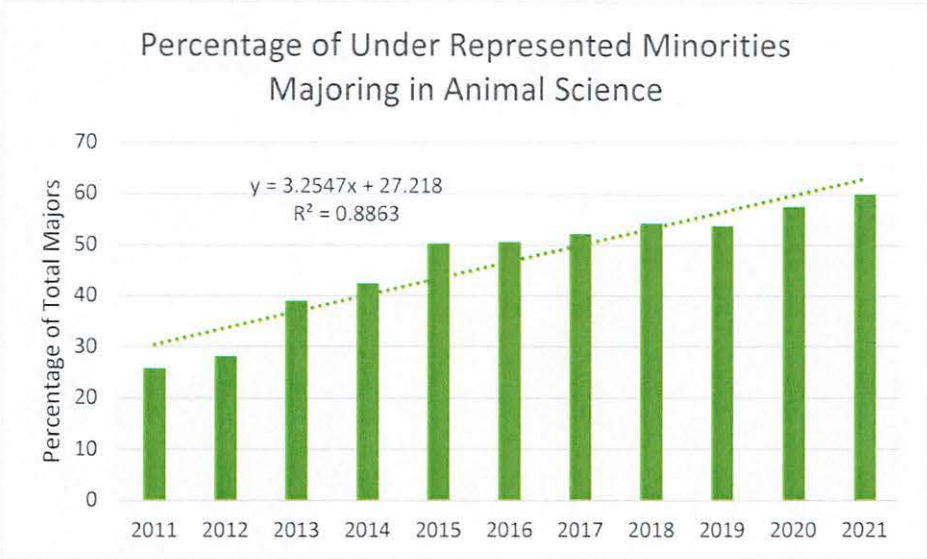


Figure 4. Percentage of students of color in the Animal Science Program at California State University, Chico over the past 10 years. Data expressed as percentage of students majoring in Animal Science at census during fall semester of each academic year. Data from Chico State Fact Book available online at https://www.csuchico.edu/ir/fact-book/. No data was reported for 2011.

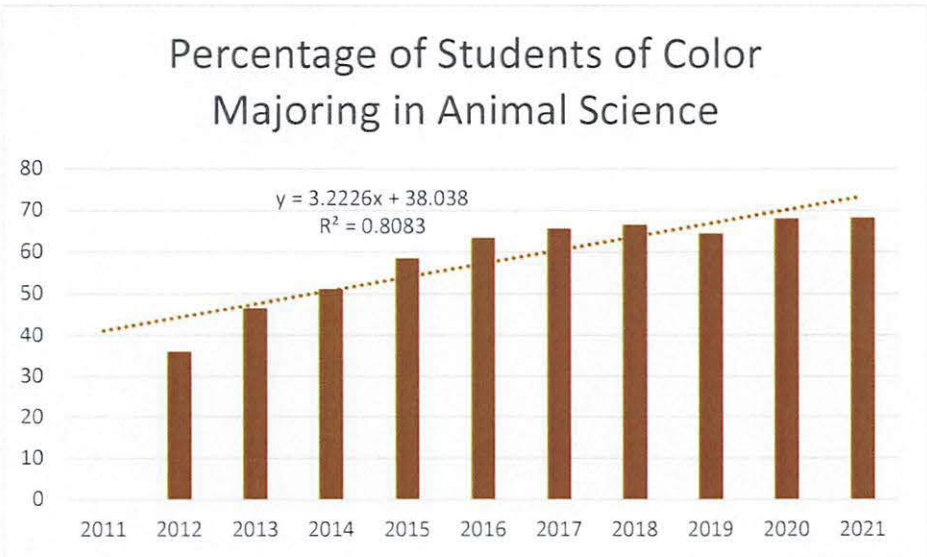


Figure 5. Trends in first-time freshmen graduation rates for students majoring in Animal Science, over the past 10 years. Data from Chico State Fact Book available online at https://www.csuchico.edu/ir/fact-book/.

