

Approval Chart for Curriculum Changes

A = Approve I= Information Item¹ R= Advise & Respond²

Course Number AENV 371 or Degree Plan(s) _____

State the requested change and reason. A memo may be attached if more space is necessary.

Current course description: Fundamental concepts of experimental and statistical methods as applied to agricultural research. Various experimental designs, their analysis and application to agricultural research will be discussed. Course provides hands-on training with SAS applications to prepare students for real life data collection and analysis. Prerequisite: MATH 123 or MATH 130.

New course description: Fundamentals of experimental and statistical methods as applied to agricultural and environmental research. Various experimental designs, their analyses, and applications to natural sciences will be discussed. Course provides practical training with statistical software to prepare students for data collection and experimental analysis.

Prerequisite: MATH 123 or MATH 130

Please see the attached memo for the old course outcomes and the revised course outcomes.

Circle the number that corresponds to the requested change. Degree plan changes are on the second page.

		COUNCIL ³						
		Dept./School	College Academic	Deans	TEC	UGEC	UUAC	GRAD
Change to a Course								
1.	Title (description unchanged)	A	A	A			I	I
2.	Description (not affecting content)	A	A	A			I	I
3.	Course term(s)	A	I	A			I	I
4.	Content (substantive change)	A	A	A			I	A
5.	Number of hours (lecture, lab, contact)	A	A	A			A	A
6.	Course number within the hundred	A	A	I			I	I
7.	Course number beyond the hundred	A	A	A			A	A
8.	Prerequisites	A	A	A			I	I
9.	Course fee(s)	A	--	A			--	A
10.	From U to G or G to U	A	A	A			A	A
11.	Cross list with another department: U or G level	A	A	A			A	A
12.	Department of record	A	A	A			A	A
13.	Open or close a course	A	A	A			A	A
14.	New course — See website for application and process. This change includes combining or splitting a course(s).	A	A	A			A	A

Note: When an academic unit does not have a council, the UGEC and/or UUAC will serve as its academic council, depending on the nature of the issue.

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		COUNCIL ³							Board of Trustees
Change to a Degree Plan		Dept./School	College Academic	Deans	TEC	UGEC	UUAC	GRAD	
1.	University Requirements — Change in approved course content ⁶	A	A	A		A		A	--
2.	University Requirements — Add or drop a required course from the University Requirements chart ⁶	A	A	A		A		A	--
3.	University Requirements — Add or drop a course from a menu within the University Requirements ⁶	A	--	--		A		A	--
4.	University Requirements — Change hours within a menu on the University Requirements chart ⁶	A	A	A		A		A	--
5.	Major — Revision of major ^{4,5}	A	A	A		A		A	--
6.	Major — Adopt or change admission requirements	A	A	A		A		A	--
7.	Major — Add ^{4,5}	A	A	A		A		A	I
8.	Major – Discontinue (proposed by the department or college)	A	A	A		A		A	I
9.	Major – Discontinue (proposed by the Provost)	See below.							
10.	GPA — Revise major or cumulative requirement	A	A	A		A		A	--
11.	Minor — Revise course selection	A	A	A		I		I	--
12.	Minor — Add	A	A	A		A		A	--
13.	Minor – Discontinue (proposed by the department or college)	A	A	A		A		A	--
14.	Minor – Discontinue (proposed by the Provost)	See below.							
15.	Degree — Add	A	A	A		A		A	I
16.	Degree – Discontinue (proposed by the department or college)	A	A	A		A		A	I
17.	Degree – Discontinue (proposed by the Provost)	See below.							
18.	Any change to a graduate degree program	A	A	A		A		A	--

		COUNCIL ³							Board of Trustees
Provost-Proposed Change		Provost	Department	Dean	TEC	UUAC	Graduate	Faculty	
1.	Major/Graduate Program – Discontinue (proposed by the Provost)	A	R	R		A		A	I
2.	Minor – Discontinue (proposed by the Provost)	A	R	R		A		--	--
3.	Degree – Discontinue (proposed by the Provost)	A	R	R		A		A	I

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					COUNCIL ³					
	Change to the Catalog Information	Dept./School	College Academic	Deans	UGECE	UUAC	GRAD	Provost	Faculty	President
1.	General requirements for graduation including course requirements that are common to all majors for all degrees ⁷	--	--	--	A			A	A	A
2.	Admission requirements	--	--	--	A			A	A	A
3.	Policies governing academic probation and suspension	--	--	--	A			A	A	A
4.	Requirements for graduating with honors	--	--	--	A			A	A	A

¹ Councils may request additional information about "Information" items. These items are approved as "Consent Agenda."

² The Dean and Department should respond to the Provost's recommendation to close a program in writing. Advise & Respond (R) requires that the voting body should receive the written responses at least one week prior to the vote.

