

Abilene Approval Chart for Curriculum Changes

A = Approve I = Information Item R = Respond In Writing

Course Number: AENV 353

or Degree Plan(s):

Short description: We are proposing a new course, AENV 353: Plant and Animal Genetics. Currently, at ACU, BIOL 351 and ANSC 496 are somewhat similar to the proposed AENV course. AENV 353 would enhance ANSC 496 because it would provide more grounding in genetic concepts such as variation, heritability, population genetics, and selection schema and criteria. AENV 353 would differ from BIOL 351 in that it would be predominantly focused on domesticated plant and animal species, especially related to variation, heritability, and population genetics. AENV 353 would differ from ANSC 496 because of its focus on basic genetic concepts. It would therefore provide a solid foundation for ideas and principles that can be further developed in ANSC 496.

		Dept./School	College	Dean	TEC	AUAC/Grad	Provost
	Campus-Level Academic Review¹						
	Change to a Course Include signatures from all chairs/program directors for cross-listed courses. ¹						
1.	Title (description unchanged)	A	A	A	I	I	I
2.	Description (not affecting content)	A	A	A	I	I	I
3.	Course term(s)	A	I	A	I	I	I
4.	Content (change of course outcomes)	A	A	A	I	I	A
5.	Number of credit hours	A	A	A	A	A	A
6.	Course number within the hundred	A	A	I	I	I	I
7.	Course number beyond the hundred	A	A	A	A	A	A
8.	Prerequisites	A	A	A	I	I	I
9.	Course restriction (e.g., majors only, junior standing)	A	A	A	A	A	A
10.	Level change (U to G or G to U)	A	A	A	A	A	A
11.	Cross list course	A	A	A	A	A	A
12.	Department of record	A	A	A	A	A	A
13.	Open or close a course	A	A	A	A	A	A
	Change to a Degree Plan						
14.	Educational Program — Revise	A	A	A	A	A	A
15.	Educational Program — Adopt/revise admission requirements	A	A	A	A	A	A
16.	GPA — Revise program-required GPA	A	A	A	A	A	A
17.	Minor — Revise	A	A	A	A	A	A

		Dept./School	College	Dean	TEC	AUAC/Grad	Provost	Campus Faculty	Senior VPAA	President
	Full Review									
	Change to Catalog Information (for Campus)									
18.	General requirements for Bachelor's and Associate Degrees	-	-	-	-	A	A	A	A	I
19.	Policies governing academic probation and suspension	-	-	-	-	A	A	A	A	I
20.	Requirements for graduating with honors	-	-	-	-	A	A	A	A	I
	Change to a Degree Plan									
21.	Educational Program — Add or Discontinue ^{2 3}	A	A	A	A	A	A	A	A	I
22.	Educational Program — Discontinue (Provost-proposed)	R	-	R	A	A	A	A	A	I
23.	Minor — Add or Discontinue	A	A	A	A	A	A	-	A	I
24.	Minor — Discontinue (Provost-proposed)	R	-	R	A	A	A	-	A	I
25.	Degree — Add or Discontinue	A	A	A	A	A	A	A	A	I
26.	Degree — Discontinue (Provost-proposed)	R	-	R	A	A	A	A	A	I

		Dept./School	College	Dean	TEC	AUAC/Grad	Provost	Campus Faculty	Senior VPAA	President
	Change to General Education Requirements for Undergraduates (System)									
27.	Change course outcomes of an included course	A	A	A	A	A	A	-	A	I
28.	Add or drop a required course from the General Education Requirements	A	-	A	-	A	A	A	A	I
29.	Add or drop a course from a menu within the General Education Requirements	A	-	A	-	A	A	-	A	I
30.	Comprehensive revision of General Education Requirements	-	-	-	-	A	A	A	A	I

Notes

² Any change to a cross-listed course requires the signature of both department chairs or program directors overseeing the course to ensure that the courses stay in sync. This includes courses taught at other campuses (e.g., BIBL 101 and BIBO 101).

³ For undergraduate majors, a minimum of 30 hours is required. These programs must have a minimum of 6 elective hours, unless the requirements of external accrediting bodies make it impossible. Master's programs must include a minimum of 30 hours, and doctoral programs must include a minimum of 30 hours beyond the master's.

⁴ When a department/school or dean proposes closing a program, approval routing follows the typical process beginning with the department/school. An administrative proposal by the provost or senior vice president for academic affairs would follow the "provost-proposed" routing on the chart.

Department/School(s)*Sam Funk*

Sam Funk (Sep 26, 2025 10:24:52 CDT)

09/26/2025

Chair Signature

09/26/2025
Date

Chair/Program Director Signature

Date

College Academic Council(s)*Kathleen Ru*

10/03/2025

Chair Signature

Date

Chair Signature

Date

Dean(s)*Charles M. Minter*

10/06/2025

Signature

Date

Signature

Date

Teacher Education Council

Signature

Date

**Campus Academic Council:
Abilene Undergraduate or Abilene Graduate**

Signature

Date

Provost

Signature

Date

University General Education Council

Signature

Date

University Faculty

Abilene Faculty Senate Chair signature	Date
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Dallas Faculty Council Chair signature	Date
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Senior Vice President for Academic Affairs

Signature	Date
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President

Signature	Date
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Abilene New Course Application

You may delete the preceding instructional pages before submitting application.