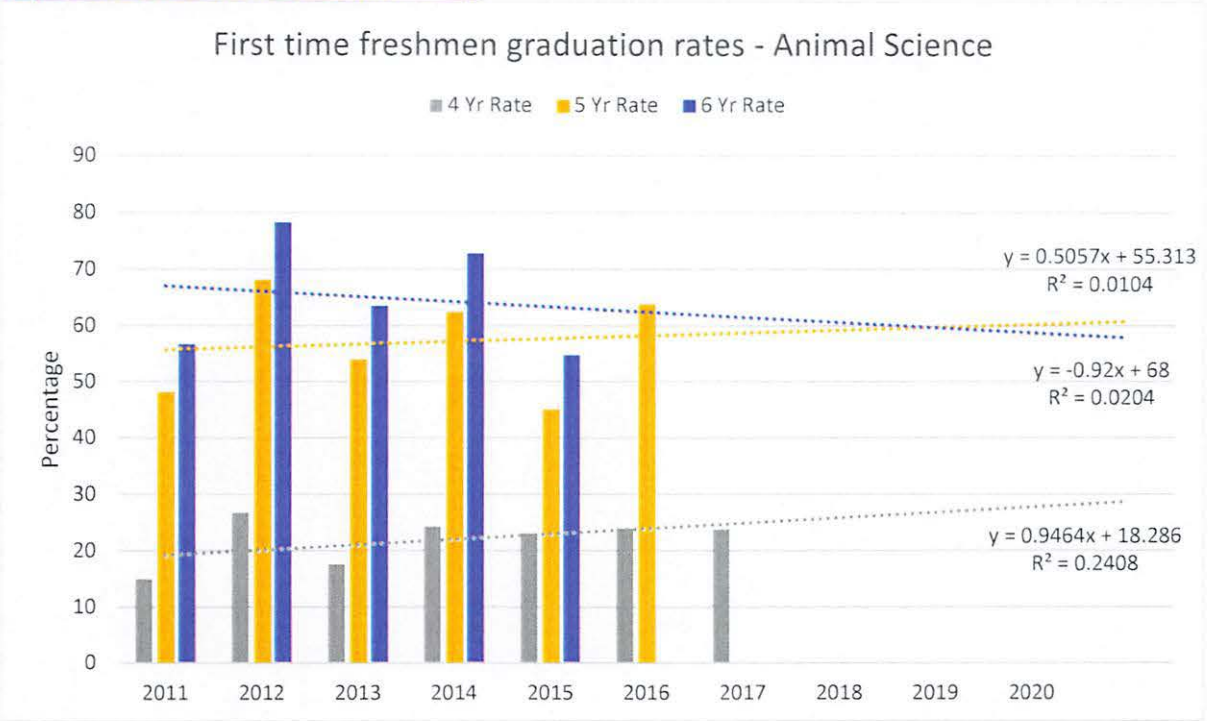
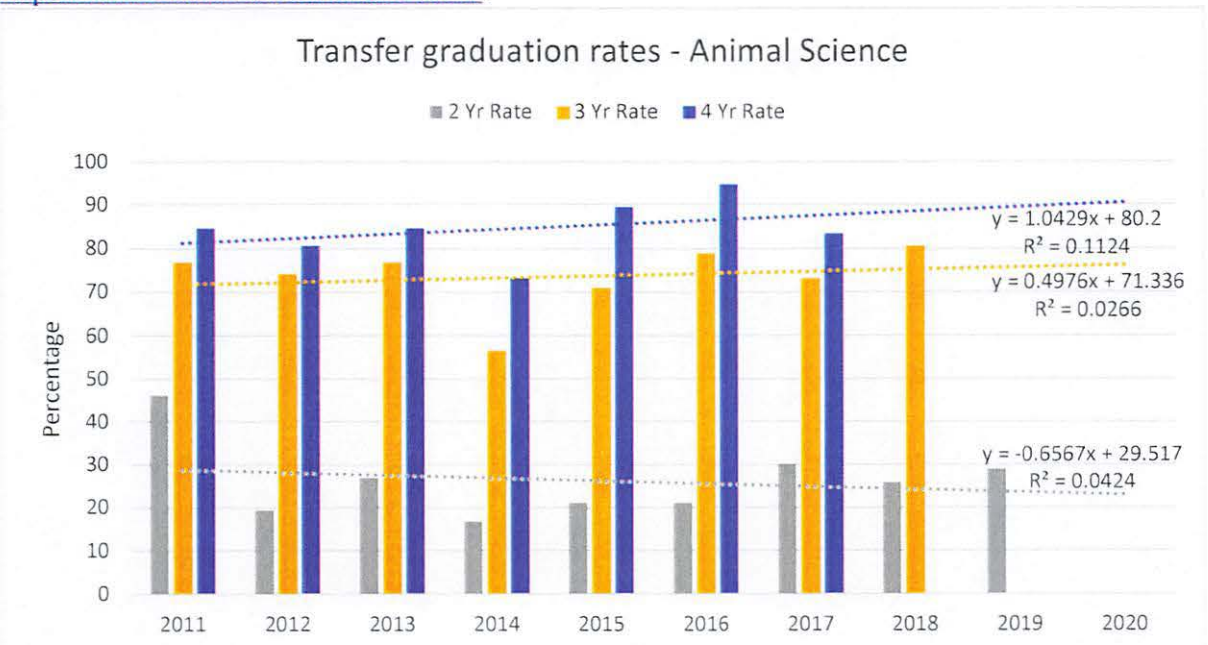


