



Abraham Lincoln

LAND-GRANT LESSON PLAN

for middle or high school students in Agricultural Education Classrooms



Justin Morrill

LAND-GRANT LESSON PLAN

ABOUT THE AUTHORS



Case Emerson (case.emerson@ufl.edu) is a graduate student in Agricultural Education and Communication in the College of Agricultural and Life Sciences at the University of Florida. He graduated with a bachelor's degree in spring 2020 in animal sciences with a concentration in meat science and minors in history, mass communication and international studies in agricultural and life sciences. He is actively involved on campus and was inducted into the University of Florida Hall of Fame in 2020. He served as the president of Alpha Gamma Rho Fraternity and Collegiate Farm Bureau and was a member of numerous clubs and organizations at UF. He is a former FFA and 4-H member and continues to serve both as a volunteer. In the summer of 2020, he completed an extension internship with UF Institute of Food and Agricultural Sciences and will intern in spring 2022 in an agricultural education classroom at Lafayette County High School in Mayo, FL. As the son of a fifth-generation farmer he is deeply steeped in the history and potential of the agriculture industry.



Lacey Seckman (ldseckman@mix.wvu.edu) is a graduate student in Agricultural and Extension Education in the Davis College of Agriculture, Natural Resources and Design at West Virginia University. She graduated summa cum laude with a bachelor's degree in the spring of 2020 majoring in agricultural and extension education. Lacey completed her degree with an emphasis in teacher education and two minors in soil science and food science technology. During her undergraduate experience, she was an active member of the WVU Collegiate Soil Judging Team and the WVU Plant and Soil Science Club. Lacey is a former FFA and 4-H member and continues to volunteer with both organizations. For two summers she served as a WV 4-H STEM Ambassador helping deliver STEM curriculum to WV youth at various 4-H events across the state. In the summer of 2021, she completed an internship with the WVU Extension Dean's Office in Morgantown, where she worked closely with the program evaluation team. Growing up with a large agriculture influence, Lacey looks forward to continuing working in the industry and inspiring others to explore its endless opportunities.



Dr. Charlotte Emerson (cemer@ufl.edu) is the Director of Student Development and Recruitment for the University of Florida College of Agricultural and Life Sciences. She is responsible for leadership development for graduate and undergraduate students and recruiting new students to UF/CALS. Before coming to UF in 2006, she taught agricultural education at Union County High School in Lake Butler, FL for 12 years where she served as an FFA Advisor for the Lake Butler FFA Chapter. In 2004, she and her colleagues were named the National Association of Agricultural Educators Outstanding Secondary Agricultural Education Program for Region

V and she was also awarded the NAAE Outstanding Cooperation award in 2009. Today, she serves the Florida FFA Association as a board member and as the superintendent for the State FFA Parliamentary Procedure and Conduct of Chapter Meetings Leadership Development Events. She volunteers with local and state 4-H as well as a variety of church and community groups.



Dr. Jessica Blythe (jmblythe@mail.wvu.edu) is an associate professor of Agricultural Extension and Education at West Virginia University Davis College of Agriculture, Natural Resources and Design. In 2005, she earned her Bachelor of Science at the University of Connecticut in ornamental horticulture. She then moved to Florida to complete a master's degree in Agricultural Education at the University of Florida. She graduated in 2007 and accepted a position as an agriculture teacher at Baker County High School in Florida. Dr. Blythe developed the horticulture pathway and taught four different courses. During her years as a secondary teacher, she

strived to increase the relevance of content in students' lives and integrate academic content into agricultural contexts. She was presented the National Association for Agricultural Educators Teacher Turn the Key award, and with her co-teacher was awarded Outstanding Middle/High School Program by the Florida Association for Agricultural Education. After four years in the classroom, she returned to UF to complete a Ph.D. in Agricultural Education and Communication. Dr. Blythe has continually conducted meaningful research related to the integration of STEM in agricultural education and teacher professional development.



MATERIALS

- Land-Grant Universities and Systems PowerPoint or Whiteboard/ Chalkboard
- Resources:
 - Timeline Worksheets
 - Reading Activities
 - Maps
 - Assessment
- Kahoot Online Review

OBJECTIVES

1. Students will be able to explain what a land-grant university is
2. Students will be able to distinguish between the 3 types of land-grant institutions
3. Students will be able to list the three parts of the land-grant mission
4. Students will be able to describe the Hatch and Smith-Lever Act

Download the PowerPoint!