Course ID (<i>Subject Code and Number</i>)	AENV 353
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1. Systems and Catalog Information Complete each item.

A	Course Developer	Kendra Jernigan
B	Course Instructor	Kendra Jernigan
C	Course Title	Plant and Animal Genetics
D	Course Abbreviation for Banner if title is more than 30 characters	Plant and Animal Genetics
E	College	OSE - Onstead Science and Engineering
F	Department or School	A&E - Agricultural and Environmental Sciences
G	Number of Credit Hours	3
G1	Number of Lecture Contact Hours	3
G2	Number of Lab Contact Hours	0
H	Is the course for a fixed or variable number of credit hours?	Fixed If variable, explain rationale:
I	Is the course repeatable for additional credit?	No
J	Maximum total number of credit hours a student can earn for this course	3
K	Course Schedule Type	Lecture (LEC) See Schedule Type definitions in the Reference section.

L	Number of Faculty Workload Hours	3
M	Grading Mode	Standard
N	Maximum Enrollment	15
O	Catalog Description (50 words or less)	Fundamental principles of genetics: physical basis of inheritance, interaction of genes, linkage, sex linkage, mutation, variation, and heritability. Special emphasis on breeding farm crops and domestic animals, especially inbreeding and crossbreeding, gene (allele) frequency, genotype-environment interactions, selection schema and criteria, genetic evaluation and prediction. A&E majors only or instructor approval.
P	List any prerequisites (course/s, test scores, class standing, major, etc.)	Completion of Introductory Biology I (BIOL 121/122) and Introductory Biology II (BIOL 123/124) with a minimum grade of "C" <u>and</u> MATH 109 or higher.
Q	List any corequisites (these <i>must</i> be taken at the same time; note that a single requirement cannot be both a prerequisite <i>and</i> a corequisite)	N/A
R	If the course is cross-listed, specify the subject code and course number of the other course	N/A
S	Does this course require any additional student course fees?	No If yes, attach a completed course fee form (see form "Request to Add or Change Course Fees").
T1	Will the course be offered in fall terms?	No
T2	Will the course be offered in spring terms?	Yes, even years

T3	Will the course be offered in summer terms?	No
U	First semester this course will be offered under new Course ID. <i>May not be earlier than the coming fall semester.</i>	Spring 2028
V	Is this course required for a program(s)?	Yes If yes, submit a separate completed curriculum proposal to change the program(s).
W	Should the addition of this course be retroactively applied to the degree plan it supports? <i>This is rare, and rationale should explain compelling extenuating circumstances.</i>	No If yes, provide rationale:
X	Has this course been offered as a Special Topics course? <i>New courses are not required to be taught as Special Topics courses prior to approval.</i>	Yes If yes, provide course ID, term, and enrollment: AENV 340, Spring 2023, 15 students AENV 340, Spring 2025, 10 students
Y	List any courses in which the content overlaps the proposed course. (Course ID and Name). <i>Attach a statement from the instructor/dept chair of the existing course justifying the new offering.</i>	ANSC 496: Animal Breeding & BIOL 351: Genetics

2. Curriculum

A. Explain any effects of this course on any degree plans. If the addition of the course alters program requirements, submit a separate [Approval Chart for Curriculum Change](#) to update the program.

This course will become a choice in the two animal science tracks, and the Animal Health Professions Cooperative.

B. Justify the addition of this course to the current curriculum, explaining the gap it meets. Currently, at ACU, BIOL 351 and ANSC 496 are somewhat similar to the proposed AENV course. The AENV course would enhance ANSC 496 because it would provide more grounding in genetic concepts such as variation, heritability, population genetics, and selection schema and criteria. The AENV course would differ from BIOL 351 because it would be predominantly focused on domesticated plant and animal species, especially related to variation, heritability, and population

genetics. The AENV course would differ from the ANSC 496 because of its focus on basic genetic concepts. Thus, it provides a solid foundation for ideas and principles that can be further developed in ANSC 496.

Rationale for Proposed Plant and Animal Genetics

1. Provide more specialized training for A&E students than the currently offered BIOL 351 because it will primarily focus on the genetics of domesticated plant and animal species. It will also focus more specifically on genetic variation, heritability, selection indices, and population genetics within these domesticated species.
2. Provide A&E students with more courses that will meet minimum job requirements for various jobs at the US Department of Agriculture and the Natural Resource Conservation Service.
3. Other agricultural and environmental science programs (at Tarleton State University and Angelo State University) offer specialized plant and animal genetics courses to their students.
4. Provide additional upper-level courses for A&E agricultural and environmental sciences students to choose from a diverse menu of courses.

3. Course Design

A. Audience and Course Goal

1. Describe the intended audience, including prerequisite skills.

The intended audience for this course would primarily be Animal Science students. These juniors must have already passed their basic biology courses with at least a C, and taken their required mathematics courses. Additionally, other A&E students from Agribusiness and Environmental Science may also enroll in this course. Plant and Animal Genetics would also be a prerequisite for the Animal Breeding course.