Figure 6. Trends in transfer student graduation rates for students majoring in Animal Science, over the past 10 years. Data from Chico State Fact Book available online at https://www.csuchico.edu/ir/fact-book/.



From: Christopher J Nichols <CJNichols@csuchico.edu>
Sent: Thursday, December 15, 2022 7:05 PM
To: Kristopher A Blee <KBlee@csuchico.edu>; Celina Phillips <crphillips1@csuchico.edu>
Subject: Re: Request for support ANSC major adding option in Pre-Veterinary Science

Celina – in case it wasn't clear from my earlier reply (with questions that you answered to my satisfaction), CHEM is also in favor of putting forth this option.

Thanks
cjn

Christopher J. Nichols
Professor and Chair
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From: Kristopher A Blee <KBlee@csuchico.edu>
Date: Thursday, December 15, 2022 at 6:54 PM
To: Celina Phillips <crphillips1@csuchico.edu>, Christopher J Nichols <CJNichols@csuchico.edu>
Subject: RE: Request for support ANSC major adding option in Pre-Veterinary Science

Hi Celina
As Biology chair, I write in support of the pre-veterinary science option as presented by pdf because use of two Biology courses, 162 and 163, was supported by the option also requiring Chem 111 as a prerequisite. You email text below suggested upper division biology courses would be impacted, but I could not find mention of upper division biology courses being use as electives in the supplied pdf.
Kris

> **From:** Celina Phillips <crphillips1@csuchico.edu>
> **Sent:** Thursday, December 15, 2022 10:48 AM
> **To:** Kristopher A Blee <KBlee@csuchico.edu>; Christopher J Nichols <CJNichols@csuchico.edu>
> **Subject:** Request for support ANSC major adding option in Pre-Veterinary Science
>
> Chris and Kris,
>
> I had reached out about a year ago, I believe Jonathan Day was still chair, for support to formalize an option in pre-veterinary science in our ANSC major. This impacts your two programs in the aspect that we are formalizing the option. The classes that would be impacted are BIOL 162 and 163, some of the upper division courses as electives; and CHEM 111, 112, 270, 370, 451.

I had the support of both departments a year ago, but we have finally navigated our college and change in administration ourselves, so I was wondering if I could ask for an updated email of support from your programs. I have attached our proposal for your review.

Sincerely,
Celina Phillips

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Celina R. Phillips, PhD, PAS
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Sheep Unit Faculty Supervisor
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Learn more about me: https://tinyurl.com/DrCelinaPhillips

Want to set an appointment? Book here: https://tinyurl.com/CelinaAppointment

Do we have a meeting? Visit my "office": https://tinyurl.com/CelinasOffice

"Education is not the filling of a pail, but the lighting of a fire." –William Butler Yeats

California State University Chico
College of Agriculture

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Meriam Library
California State University, Chico
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MEMORANDUM

To: Dr. Celina Phillips
From: Marc Langston
Date: August 24, 2022
Subject: Library materials support for Agriculture program changes, specifically the new Pre-Veterinary Science major

Library materials appropriate for the proposed Pre-Veterinary Science major are classified under the Library of Congress classifications of SF-Animal Culture, QL-Zoology, and QP-Physiology. Library materials currently held by the library in these subject areas are listed below:

Print Books: 11,980 titles
Print journals: 459 titles
E-books: 3,212 titles
E-journals: 169 titles
Databases: Agricola, CAB Abstracts, Academic Search, Biological Abstracts, Science Direct

In addition to resources currently held in the Library, Agriculture is allotted an annual book budget to purchase new library materials. Selection of these new materials is overseen by the Library's Agriculture Librarian, who also makes available information literacy instruction for all Agriculture classes.
The Meriam Library currently provides adequate access to both electronic and physical library and learning resources that would support the new Pre-Veterinary Science major.