³ All courses that meet University Requirements for general education must go through UGEC. Courses or degrees offered only to students seeking teacher certification must go through the Teacher Education Council. All undergraduate changes must go before the UUAC. All graduate degree plan changes must go through the Graduate Council.

⁴ A minimum of 30 hours is required for a major. A maximum is specified for each degree (e.g., BA, BS). The university minimum for elective hours is 6, unless the requirements of external accrediting bodies make it impossible.

⁵ Program or course changes that apply to any major that includes Teacher Certification will be reviewed by the college, the Teacher Education Council (TEC), and then the UUAC.

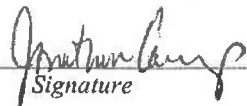
⁶ Courses that satisfy ACU's University Requirements (General Education) will normally have lower-level numbering, be free of prerequisites and co-requisites, appeal to more than one or two majors, and "not narrowly focus on those skills, techniques, and procedures specific to a particular occupation or profession" (SACS 2.7.3). Departments may request exceptions to the first three criteria.

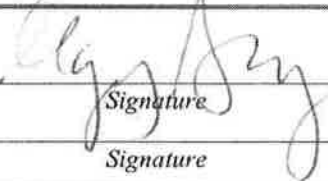
⁷ The UUAC approved the clarification that "general requirements for graduation" means the enumerated items in the "General Requirements for Bachelor's Degrees" section of the catalog.

Revised 8-26-19

Curriculum/Catalog Changes Signature Page

Department/School Chair(s)	
 Signature	09/09/2019 Approval date
_____ Signature	_____ Approval date

College Academic Council(s)	
 Signature	11-15-19 Approval date
_____ Signature	_____ Approval date

Dean(s)	
 Signature	12/3/19 Approval date
_____ Signature	_____ Approval date

Teacher Education Council	
_____ Chair's signature	_____ Approval date

General Education Council	
_____ Chair's signature	_____ Approval date

Undergraduate Academic Council	
_____ Chair's signature	_____ Approval date

Graduate Council	
_____ Chair's signature	_____ Approval date

Provost	
_____ Signature	_____ Approval date

Faculty	
_____ Chair of faculty senate	_____ Approval date

President	
_____ Signature	_____ Approval date

AENV 371

Old outcomes:

	Course Outcome	Measurement Instrument
1.	Demonstrate biological literacy and critical thinking skills in an experimental agricultural context.	Test Group project Research article comprehension
2.	Differentiate among experimental methods and designs and apply appropriately within experimental-agriculture contexts.	Test Assignments Project
3.	Construct experimental research designs for specific agricultural problems.	Group Project Peer Review
4.	Evaluate analytical techniques for research data.	Tests Assignments Project SAS programming

Revised outcomes:

	Course Outcome	Measurement Instrument
1.	Demonstrate environmental and agricultural literacy and critical thinking skills in an experimental context.	Tests Research project Writing assignment
2.	Differentiate among experimental designs and apply within the contexts of natural sciences.	Tests Homework assignments
3.	Construct experimental research designs for specific environmental and agricultural problems.	Research project
4.	Evaluate analytical techniques for research data.	Tests Statistical programming Homework assignments

EXPERIMENTAL DESIGNS & DATA ANALYSIS (AENV 371, 3 credit hours)

FALL 2020

Class time & place: Tuesday & Thursday 8am-9:20am; Onstead Science Center 261

Text: Ruxton, G.D. & Colegrave, N. Experimental design for the life sciences. Fourth edition. 2017. Oxford University Press.

ISBN: 978-0198717355

* [Click this link to see ACU Bookstore for these materials.](#) Search for the course, AENV 371.01

Course Prerequisite: None

Instructor: Dr. Kendra Jernigan, PhD

Office: Onstead Science Center 145C

Phone: 325-674-2101

Office Hrs: Monday: 9am-10am

Tuesday: 1pm-4pm

Wednesday: 9am-10am

Thursday: None

Friday: 9am-10am & 1pm-2pm

*or other times by appointment via Canvas message. Priority use of Canvas messaging over email, thank you! (Email: kendra.jernigan@acu.edu)

ACU Mission Statement

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

College of Arts and Sciences Mission

To educate students for worldwide Christian service and leadership through programs of study and other learning experiences that blend a liberal arts education with professional and career education.

Agricultural & Environmental Sciences Mission Statement

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

Course Description

Fundamentals of experimental and statistical methods as applied to agricultural and environmental research. Various experimental designs, their analyses, and applications to natural sciences will be discussed. Course provides practical training with statistical software to prepare students for data collection and experimental analysis.