2. State the overarching course goal(s) in performance terms.

The course goal is for students to be familiar with various genetic concepts useful in the agricultural and environmental sciences such as, variation, heritability, population genetics, selection schema and criteria. They will also learn more about inbreeding and cross-breeding and genotype-environment interactions. These genetic concepts would provide students with specific skills related to genetics of domesticated plant and animal species.

B. Student Learning Outcomes and Measurements

	Student Learning Outcome	Measurement
1	Explain the basic concepts of genetics, including inheritance, interaction of genes, linkage, variation, and heritability.	Exams Homework assignments
2	Apply the knowledge of the basic concepts of genetics to solve plant and animal genetics problems.	Exams Homework assignments

3	Analyze genetic data and draw conclusions about how these data address plant and animal genetics.	Homework assignments
4	Connect genetic principles to current issues within agricultural and environmental sciences.	Writing assignments Project

C. Text and Resources

Give the full publication information of the textbook/s and other required resources and outside readings. For **combined undergraduate/graduate** courses, make two lists:

A. full publication information; label **Undergraduate**.

Students will be assigned specific chapter readings from the following textbooks:

- Bourdon, R. M. (2014). *Understanding Animal Breeding* (2nd ed.). Pearson.
- Khatib, H. (2015). *Molecular and Quantitative Animal Genetics*. Wiley Blackwell.
- Simons, A. (2024). *Chromosomes, Genes, and Traits: An Introduction to Genetics* [Revised Edition]. Framingham State University.
- Suza, W., & Lamkey, K. (Eds.). (2023). *Crop Genetics*. Iowa State University Digital Press.
- Suza, W., & Lamkey, K. (Eds.). (2023). *Crop Improvement*. Iowa State University Digital Press.
- Suza, W., & Lamkey, K. (Eds.). (2023). *Molecular Plant Breeding*. Iowa State University Digital Press.
- Suza, W., & Lamkey, K. (Eds.). (2023). *Quantitative Genetics for Plant Breeding*. Iowa State University Digital Press.

B. full publication information; label **Graduate**.

4. Supporting Documentation

Required of all applications	
1	Approval Chart for Curriculum Changes
2	Syllabus — Attach the syllabus for the course based upon the anticipated first-semester offering.
4	Library — Submit new course application and syllabus to the Library dean's office. Attach the Library's memo.
Attach if applicable	
5	Content Overlap — Include one document for each course you listed in Section 1Y. Attach statement from instructor/dept chair of existing course justifying the new offering.

6	Departmental Resources — List the resources that support the course and are available only through the department, if applicable. Attach the list of the holdings and the location(s). None for AENV 353
7	Resources — List resources (other than library or departmental resources) that are needed to support this course (computers, lab equipment, other technology, etc.). Attach a complete list of all items and indicate possible sources or estimated cost of each. List the sources of any needed funds. None for AENV 353
8	Expenses — List additional expenses needed to implement this course (full-time or part-time faculty, graduate or lab assistants, student employees, travel, special student costs, room renovation, storage facility, etc.). Attach a complete list of all items, the estimated cost of each and the source of the funds. None for AENV 353
9	Justification — Attach any documents to which you refer in Section 2B.

Class time & place: TuTh 12:00pm-1:20pm, Onstead Science Center 233

Required course materials:

You will read selected material from all the following textbooks:

1. Bourdon, R. M. (2014). *Understanding Animal Breeding* (2nd ed.). Pearson.
2. Khatib, H. (2015). *Molecular and Quantitative Animal Genetics*. Wiley Blackwell.
3. Simons, A. (2024). *Chromosomes, Genes, and Traits: An Introduction to Genetics* [Revised Edition]. Framingham State University.
4. Suza, W., & Lamkey, K. (Eds.). (2023). *Crop Genetics*. Iowa State University Digital Press.
5. Suza, W., & Lamkey, K. (Eds.). (2023). *Crop Improvement*. Iowa State University Digital Press.
6. Suza, W., & Lamkey, K. (Eds.). (2023). *Molecular Plant Breeding*. Iowa State University Digital Press.
7. Suza, W., & Lamkey, K. (Eds.). (2023). *Quantitative Genetics for Plant Breeding*. Iowa State University Digital Press.

**Nearly all of these textbooks are open-source and available for download as EPUBs.

** I will provide you with copies of the required readings from the other textbooks, so you do not need to purchase them.

Course Prerequisites: Completion of Introductory Biology I (BIOL 121/122) and Introductory Biology II (BIOL 123/124) with a minimum grade of “C” and MATH 109 or higher.

Instructor: Dr. Kendra Jernigan, PhD

Email: kendra.jernigan@acu.edu

Office: Onstead Science Center 145C

Phone: 325-674-2101

Office Hrs: Monday: 10am-11am & 1pm-3pm

Tuesday: 1:30pm-3pm

Wednesday: None

Thursday: 1:30pm-4pm

Friday: None

* I am happy to meet with you in person or virtually (Zoom or Google Meet). Please let me know what you would prefer whenever you schedule a meeting with me. You are also welcome to send me an email or a Canvas message.

ACU Mission Statement

The mission of ACU is to educate students for Christian service and leadership throughout the world.