Animal Science BS

The Bachelor of Science in Animal Science prepares students for diverse careers involving all aspects of food animal agriculture. Careers in food animal production, support industries such as animal health and nutrition companies, and pre-professional preparation for graduate or professional school studies are all possible directions for students obtaining this degree.

Students interested in food animal pre-veterinary medicine should pursue this degree. The degree emphasizes science-based study of food animal production, including nutrition, health, reproduction, anatomy/physiology, genetics, and meat science.

In addition, management level courses in several food animal species are offered. Students get hands-on learning about food animals such as sheep, beef and dairy cattle, and pigs at the University Farm.

Grading Requirement

All courses taken to fulfill program course requirements must be taken for a letter grade except those courses specified by the department as credit/no credit grading only.

Course Requirements for the Major: ~~79-80~~ 78 units

Completion of the following courses, or their approved transfer equivalents, is required of all candidates for this degree. Courses in this program may complete more than one graduation requirement.

Course	Title	Units
Lower-Division ~~Requirements~~ Core		
~~AGRI 180~~	~~The University Experience~~	~~1~~
ANSC 100	Introduction to Food Animal Systems	3
ANSC 101	Introduction to Animal Science	3
ANSC 230	Animal Feeds and Nutrition	3
MATH 105	Introduction to Statistics	3

Course	Title	Units
Select one of the following:		4
CHEM 107	General Chemistry for Applied Sciences	
CHEM 111	General Chemistry I	
Select one of the following:		4
CHEM 108	Organic Chemistry for Applied Sciences	
CHEM 112	General Chemistry II	
~~Select one of the following:~~		~~3~~
ABUS 101	Introduction to Agricultural Business and Economics	3
~~ABUS 261~~	~~Farm Accounting~~	
~~Select one of the following:~~		~~3-4~~
~~BIOL 162~~	~~Principles of Cellular and Molecular Biology~~	
~~PSSC 101~~	~~Introduction to Plant Science~~	
~~PSSC 250~~	~~Introduction to Soil Science~~	
~~Select nine units from the following:~~		~~9~~
~~Any combination of lower division courses in Agriculture (AGRI), Agricultural Engineering Technology (AGET), Animal Science (ANSC), Plant Science (PSSC), Agricultural Business (ABUS).~~		
~~BIOL 161~~	~~Principles of Ecological, Evolutionary, and Organismal Biology~~	
~~BIOL 163~~	~~Principles of Physiology and Development~~	
~~CHEM 270~~	~~Organic Chemistry I~~	
~~PHYS 202A~~	~~General Physics I~~	
~~PHYS 202B~~	~~General Physics II~~	
Upper-Division ~~Requirements~~ Core		
AGRI 305	Agricultural Genetics	3
AGRI 482W	Agricultural Issues (W)	3
AGRI 490W	Agricultural Experimental Research (W)	4
ANSC 330	Animal Nutrition	3

Course	Title	Units
ANSC 340	Reproductive Physiology of Domestic Animals	3
ANSC 360	Animal Health and Disease	3
ANSC 440	Physiology of Domestic Animals	3
Select one of the following:		3
AGRI 331	Agricultural Ecology	
PSSC 330	Rangeland Resources and Management	
PSSC 363	Forage Crops	
Animal Science Electives		
Select nine units from the following (six units must be upper division):		9
ANSC 271	Principles of Beef Cattle Production	
ANSC 272	Principles of Sheep & Goat Production	
ANSC 273	Principles of Swine Production	
ANSC 274	Principles of Dairy Production	
ANSC 301	Intermediate Animal Systems	
ANSC 350	Meat and the Consumer	
ANSC 374	Organic Dairy Production and Management	
ANSC 450	Food Sanitation and Quality Control	
ANSC 471	Advanced Beef Cattle Management and Production	
ANSC 474	Dairy Production and Management	
Select 12 units from the following:		12
Any combination of upper division courses in Agriculture (AGRI), Agricultural Engineering Technology (AGET), Animal Science (ANSC), Plant Science (PSSC), Agricultural Business (ABUS). A minimum of three upper division ABUS units are recommended.		
BIOL 360	Genetics	
BIOL 416	Vertebrate Physiology	
CHEM 370	Organic Chemistry II	
CHEM 451	Biochemistry I	

Course	Title	Units
Total Units For Core		45

Major Option Course Requirements

Students must select one of the following options for completion of the major course requirements.

The Option in Pre-Veterinary Science: 33 units

This option prepares students for application to professional programs such as veterinary schools and graduate programs. Emphasis is on advanced sciences to prepare students for post-baccalaureate education.