<https://cals.ufl.edu/content/land-grant/land-grant-slides.pptx>

OPENING ACTIVITY

Prompt students to think about universities and colleges they have heard of.

Ask each student to write on the board the name of a university or college. Call on students one or two at a time depending on the size of the board.

-OR-

Create a word cloud question using www.mentimeter.com. (This will require a free registration and should be set up ahead of time.)

After all students have participated go through the list and identify the land-grant institutions with a star or another identifier without giving away the commonality.

- Ask students what the stated institutions have in common? Allow for sharing of ideas.
- Ask students “What is a land-grant institution”, lead the discussion to the history of the land-grant system and why it is important to agriculture, natural resources, and the environment as well as agricultural education both formal and informal.

CONTENT

What is a Land-Grant University?

- Morrill Act of 1862, or the Land-Grant College Act, of the U.S. Congress provided grants of land to states to finance the establishment of colleges specializing in agriculture, mechanical arts and military science

What did education look like at that time?

- Colonial Times (1600’s to the 1700’s)
- Common people were workers and most of the time only completed grade school
- Very few high schools in the country
- Upper class families sent children to Europe for their studies
- Students who went to Europe went to study the classics, philosophy, religion, law, & music

History of Higher Education

- Colonial Colleges
- Nine colleges were founded prior to 1776
- Seven of the nine colleges are part of the Ivy League System (*)
- Mostly established by religious communities
- These European style “Latin Schools” were to provide ministers, judges, and public officials for the community
- Other Schooling
- Apprenticeships
- Practical Schools
- Higher education was mostly for white males who were interested in the above
- Men who were interested in other professions (accounting or medicine) found training in apprenticeships or “practical schools”

The 9 Colleges in the US before 1776

- Harvard* (Oldest school in the U.S.)
- Yale*
- Princeton*
- Columbia*
- Penn*
- Brown*
- Dartmouth*
- William and Mary
- Rutgers

America in 1860, Just before the Morrill Act was Signed

The Industrial Revolution created a need for a population with more diversified skill sets

- America in the 1860's was still a very agrarian society, but with urbanization, farmers were tasked with needing to grow enough to provide for more than just their families
- The majority of those who went to college included wealthy, white men
- The Industrial Revolution created a need for multiple levels of skill and education with an importance for science being recognized
- What few options there were for a science education were only available or attainable to the wealthy

The Morrill Act of 1862

- Written by Vermont Representative Justin Smith Morrill
- He "saw the most valuable public lands being dissipated and squandered by reckless grants for all sorts of local and private objects, without benefit to the nation as a whole"
- Signed by President Abraham Lincoln on July 2, 1862
- Provided "grants" of federal lands to establish at least one public institution of higher education in every state
- Allocated 30,000 acres of land per congressman in each state
- Responsibility of the state to provide money and buildings
- Confederate states were excluded until end of the war
- The purpose was to educate the children of the common people in
 - Agriculture
 - Mechanical Arts
 - Military Science
 - "To promote the liberal and practical education of the industrial classes in the several pursuits and professions in life"

The Purpose of the Land-Grant Institution

To provide broader access to instruction related to the practical realities of an agricultural and industrial society, and to teach agriculture, military tactics, and the mechanical arts as well as classical studies so members of the working class could obtain a liberal, practical education. Other courses offered included scientific and classical studies.

Morrill Act of 1890

- Second Morrill Act
- Gave land-grant status to Historically Black Colleges and Universities (HBCU's)
- Referred to as "1890 Institutions"

Equity in Educational Land-Grant Status Act of 1994

- Gave land-grant status to Tribal Colleges and Universities (TCUs)
- Referred to as "1994 Institutions"

Current Land-Grant University Totals

There are 106 colleges and universities with land-grant status:

- 1862 Institutions – 57 universities
- 1890 Institutions – 18 universities
- 1994 Institutions – 31 colleges

Land-Grant Map

- Indicates the location of all land-grant institutions



United States Department of Agriculture
Cooperative State Research, Education, and Extension Service

Land-Grant Colleges and Universities



Land-Grant Mission Expands to include the Hatch Act and Smith-Lever Act

- Universities needed “aid in acquiring and diffusing among the people of the United States useful and practical information...”
- **Hatch Act of 1887**
 - Agricultural Experiment Stations: Research
 - Institutions would be responsible for conducting applicable research
 - Institutions would keep up with the maintenance of an effective agricultural industry to develop and improve rural life and welfare of the consumer
- **Smith-Lever Act of 1914**
 - Cooperative Extension Service: Outreach
 - The Smith-Lever Act addressed outreach and connected federal, state, local levels of education, hence “cooperating”.
 - More specifically extends the work at the universities to the people in the communities; *Comprehensively* provides opportunity for non-formal, non-credit courses
 - Allows for the practical application of research
 - Provides instruction, demonstrations, improved practices of research, 4-H, agriculture, family science, community, leadership, and other resources

With the addition of the Smith-Lever and Hatch Act the Land-Grant Tripartite mission was complete: **Teaching, Extension, and Research**

Land-Grant System and the Future: The more things change, the more they stay the same.