Onstead College of Science and Engineering Mission Statement

The mission of the Onstead College of Science and Engineering is to explore and understand God’s creation in the natural world and apply the acquired knowledge and principles to address its issues and challenges. The college offers programs in the natural sciences, engineering and mathematics. These programs combine the rigor of scientific and technical disciplines with the critical thinking, ethical reasoning, and spiritual perspectives that are central to a Christian liberal arts education.

Agricultural & Environmental Sciences Mission Statement

To educate students for Christian stewardship of sustainable agricultural and environmental systems throughout the world.

Course Description

Fundamental principles of genetics: physical basis of inheritance, interaction of genes, linkage, sex linkage, mutation, variation, and heritability. Special emphasis on breeding farm crops and domestic animals, especially inbreeding and crossbreeding, gene (allele) frequency, genotype-environment interactions, selection schema and criteria, genetic evaluation and prediction. A&E majors only or instructor approval.

Course Format

Class meets for 80 minutes two times per week. The format in class will be a mixture of traditional lectures, multimedia presentations, and discussions.

Christian Perspective

Then God said, "Let the land produce vegetation: plants yielding seeds and trees on the land bearing fruit with seed in it, according to their kinds." It was so. The land produced vegetation – plants yielding seeds according to their kinds, and trees bearing fruit with seed in it according to their kinds. God saw that it was good.

God said, "Let the land produce living creatures according to their kinds: cattle, creeping things, and wild animals, each according to its kind." It was so. God made the wild animals according to their kinds, the cattle according to their kinds, and all the creatures that creep along the ground according to their kinds. God saw that it was good.

Genesis 1:11-12, 24-25

From the very beginning, God has created all the various plant and animal species we see in the natural world. God has graciously given us stewardship over the natural world and the responsibility of tending them. For us to be good stewards of all creation, not just those species that supply human needs, we must understand these organisms well. Also, as we study God's intricate creation, we may also learn more about the Creator of us all. Studying plant and animal genetics enhances our abilities to be good stewards and may draw us closer to our God.

Course Goal and Specific Learning Objectives

By the end of the course, students will be able to:

	Course Outcome	Measurement Instrument
1.	Explain the basic concepts of genetics, including inheritance, interaction of genes, linkage, variation, and heritability.	Exams Homework assignments
2.	Apply the knowledge of the basic concepts of genetics to solve plant and animal genetics problems.	Exams Homework assignments
3.	Analyze genetic data and draw conclusions about how these data address plant and animal genetics.	Homework assignments
4.	Connect genetic principles to current issues within agricultural and environmental sciences.	Writing assignments Project

Other Learning Outcomes: Several learning outcomes and transferable skills are incorporated into this course. By the end of the course, students will have improved skills in the following:

Critical thinking through:

-reading and discussion of principle concepts of the course

Communication through:

-writing reports in a professional journal style

Assessment and Grading

The grade will be computed based on the following:

Activity	Value
Quizzes	15%
Exams (4 exams)	40%
1 Comprehensive final exam	15%
Homework assignments	15%
Project paper & presentation	10%
Class engagement & professionalism	5%

Grading Scale:	90.0-100.0	A
	80.0-89.9	B
	70.0-79.9	C
	60.0-69.9	D
	0-59.9	F

Assignments received late will be assessed a penalty, the severity of which will depend on the degree to which the assignment is late. Typically, 10% of the total possible grade will be deducted for each day the assignment is late (i.e., a 50-point report would be docked 5 pts. per day). No late assignments will be accepted after Dead Day unless due to extenuating circumstances.

Make-ups: It is the student's responsibility to make up all missed work. Any make-up work (**including for excused absences**) must be completed **within one week of the original due date**. Quizzes, exams, or in-class work missed due to an unexcused absence cannot be made up. Please communicate with the professor if an issue arises related to make-up work.

Extra Credit: Random extra credit points may be available throughout the semester. **These will be the only opportunities for extra credit in this course.**

Details about course assessments:

Quizzes: Quizzes will be given approximately once per week. They will consist of various questions, such as multiple-choice and true/false. They will be completed using Lockdown Browser. Quizzes may only be made up due to University approved reasons.

Exams: There will be four exams throughout the semester. Each exam will include an in-class portion and an out-of-class portion. They will be completed using Lockdown Browser. These exams will highlight important course content.

Final Exam: The final exam is cumulative and accounts for 15% of the overall grade. The questions will consist of various types, including multiple-choice, true/false, and short-answer questions. It will be completed using Lockdown Browser.

Homework assignments: You will have various homework assignments throughout the semester. These assignments will help you engage with the course material and are worth 15% of the overall grade.

Project Presentation & Paper: Each student will submit a video presentation and paper on a topic related to plant and animal genetics. The video presentation and paper are worth 10% of the overall grade.

Class engagement & professionalism: It is the responsibility of the student to make sure to engage with our learning community professionally. Students must ensure that any missed work is made up and stay current with covered material. Please communicate with the professor if an issue arises, such as an unexpected illness, family emergency, or university-approved absence.