Course	Title	Units
Lower Division Requirements		
BIOL 162	Principles of Cellular and Molecular Biology	4
BIOL 163	Principles of Physiology and Development	4
CHEM 270	Organic Chemistry I	4
Upper Division Requirements		
CHEM 370	Organic Chemistry II	3
CHEM 451	Biochemistry I	3
Production Electives (choose 2, one can be lower division)		6
ANSC 250	Live Animal and Carcass Evaluation	
ANSC 271	Principles of Beef Cattle Production	
ANSC 274	Principles of Dairy Production	
ANSC 276	Principles of Meat Science	
ANSC 294	Principles of Rangeland Livestock Management	
ANSC 301	Intermediate Animal Systems	
ANSC 350	Meat and the Consumer	
ANSC 370	Livestock and Companion Animal Behavior	

Course	Title	Units
ANSC 372	Sheep Production and Management	
ANSC 373	Swine Production and Management	
ANSC 374	Organic Dairy Production and Management	
ANSC 394	Livestock Grazing Ecology and Management	
ANSC 450	Food Sanitation and Quality Control	
ANSC 470	Animal Welfare	
ANSC 471	Advanced Beef Cattle Management and Production	
ANSC 474	Dairy Production and Management	

General Electives:

Select 9 units from the following:	9
Any combination of upper division courses in AGET, AGRI, ANSC, PSSC or ABUS. Choose courses in consultation with your advisor.	
Total Units	**33**

The Option in Food Animal Production: 33 units

The option in Food Animal Production is a general animal science option that balances science and production. Students should select this option if they are interested in entering the livestock production field or any of the supporting industries (feed companies, pharmaceutical companies, etc.).

Course	Title	Units
Lower Division Requirements		
Select one of the following:		3
PSSC 101	Introduction to Plant Science	
PSSC 250	Introduction to Soil Science	
Select 9 units from the following:		9
	Any combination of lower division courses in AGET, AGRI, ANSC, PSSC or ABUS.	
Upper Division Requirements		
Ecology Elective (choose 1 of the following)		3
AGRI 331	Agriculture Ecology	
AGRI 432	Holistic Management	
ANSC 394	Livestock Grazing Ecology and Management	
PSSC 363	Forage Crops	
Production Electives (choose 3, one can be lower division)		9
ANSC 250	Live Animal and Carcass Evaluation	
ANSC 271	Principles of Beef Cattle Production	
ANSC 274	Principles of Dairy Production	
ANSC 276	Principles of Meat Science	
ANSC 294	Principles of Rangeland Livestock Management	
ANSC 301	Intermediate Animal Systems	
ANSC 350	Meat and the Consumer	
ANSC 370	Livestock and Companion Animal Behavior	
ANSC 372	Sheep Production and Management	
ANSC 373	Swine Production and Management	

Course	Title	Units
ANSC 374	Organic Dairy Production and Management	
ANSC 394	Livestock Grazing Ecology and Management	
ANSC 450	Food Sanitation and Quality Control	
ANSC 470	Animal Welfare	
ANSC 471	Advanced Beef Cattle Management and Production	
ANSC 474	Dairy Production and Management	

General Electives:

Select 9 units from the following:	9
Any combination of upper division courses in AGET, AGRI, ANSC, PSSC or ABUS. One of these courses is required to be an upper division ABUS course.	
Total Units	**33**

Honors in the Major

Honors in the Major is a program of independent work in your major. It requires 6 units of honors course work completed over two semesters.

The Honors in the Major program allows you to work closely with a faculty mentor in your area of interest on an original performance or research project. This year-long collaboration allows you to work in your field at a professional level and culminates in a public presentation of your work. Students sometimes take their projects beyond the University for submission in professional journals, presentation at conferences, or academic competition. Such experience is valuable for graduate school and professional life. Your honors work will be recognized at your graduation, on your permanent transcripts, and on your diploma. It is often accompanied by letters of commendation from your mentor in the department or the department chair.

Some common features of Honors in the Major program are:

- You must take 6 units of Honors in the Major course work. All 6 units are honors classes (marked by a suffix of H), and at least 3 of these units are independent study (399H, 499H, 599H) as specified by your department. You must complete each class with a minimum grade of B.
- You must have completed 9 units of upper-division course work or 21 overall units in your major before you can be admitted to Honors in the Major. Check the requirements for your major carefully, as there may be specific courses that must be included in these units.
- Your cumulative GPA should be at least 3.5 or within the top 5% of majors in your department.
- Your GPA in your major should be at least 3.5 or within the top 5% of majors in your department.
- Most students apply for or are invited to participate in Honors in the Major during the second semester of their junior year. Then they complete the 6 units of course work over the two semesters of their senior year.
- Your honors work culminates with a public presentation of your honors project.