“The future of land-grant colleges **will be determined** by the **nature of the problems which come up in the areas they serve**. From the present point of view, it appears as though the problems of **social adjustment, to the technological conditions in agricultural and industrial areas**, are going to require extended study and integration. Problems of production have been dealt with most efficiently by the colleges, the department and the experiment stations, and now the problems of **distribution and their social repercussions** on the life of people on the farm and in industry are claiming and are apt to claim a good deal of attention.” -Alfred Atkinson, president of the American Association of Land-Grant Colleges and Universities, 1937

Land-Grant Institutions Today are Especially Focusing on:

- Sustainability
- Urban agriculture
- Social issues in a post COVID world
- Feeding 9 billion by 2050
- Artificial Intelligence

Land Grant Universities and Systems

Tri-partite Mission:

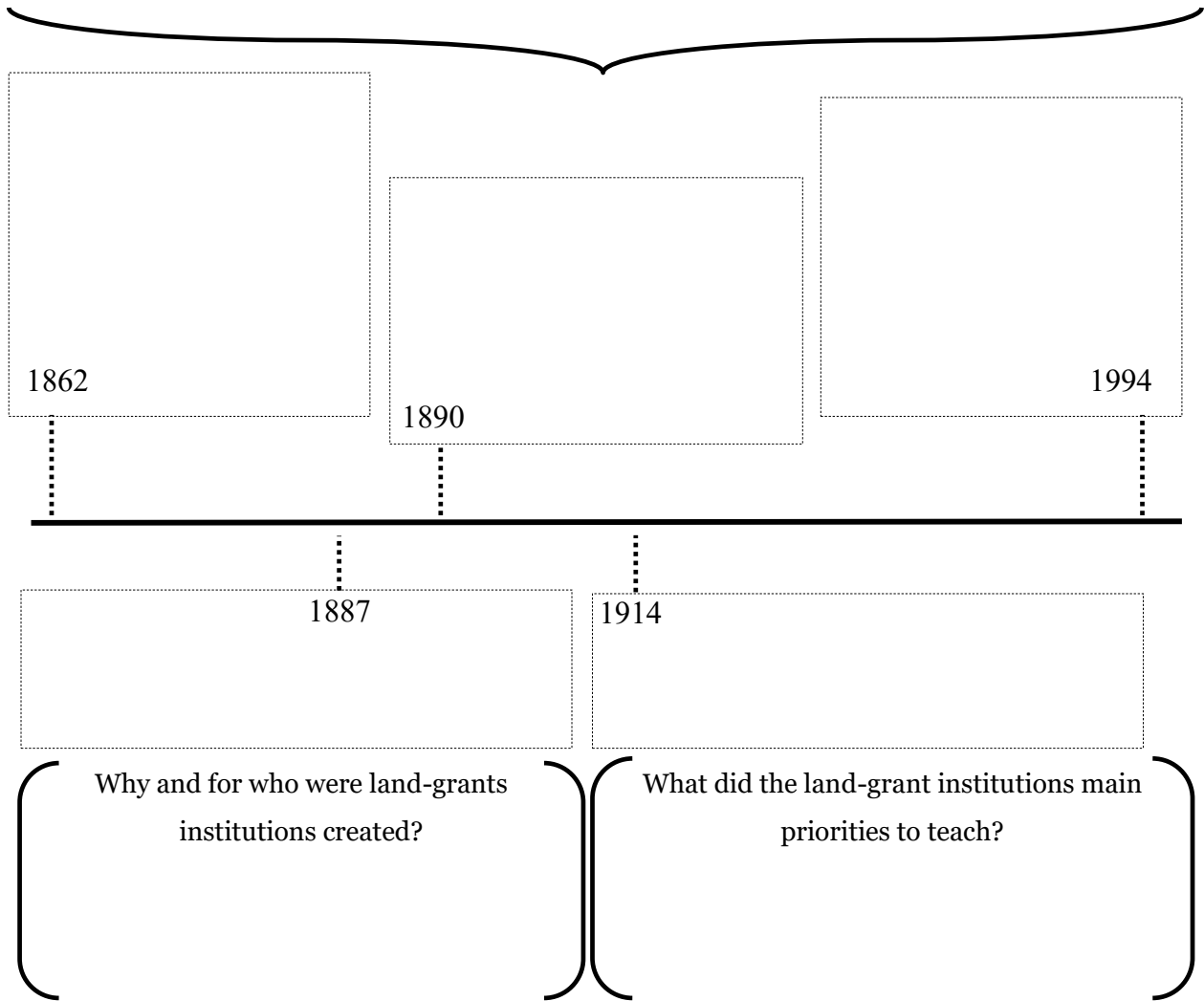
History of Higher Education

Other Schooling

Colonial Times

Colonial Colleges

America in 1860



Looking to the Future:

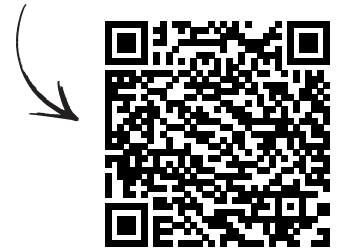
FOR FURTHER DISCUSSION

What other issues should the land-grant system tackle in the future?
How does the land-grant system serve your community?

SUMMARIZING ACTIVITIES

Instructions: As you review, tie back to the introduction activity and some of the universities' students listed that are land-grants. Discuss why Ivy League (Private) and land-grant (Public) institutions are different systems.

- Review by calling on students to summarize what a land-grant university is and which act established them originally
- Ask 3 students to elaborate on one of the three types of institutions (1862, 1890, 1994)
- Ask students to discuss how the Hatch and Smith-Lever Act tie into the tripartite mission of the land-grant universities, what these acts established, and list a few things they do.
- Click the link or scan the QR code to use the Kahoot to review content: <https://create.kahoot.it/share/land-grant-history-and-mission-draft/962173fd-f890-49c3-a6c6-662e028505ed>



GUIDED READING AND ASSESSMENT

- Continue discussing the land-grant staples while moving through activities to verify learning
- See Assessment Questions for a quiz-style assessment