University Policies

ADA compliance: Abilene Christian University is dedicated to removing barriers and opening access for students with disabilities in compliance with ADA and Section 504 of the Rehabilitation Act. The Alpha Scholars Program facilitates disability accommodations in cooperation with instructors. To receive accommodations, you must be registered with Alpha Scholars Program, and you must complete a specific request for each class in which you need accommodations. If you have a documented disability and wish to discuss academic accommodations, please call 325-674-2667.

Academic integrity: Academic integrity is defined as academic work completed as assigned for each class by the individual or group responsible for the work. Violations of academic integrity and other forms of cheating involve the intention to deceive, mislead, or misrepresent and, therefore, are a form of lying. Such actions are contrary to behavioral norms that flow from the nature of God. Academic misconduct includes, but is not limited to, the following: 1) Failure to give credit to sources used in a work in an attempt to present the work as one's own, 2) Submission of papers or projects obtained from another source (e.g., research service or club paper file) as one's own, and 3) Falsifying information orally or in writing. Academic misconduct may result in, but is not limited to, a zero on the assignment and/or an F in the course. Additionally, the department chair, Dean of your school, and the Dean of Student Life will be notified. See the College of Arts & Sciences policy, including how to appeal a decision, at <https://www.acu.edu/content/dam/community/documents/cas/cas-academic-integrity.pdf>.

Harassment policy: As a Christian community, Abilene Christian University has committed itself, unequivocally, to ensuring a working and learning environment in which the dignity of every individual is respected. Harassment is defined as unwelcome behavior or conduct based on sex, religion, race, age, color, national origin, veteran's status, disability, or any other characteristic protected by law when (1) submission to such conduct is made either explicitly or implicitly a term or condition of an individual's employment, education, or participation in University programs or activities, (2) submission to, or rejection of, such conduct by an individual is used as the basis for a decision affecting an individual's employment, education, or participation in University programs or activities, or (3) such conduct has the purpose or effect of unreasonably interfering with an individual's work or academic performance or creating an intimidating, hostile, or offensive environment for work, education, or participation in a University program or activity. See the full university policy at <https://www.acu.edu/titleix>.

Title IX: As a professor, one of my responsibilities is to help create a safe learning environment on our campus. I also have a mandatory reporting responsibility related to my role as a professor. It is my goal that you feel able to share information related to your life experiences in classroom discussions, in your written work, and in our one-on-one meetings. I will seek to keep the information you share private to the greatest extent possible. When I am not able to keep your information confidential, I will only share it with responsible administrators on campus who can provide you with services and resources. I am required to share with the Title IX Coordinator information regarding sexual misconduct or harassment, dating or domestic violence, or stalking that you report to me. If you would prefer to share information in a confidential setting, I encourage you to speak with someone in the [ACU Counseling Center](#). All of your options are available for review by clicking on the link to ACU's [policy](#).

FERPA: “The Family Educational Rights and Privacy Act” affords the student certain rights concerning student records.” Refer to the ACU course catalog for a more thorough discussion.

Course Policies

Professionalism: You should conduct yourself professionally, similar to what will be expected of you in the workplace.

Generative Artificial Intelligence (AI)

Generative AI is an emerging technology, and as with any new tool, it shows promise for beneficial and problematic usage. Our loving Creator endowed us with minds to think critically and ethically about how we engage with ourselves, others, and the natural world. Within Scripture, we are called to be people of integrity, wisdom, and humility. Thus, the use of any generative AI technology in this class is expressly prohibited for any assignment unless the professor explicitly includes its use for a particular assignment.

Technology Use:

Appropriate use of electronic devices for classroom purposes is permitted. The inappropriate use of electronic devices in a learning environment is disruptive and disrespectful to others. Unless the devices are approved as accommodations for persons with disabilities or have been designated for use in the classroom by the instructor, all such devices should be turned off and put away during class. Students violating this policy may be asked to leave the classroom immediately.

Canvas Messaging. Have a question about anything? Please shoot me a message by email or in Canvas. I will respond happily within 24-36 hours.

These messages are expected to be professional and respectful. Texting shorthand and abbreviations are not appropriate for messages. Confirmation of message replies (i.e., such as ‘Thank you!’) is expected, professional, and is standard in professional workplace environments.

If you have a problem with Canvas Messaging, you are welcome to email me at kendra.jernigan@acu.edu.

Expectations

This semester, we have the opportunity to explore various aspects of genetics together. For us to work together and learn from one another, I want to delineate what is expected of students and what you can expect from me.

Expectations of Students:

- I expect you to put forth your best efforts and be prepared to learn.
- I expect you to respect everyone in the class – fellow students and the professor. We are all human, and therefore all make mistakes, but we are also created in God's image. Please extend grace to everyone in our class when mistakes are made and be willing to consider viewpoints other than your own. We all approach the topic of genetics from different viewpoints and have varied experiences. Please be mindful that not everyone will have the same life experiences or approaches as you do. We can heartily disagree with others but still afford them respect and courtesy.
- I expect you to spend the necessary time to complete your assignments and study for this class. The video lectures, assignments, discussion forums, group assignments, quizzes, and exams are designed to further your understanding of course topics and help you earn your final class grade.
- I expect you to do your own work for this class and not engage in academic dishonesty or plagiarism.