While Honors in the Major is part of the Honors Program, each department administers its own program. Please contact your major department or major advisor to apply.

Total Units Required: 120

- Overview
- Program Requirements
- **Graduation Requirements**

See Bachelor's Degree Requirements for complete details on general degree requirements. A minimum of 39 units, including those required for the major, must be upper division.

General Education Requirements: 48 units

See General Education and the Class Schedule for the most current information on General Education Requirements and course offerings.

This major has approved GE modification(s). See below for information on how to apply these modification(s).

- ANSC 101 is an approved major course substitution for Life Science (B2).
- AGRI 482W is an approved major course substitution for Upper-Division Social Sciences (UD-D).

Diversity Course Requirements: 6 units

You must complete a minimum of two courses that focus primarily on cultural diversity. At least one course must be in U.S. Diversity (USD) and at least one in Global Cultures (GC). See Diversity Requirements for a full list of courses. Most courses taken to satisfy these requirements may also apply to General Education.

Upper-Division Writing Requirement

Writing Across the Curriculum (EM 17-009) is a graduation requirement and may be demonstrated through satisfactory completion of four Writing (W) courses, two of which are designated by the major department. See Mathematics/Quantitative Reasoning and Writing Requirements for more details on the four courses. The first of the major designated Writing (W) courses is listed below.

- AGRI 490W Agricultural Experimental Research (W)

The second major-designated Writing course is the Graduation Writing Assessment Requirement (GW) (EO 665). Students must earn a C- or higher to receive GW credit. The GE Written Communication (A2) requirement must be completed before a student is permitted to register for a GW course.

Animal Science BS

Total Units Required: 120

Grading Requirement

All courses taken to fulfill program course requirements must be taken for a letter grade except those courses specified by the department as credit/no credit grading only.

Course Requirements for the Major: ~~79-80~~ 78 units

Completion of the following courses, or their approved transfer equivalents, is required of all candidates for this degree. Courses in this program may complete more than one graduation requirement.

Course List

Course	Title	Units
Lower-Division Core ~~Requirements~~		
~~AGRI 180~~	~~The University Experience~~	~~1~~
ABUS 101	Intro to Agricultural Business and Economics	3
ANSC 100	Introduction to Food Animal Systems	3
ANSC 101	Introduction to Animal Science	3
ANSC 230	Animal Feeds and Nutrition	3
MATH 105	Introduction to Statistics	3
Select one of the following:		4
CHEM 107	General Chemistry for Applied Sciences	
CHEM 111	General Chemistry I	
Select one of the following:		4
CHEM 108	Organic Chemistry for Applied Sciences	
CHEM 112	General Chemistry II	
~~Select one of the following:~~		~~3~~
~~ABUS 101~~	~~Introduction to Agricultural Business and Economics~~	
~~ABUS 261~~	~~Farm Accounting~~	
~~Select one of the following:~~		~~3-4~~
~~BIOL 162~~	~~Principles of Cellular and Molecular Biology~~	
~~PSSC 101~~	~~Introduction to Plant Science~~	
~~PSSC 250~~	~~Introduction to Soil Science~~	
~~Select nine units from the following:~~		~~9~~