Prerequisite: MATH 123 or MATH 130

Christian Perspective

God created us with a creative mind that allows us to study and understand his creation. Experimentation is one way that we use to study God's creation. The focus of this course is to provide students with facilities necessary to discern the quality of quantitative information, to follow appropriate and ethical procedures when experimenting with God's creation and to act faithfully and responsibly on behalf of the organizations they serve.

Course Format

Class meets for 80 minutes, 2 times per week. Format in class will be a mixture of traditional lecture, multimedia presentations, and discussion.

Course Goal and Specific Learning Objectives

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

	Course Outcome	Measurement Instrument
1.	Demonstrate environmental and agricultural literacy and critical thinking skills in an experimental context.	Tests Research project Writing assignment
2.	Differentiate among experimental designs and apply them within the contexts of natural sciences.	Tests Homework assignments
3.	Construct experimental research designs for specific environmental and agricultural problems.	Research project
4.	Evaluate analytical techniques for research data.	Tests Statistical programming Homework assignments

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:

Critical thinking through:

the collection and analysis of data

reading and discussion of principle concepts of the course

Communication through:

writing assignments in professional journal style

Assessment and Grading

The grade will be computed on the basis:

Activity	Value
Exams	30 %
Homework (Statistical programming & writing assignments)	30%
Group Project	20%
Final Exam	10%
Participation	10%

Grading Scale in points:

900-1000	A
800-899	B
700-799	C
600-699	D
0-599	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).

Makeups: It is the student's responsibility to make up all missed work. Due to setup time and space considerations, lab make-ups are sometimes difficult to arrange. Any make-up work must be completed **within one week of the original due date**. Make up exams will be similar to the original in content and format, but will have no extra credit component. Labs, exams, quizzes, or in-class work missed due to an unexcused absence cannot be made up.

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

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. In order 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>.

FERPA: "The Family Educational Rights and Privacy Act" affords the student certain rights with respect to student records." Refer to the ACU course catalog for a more thorough discussion (p. 9 in the 2015-2016 catalog).

Course Policies

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

Expectations

This semester, we have the opportunity to explore various aspects of plant science together. In order 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. As such, I expect you to be on time to class and be prepared to learn.
- I expect you to be respectful of everyone in class – fellow students as well as 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. 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 assignments, group assignments, 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 to not engage in any form of 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. In order to allow for Sabbath rest and time with my family, I will not be checking 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 on time to class. It is disrespectful to you if I am not prepared and on time for class, as such I will make every effort to be prepared for class just as I expect you to be.
- I will return assignments and exams to you within 2 weeks of the due date. It is important for you to have assignments returned to you in a timely manner, so that you can assess what areas you need to spend more time studying and what areas you already have successfully mastered.

Class Attendance and Conduct

Attendance: Attendance of class is expected. It is the responsibility of the student to make sure that any missed work is made up, and to stay current with the covered material. Any absence due to documented illnesses, family emergencies, or university approved events will be considered excused. In lecture, after three unexcused absences, you will lose 5 points per absence from your participation grade..

Participation and Tardiness: Discussion is an integral part of this class. Worthwhile discussion can only happen if people are prepared. If students have done the requested readings before class, this should not be a problem. But you need to be willing to contribute to the discussions. Your participation grade will be based on your level of interactions in the class and attendance. Being late to class is unprofessional and disruptive. Three tardies will equal one unexcused absence in class or lab. Chronic or severe tardiness (e.g. being more than 10 minutes late) will result in loss of participation points.

Conduct: Students are expected to conduct themselves in accordance with the standards given in the Student Handbook. I shall treat you with the same level of respect I expect from you. No electronic devices shall be turned on during class, except for those specifically being used for note taking or assignments in the class.

Technology Use:

Appropriate use of electronic devices for classroom purposes is permitted. Inappropriate use of any electronic devices in a learning environment is disruptive and disrespectful of 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? Shoot me a message 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 the standard in professional workplace environments.

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

AENV 371 Tentative Class Schedule Fall 2020

Week	Content
1	Introduction and Overview Types and Organization of Data (Descriptive Statistics)
2	Introduction to SAS & R, Elements of Experimentation, Randomization,
3	Completely randomized designs, models and parameter estimation. ANOVA
4	Exam I. Completely randomized designs, models and parameter estimation, The F- test and one-way ANOVA, Multiple Comparisons of means
5	Randomized Block (RB) designs;
6	Randomized Block (RB) designs;
7	Exam II, Latin Squares (LS) Designs, RB and LS designs
8	Introduction to Factorial Designs
9	Incomplete Block designs
10	Split Plot Designs
11	Random Effects, models for random effects
12	Correlation and Regression Correlation and Regression
13	Exam III, Analysis of Covariance
14	Checking assumptions, Data transformations
15	Presentations of research; Final exam