Expectations of the Instructor:

- I will respond to your Canvas messages, emails, and other forms of communication promptly – generally within 24 hours. To allow for Sabbath rest and time with my family, I will not check emails as often in the evenings or on weekends.
- I will respect you and your desire to learn. My role is to provide you with the resources to succeed and facilitate your learning in this class. Please do not hesitate to ask if you do not understand something; I will do my best to reword or spend additional time on a subject to ensure that all content is understood. You are enrolled in this class to learn. I am happy to provide you with resources and opportunities to be successful.
- I will be prepared and timely with course materials. It is disrespectful to you if I am not prepared with the course materials; as such, I will make every effort to be prepared just as I expect you to be.
- I will return assignments, quizzes, and tests to you within two weeks of the due date. To assist your learning, you need to have assignments returned to you promptly. Then you can assess what areas you need to spend more time studying and what areas you already have successfully mastered.

Plant and Animal Genetics Tentative Class Schedule Spring 2026

Date	Week	Quizzes	Subject	Required Readings
Tues 1/13	1		Introduction Mendelian genetics	<i>Chromosomes, Genes, & Traits</i> (Part X: Mendel & Basic Heredity)
Thurs 1/15	1	Syllabus & Course Policies Quiz	Mitosis & meiosis	<i>Chromosomes, Genes, & Traits</i> (Part III: Mitosis & Meiosis)
1/16 – Last day to add/drop a class without a penalty 1/19 – Martin Luther King Jr Day (ACU Campus closed)				
Tues 1/20	2	Week 2 Quiz	Molecular structure of DNA & RNA	<i>Chromosomes, Genes, & Traits</i> (Part I: DNA Structure)
Thurs 1/22	2		Chromosome Number & Variations	<i>Crop Genetics</i> (Chapter 10: Ploidy – polyploidy, aneuploidy, & haploidy)
Tues 1/27	3	Week 3 Quiz	DNA Replication, Transcription, & Translation	<i>Chromosomes, Genes, & Traits</i> (Part IV: Replication; Part V: Transcription; & Part VI: Translation)
Thurs 1/29	3		DNA Replication, Transcription, & Translation	<i>Chromosomes, Genes, & Traits</i> (Part IV: Replication; Part V: Transcription; & Part VI: Translation)
Tues 2/3	4		Exam 1	
Thurs 2/5	4		Extensions of Mendelian Inheritance	<i>Chromosomes, Genes, & Traits</i> (Part XI: Allele Interactions)
Tues 2/10	5	Week 5 Quiz	Non-Mendelian Inheritance Patterns	<i>Chromosomes, Genes, & Traits</i> (Part XIII: Genetics of Sex & Part IX: Eukaryotic Gene Regulation in Action)
Thurs 2/12	5		Chromosome Structure & Transposable Elements	<i>Chromosomes, Genes, & Traits</i> (Part II: Genome structure)
Tues 2/17	6	Week 6 Quiz	Mutation, DNA Repair, & Recombination	<i>Chromosomes, Genes, & Traits</i> (Part VII: Mutation)
Thurs 2/19	6		Gene Regulation in Eukaryotes	<i>Chromosomes, Genes, & Traits</i> (Part VIII: Overview of Gene Regulation & Part IX: Eukaryotic Gene Regulation in Action)
Tues 2/24	7	Week 7 Quiz	Gene Regulation in Eukaryotes – Epigenetics	<i>Chromosomes, Genes, & Traits</i> (Part XVI: Epigenetics)
Thurs 2/26	7		Genetic Linkage & Mapping	<i>Chromosomes, Genes, & Traits</i> (Part XV: Linkage & Mapping) <i>Crop Genetics</i> (Chapter 5: Linkage)
Tues 3/3	8		Exam 2	
Thurs 3/5	8		Molecular Genetic Techniques & Biotechnology	<i>Molecular & Quantitative Animal Genetics</i> (Chapter 17: Molecular Genetics Techniques & High Throughput Technologies)
3/9 to 3/13 – Spring Break (ACU Campus Closed)				
Tues 3/17	9	Week 9 Quiz	Genomics – Analysis of DNA	<i>Molecular Plant Breeding</i> (Chapter 1: Molecular Plant Breeding Concepts & Chapter 2: Markers & Sequencing)
Thurs 3/19	9		Functional Genomics & Bioinformatics	<i>Molecular & Quantitative Animal Genetics</i> (Chapter 15:

				Bioinformatics in Animal Genetics) <i>Molecular Plant Breeding</i> (Chapter 13: Introduction to Bioinformatics)
Tues 3/24	10	Week 10 Quiz	Complex & Quantitative Traits	<i>Understanding Animal Breeding</i> (Chapter 5: Simply Inherited & Polygenic Traits) <i>Crop Genetics</i> (Chapter 8: Inheritance of Quantitative Traits)
Thurs 3/26	10		Evolutionary Genetics	<i>Chromosomes, Genes, & Traits</i> (Part XVII: Evolution & Ancestry)
Tues 3/31	11		Exam 3	
Thurs 4/2	11		Population Genetics	<i>Understanding Animal Breeding</i> (Chapter 4: Genes in Populations) <i>Crop Genetics</i> (Chapter 6: Population Genetics)
4/3 – Good Friday (ACU Campus closed)				
Tues 4/7	12	Week 12 Quiz	Variation & Heritability in Plants & Animals	<i>Molecular & Quantitative Animal Genetics</i> (Chapter 5: Heritability & Repeatability)
Thurs 4/9	12		Inbreeding & Cross-Breeding	<i>Molecular & Quantitative Animal Genetics</i> (Chapter 2: Mating Systems: Inbreeding & Inbreeding Depression) <i>Crop Genetics</i> (Chapter 7: Inbreeding & Heterosis)
4/10 – Last day to withdraw from a class				
Tues 4/14	13	Week 13 Quiz	Breeding of Domesticated Plants	<i>Crop Improvement</i> (Chapter 1: Basic Principles of Plant Breeding & 6: Breeding Methods)
Thurs 4/16	13		Breeding of Domesticated Animals	<i>Understanding Animal Breeding</i> (Chapter 2: How are Animal Populations improved?)
Tues 4/21	14		Exam 4	
Thurs 4/23	14		Genotype x Environment Interactions	<i>Quantitative Genetics for Plant Breeding</i> (Chapter 10: GxE)
Tues 4/28	15	Week 15 Quiz	Selection Methods in Breeding Programs	<i>Molecular & Quantitative Animal Genetics</i> (Chapter 3: Genomic Selection, Inbreeding, & Cross-breeding in Dairy Cattle)
Thurs 4/30	15		Genomic Evaluation	<i>Understanding Animal Breeding</i> (Chapter 12: Large-Scale Genetic Evaluation)
Mon 5/4	Dead Day, Monday, (5/4). <u>COMPREHENSIVE FINAL EXAM: Thursday (5/7) from 10am until 11:45am</u> *ACU policy is that NO final is to be taken early. *Double-check the ACU exam schedule through myACU and the ACU Registrar's Office.			

ABILENE CHRISTIAN UNIVERSITY

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July 24, 2025

Kendra Jernigan:

I have evaluated your proposed Plant and Animal Genetics course based on the syllabus you provided. You have asked for a statement from the Department of Biology justifying the new offering since the content of this proposed course does overlap with that of BIOL 351. I have evaluated the syllabus with respect to the course descriptions, required textbooks and materials, and the topics covered.

Catalog course descriptions:

The catalog descriptions of each class are as follows:

BIOL 351 Genetics: Survey of the fundamental principles of genetics including Mendelian inheritance, molecular genetics, and population genetics. Prerequisite: BIOL 312 with a minimum grade of “C” or Junior standing with credit in ANSC 111, and MATH 109 or higher. Corequisite: BIOL 352.

AENV 353 Plant and Animal Genetics: Fundamental principles of genetics: physical basis of inheritance, interaction of genes, linkage, sex linkage, mutation, variation, and heritability. Special emphasis given to breeding of farm crops and domestic animals, especially inbreeding and crossbreeding, gene (allele) frequency, genotype-environment interactions, selection schema and criteria, genetic evaluation and prediction. Completion of Biology I (BIOL 121/122) and II (BIOL 123/124) with a minimum grade of “C” and MATH 109 or higher.

It should be noted that the name of the biology courses are Introductory Biology, not just Biology.

Would it also be possible to add to the course description for the catalog “not for Biology or Biochemistry majors”? This would prevent confusion on the part of other science students and

centralized advisors. I have asked Autumn Sutherlin about the addition of “Biochemistry” majors and she agrees. However, you may confirm with her directly about this.

The course descriptions indicate that our two courses are different. The BIOL course also now has a corequisite lab.

Required textbooks and materials. The AENV course materials are distinctly focused on plant and animal genetics, while the BIOL course materials are focused on general genetics principles using many different types of organisms as examples, including, but not limited to plants and animals.

Topics covered. I compared the content of our two courses. Although the topic names are similar, the resources and the perspective from which they are covered are unique to each.

In my evaluation, these two courses do differ from one another in significant ways. It should be noted that the first iteration of this course was too similar to BIOL 351 for me to consider as different and to write a letter of support. However, I would like to acknowledge the hard work that you have put into this course, making it uniquely a plant and animal genetics course and am grateful for the conversations that we have to make it to this point where we can now have two distinct genetics courses that each serve a particular population of our students well.

Sincerely,

A handwritten signature in purple ink that reads "Jennifer Huddleston". The script is cursive and fluid, with the first name and last name clearly distinguishable.

Jennifer Huddleston, Ph.D.