Course List

Course	Title	Units
~~Any combination of lower division courses in Agriculture (AGRI), Agricultural Engineering Technology (AGET), Animal Science (ANSC), Plant Science (PSSC), Agricultural Business (ABUS).~~		
~~BIOL 161~~	~~Principles of Ecological, Evolutionary, and Organismal Biology~~	
~~BIOL 163~~	~~Principles of Physiology and Development~~	
~~CHEM 270~~	~~Organic Chemistry I~~	
~~PHYS 202A~~	~~General Physics I~~	
~~PHYS 202B~~	~~General Physics II~~	
Upper-Division Core ~~Requirements~~		
AGRI 305	Agricultural Genetics	3
AGRI 482W	Agricultural Issues (W)	3
AGRI 490W	Agricultural Experimental Research (W)	4
ANSC 330	Animal Nutrition	3
ANSC 340	Reproductive Physiology of Domestic Animals	3
ANSC 360	Animal Health and Disease	3
ANSC 440	Physiology of Domestic Animals	3
~~Select one of the following:~~		~~3~~
~~AGRI 331~~	~~Agricultural Ecology~~	
~~PSSC 330~~	~~Rangeland Resources and Management~~	
~~PSSC 363~~	~~Forage Crops~~	
~~Animal Science Electives~~		
~~Select nine units from the following (six units must be upper division):~~		~~9~~
~~ANSC 271~~	~~Principles of Beef Cattle Production~~	
~~ANSC 272~~	~~Principles of Sheep & Goat Production~~	
~~ANSC 273~~	~~Principles of Swine Production~~	
~~ANSC 274~~	~~Principles of Dairy Production~~	
~~ANSC 301~~	~~Intermediate Animal Systems~~	
~~ANSC 350~~	~~Meat and the Consumer~~	
~~ANSC 374~~	~~Organic Dairy Production and Management~~	
~~ANSC 450~~	~~Food Sanitation and Quality Control~~	
~~ANSC 471~~	~~Advanced Beef Cattle Management and Production~~	
~~ANSC 474~~	~~Dairy Production and Management~~	
~~Select 12 units from the following:~~		~~12~~
~~Any combination of upper division courses in Agriculture (AGRI), Agricultural Engineering Technology (AGET), Animal Science (ANSC), Plant Science (PSSC), Agricultural Business (ABUS). A minimum of three upper division ABUS units are recommended.~~		

Course List

Course	Title	Units
~~BIOL 360~~	~~Genetics~~	
~~BIOL 416~~	~~Vertebrate Physiology~~	
~~CHEM 370~~	~~Organic Chemistry II~~	
~~CHEM 451~~	~~Biochemistry I~~	
Major Option		
Select one of the following options:		33
Food Animal Production		
Pre-Veterinary Science		
Total Units		78 ~~79-80~~

Major Option Course Requirements

Students must select one of the following options for completion of the major course requirements.

The Option in Food Animal Production: 33 units

Course List

Course	Title	Units
Select one of the following:		3
PSSC 101	Introduction to Plant Science	
PSSC 250	Introduction to Soil Science	
Select nine units from		9
Any lower-division courses in ABUS, AGET, AGRI, ANSC, or PSSC		
Select one of the following:		3
AGRI 331	Agricultural Ecology	
AGRI 432	Holistic Management	
ANSC 394	Livestock Grazing Ecology and Management	
PSSC 363	Forage Crops	
Select three of the following (one can be lower division):		9
ANSC 250	Live Animal and Carcass Evaluation	
ANSC 271	Principles of Beef Cattle Production	
ANSC 274	Principles of Dairy Production	

ANSC 276 Principles of Meat Science	
ANSC 294 Principles of Rangeland Livestock Management	
ANSC 301 Intermediate Animal Systems	
ANSC 350 Meat and the Consumer	
ANSC 370 Livestock and Companion Animal Behavior	
ANSC 372 Sheep Production	
ANSC 373 Swine Production	
ANSC 374 Organic Dairy Production and Management	
ANSC 394 Livestock Grazing Ecology and Management	
ANSC 450 Food Sanitation and Quality Control	
ANSC 470 Animal Welfare	
ANSC 471 Advanced Beef and Cattle Management and Production	
ANSC 474 Dairy Production and Management	
Select nine units from the following:	9
Any combination of upper division courses in Agricultural Business (ABUS), Agriculture (AGRI), Agricultural Engineering Technology (AGET), Animal Science (ANSC), and Plant Science (PSSC). At least one course must be Agricultural Business (ABUS). Choose courses in consultation with your advisor.	
Total Units	33

The Option in Pre-Veterinary Science: 33 units

Course List

Course	Title	Units
BIOL 162	Principles of Cellular and Molecular Biology	4
BIOL 163	Principles of Physiology and Development	4
CHEM 270	Organic Chemistry I	4
CHEM 370	Organic Chemistry II	3
CHEM 451	Biochemistry I	3
Select two of the following (one can be lower-division):		6
ANSC 250	Live Animal and Carcass Evaluation	
ANSC 271	Principles of Beef Cattle Production	
ANSC 274	Principles of Dairy Production	
ANSC 276	Principles of Meat Science	
ANSC 294	Principles of Rangeland Livestock Management	
ANSC 301	Intermediate Animal Systems	
ANSC 350	Meat and the Consumer	
ANSC 370	Livestock and Companion Animal Behavior	
ANSC 372	Sheep Production	
ANSC 373	Swine Production	
ANSC 374	Organic Dairy Production and Management	
ANSC 394	Livestock Grazing Ecology and Management	
ANSC 450	Food Sanitation and Quality Control	
ANSC 470	Animal Welfare	
ANSC 471	Advanced Beef and Cattle Management and Production	
ANSC 474	Dairy Production and Management	
Select nine units from the following:		9
Any combination of upper division courses in Agricultural Business (ABUS), Agriculture (AGRI), Agricultural Engineering Technology (AGET), Animal Science (ANSC), and Plant Science (PSSC). Choose courses in consultation with your advisor.		
Total Units		33