Book and chapters	BIOL 351	AENV ###	Book and chapters
Publisher: Macmillan			Publisher: McGraw Hill
Pierce, B.A. <i>Genetics: A Conceptual Approach</i> . 7th ed. Macmillan. 2022			Brooker, R. <i>Genetics: Analysis and Principles</i> . 7th ed. McGraw-Hill. 2021.
Achieve - online learning platform			McGraw Connect Digital Access - online learning platform
1. Introduction to Genetics			1. Overview of Genetics
2. Chromosomes and Cellular Reproduction			3. Chromosome Transmission During Cell Division and Sexual Reproduction
3. Basic Principles of Heredity			2. Mendelian Inheritance
4. Sex Determination and Sex-Linked Characteristics			4. Extensions of Mendelian Inheritance
5. Extensions and Modifications of Basic Principles			24. Medical Genetics
6. Pedigree Analysis, Applications, and Genetic Testing			6. Genetic Linkage and Mapping in Eukaryotes
7. Linkage, Recombination, and Eukaryotic Gene Mapping			8. Variation in Chromosome Structure and Number
8. Chromosome Variation			18. Genetics of Viruses
9. Bacterial and Viral Genetic Systems			7. Genetic Transfer and Mapping in Bacteria
10. DNA: The Chemical Nature of the Gene			9. Molecular Structure of DNA and RNA
11. Chromosome Structure and Organelle DNA			10. Molecular Structure of Chromosomes and Transposable Elements
12. DNA Replication and Recombination			11. DNA Replication
13. Transcription			12. Gene Transcription and RNA Modification
14. RNA Molecules and RNA Processing			17. Non-coding RNAs
15. The Genetic Code and Translation			13. Translation of mRNA
16. Control of Gene Expression in Prokaryotes			14. Gene Regulation in Bacteria
17. Control of Gene Expression in Eukaryotes			15. Gene Regulation in Eukaryotes I: Transcriptional and Translation Regulation
18. Gene Mutations and DNA Repair			19. Gene Mutation, DNA Repair, and Recombination
19. Molecular Genetic Analysis and Biotechnology			20. Molecular Technologies
20. Genomics and Proteomics			21. Biotechnology
21. Epigenetics			22. Genomics I: Analysis of DNA
22. Developmental Genetics and Immunogenetics			23. Genomics II: Functional Genomics, Proteomics, and Bioinformatics
23. Cancer Genetics			5. Non-Mendelian Inheritance
24. Quantitative Genetics			16. Gene Regulation in Eukaryotes II: Epigenetics
25. Population Genetics			26. Developmental Genetics
26. Evolutionary Genetics			25. Genetics Basis of Cancer
			28. Complex and Quantitative Traits
			27. Population Genetics
			29. Evolutionary Genetics

The numbers in white are the numbers of days that are spent on each chapter.

 indicates that the chapter is taught in BIOL 351

 indicates that the chapter is taught in AENV ###

 indicates that the chapter is taught in BIOL 351 when time allows

August 21, 2025

Dr. Kendra Jernigan
Onstead College of Science
Room 145C
(325) 674- 2101

Re: Letter of Support for AENV 353- Plant and Animal Genetics

Dr. Jernigan,

It is my pleasure to submit this letter of support for the establishment of AENV 353 Plant and Animal Genetics. Your diligence and time spent on this course and the inclusion of necessary information is unmistakable.

This proposed course is vastly different than what will be taught in ANSC 496 Animal Breeding.

AENV 353's description states "Fundamental principles of genetics: physical basis of inheritance, interaction of genes, linkage, sex linkage, mutation, variation, and heritability. Special emphasis on breeding farm crops and domestic animals, especially inbreeding and crossbreeding, gene (allele) frequency, genotype-environment interactions, selection schema and criteria, genetic evaluation and prediction."

ANSC 496's description states "A systems approach to selection and mating of livestock through the application of genetic principles to livestock production and management. Breeding objectives, heritability, direct and correlated responses, detection of heterozygotes, utilization of pedigree and progeny information for selection, crossbreeding, and genotype-environment interactions will be discussed."

Most producers are not going to spend the time or money to dive into issues that are found within their herds due to the costs associated with this testing. So, it is critical that producers have a basic understanding of mutations or changes and what those phenotypic expressions look like in plants and animals vs humans. With the foundational knowledge provided in AENV 353, students can then take ANSC 496 and learn how to make sire/dam choices in order to improve the genetics within the herd, which will increase production and profitability for producers and consumers.

Dr. Jernigan, thank you for working so hard to provide a course that will serve our students and their desire to improve sustainability and survivability within the agricultural and environmental sciences.

Respectfully,

Caleta M Willis
College Assistant Professor of Animal Science
Onstead Science Center Room 145B

July 22, 2025

Dr. Kendra Jernigan
Onstead Science Center 145C
(325) 674-2101

Re: Review of Plant and Animal Genetics (AENV353)

Dear Dr. Jernigan,

Thank you for submitting Plant and Animal Genetics (AENV353) to us for review. I have reviewed it based on the ACU Syllabus Guidelines. I found the syllabus to meet all aspects of the checklist.

Please note that this letter is intended as a reference, which will be read by the department chair and members of the council, who may also have questions or comments of their own. If you have any questions, please feel free to let me know.

Please also let me know if we can be of any help in the design and facilitation of this course.

Sincerely,

A handwritten signature in black ink that reads "Amy Boone". The signature is written in a cursive, flowing style.

Amy Boone
Teaching and Learning Specialist, Adams Center

ABILENE CHRISTIAN UNIVERSITY

LIBRARY

M E M O R A N D U M

DATE: July 18, 2025
TO: Dr. Kendra Jernigan
FROM: Mark McCallon, Associate Dean for Library Services
RE: Course Application for AENV 353 – Plant and Animal Genetics

After reviewing the course application and syllabus, the library can adequately support the proposed course. Thank you for letting us review the course application and syllabus