See Bachelor's Degree Requirements for complete details on general degree requirements. A minimum of 39 units, including those required for the major, must be upper division.

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The Honors in the Major program allows you to work closely with a faculty mentor in your area of interest on an original performance or research project. This year-long collaboration allows you to work in your field at a professional level and culminates in a public presentation of your work. Students sometimes take their projects beyond the University for submission in professional journals, presentation at conferences, or academic competition. Such experience is valuable for graduate school and professional life. Your honors work will be recognized at your graduation, on your permanent transcripts, and on your diploma. It is often accompanied by letters of commendation from your mentor in the department or the department chair.

Some common features of Honors in the Major program are:

- You must take 6 units of Honors in the Major course work. All 6 units are honors classes (marked by a suffix of H), and at least 3 of these units are independent study (399H, 499H, 599H) as specified by your department. You must complete each class with a minimum grade of B.
- You must have completed 9 units of upper-division course work or 21 overall units in your major before you can be admitted to Honors in the Major. Check the requirements for your major carefully, as there may be specific courses that must be included in these units.
- Your cumulative GPA should be at least 3.5 or within the top 5% of majors in your department.
- Your GPA in your major should be at least 3.5 or within the top 5% of majors in your department.
- Most students apply for or are invited to participate in Honors in the Major during the second semester of their junior year. Then they complete the 6 units of course work over the two semesters of their senior year.
- Your honors work culminates with a public presentation of your honors project.

While Honors in the Major is part of the Honors Program, each department administers its own program. Please contact your major department or major advisor to apply.

Major Academic Plan
Animal Science – Option in Pre-veterinary Science

Semester	Requirement	Units
1	ANSC 100	3
1	ABUS 101 (GE Area D)	3
1	GE Area A1	3
1	GE Area A2	3
1	LD GE Course	3
		15 units
2	ANSC 101 (GE Area B2)	3
2	MATH 105 (GE Area B4)	3
2	CHEM 111 (GE Area B1)	4
2	GE Area A3	3
2	HIST 130 or POLS 155	3
		16 units
3	ANSC 230	3
3	CHEM 112	4
3	BIOL 162	4
3	LD GE Course	3
3	HIST 130 or POLS 155	3
		17 units
4	LD GE Course	3
4	LD GE Course	3
4	Elective	3
4	ANSC 330	3
4	BIOL 163	4
		16 units
5	CHEM 270	4
5	ANSC 340	3
5	ANSC 360	3
5	AGRI 305	3
5	Production Elective	3
		16 units
6	CHEM 370	3
6	Production Elective	3
6	General Elective	3
6	UD GE	3
6	General Elective	3
		15 units
7	AGRI 482W	3
7	CHEM 451	3
7	ANSC 440	3
7	Elective	3
		12 units

8	UD GE	3
8	General Elective	3
8	Elective	3
8	AGRI 490W	4
		13 units

The California State University
ACADEMIC & STUDENT AFFAIRS

Academic Programs, Innovations and Faculty Development
CSU Office of the Chancellor
401 Golden Shore, Long Beach, CA 90802

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Brent M. Foster, Ph.D.
Assistant Vice Chancellor and State University Dean
Phone 562-951-4149
bfoster@calstate.edu

May 17, 2023

Dr. Daniel S. Grassian
Vice Provost for Academic Affairs
California State University, Chico
400 West First Street
Chico, California 95929

Dear Daniel,

Thank you for notifying us that California State University, Chico has approved the options in Food Animal Production and Pre-Veterinary Science in the Bachelor of Science in Animal Science. The options will report under the CSU degree-program code 01041 and the CIP code 1.0901. The university is responsible for updating the Degrees Database prior to implementation.

If you have questions, please contact me at bfoster@calstate.edu.

Sincerely,

Brent M. Foster, Ph.D.
Assistant Vice Chancellor & State University Dean of Academic Programs

c: Dr. Kate McCarthy, Dean of Undergraduate Education