GUIDED READING ACTIVITY 1

Article: Land-Grab Universities

<https://www.hcn.org/issues/52.4/indigenous-affairs-education-land-grab-universities>



1. What was the purpose of the Morrill Act of 1862?
2. How did the Morrill Act obtain some of this land? Outside the Reading: What does “expropriated” mean?
3. What is the legal term for the giving up of territory?
4. How many states are still in possession of unsold Morrill acres?
5. What is a land acknowledgement?
6. What is a common misconception about the Morrill Act grants? How large were these grants and where were they located in reference to the institution it was given to?
7. List 5 of the current uses of some of this land.
8. What are universities being challenged to do through this article?
9. What are the Homestead Act and Pacific Railway Act?
10. What was the simple idea behind the Morrill Act?
11. What happened during the largest authorized mass execution in U.S. History? What led to this?
12. How many land-grant universities benefited from the 1851 Treaty of Traverse de Sioux and Treaty of Mendota?
13. How many acres were part of this treaty of 1851?
14. Where do many of the Dakota live today?
15. What happened in the Sand Creek Massacre of 1864? Where did this take place and what tribes were affected? Outside the Reading: Who are Meriwether Lewis and William Clark?
16. What tribe did M. Lewis and W. Clark make treaties with in 1808 and 1825?
17. Why were these treaties created?
18. How large was this land?
19. How much is still unsold and what university possess it?
20. How did the University of California capitalize on 150,000 acres?
21. What schools are the top three recipients by acreage?
22. What schools are the top three beneficiaries by principal and value?
23. From whom was land taken for Cornell’s? How many treaties or seizures?
24. How many acres remain in trusts for 12 universities?
25. What is the Wokini Initiative?

GUIDED READING ACTIVITY 2

Article: 1890 Land-Grant Universities Celebrate 130 Years of Cutting-Edge Science, Education and Community Service | USDA

<https://www.usda.gov/media/press-releases/2020/08/28/1890-land-grant-universities-celebrate-130-years-cutting-edge>



1. What legacy has the 1890 institution created?
2. Outside the Reading: When did Sonny Perdue serve as the U.S. Secretary of Agriculture? Who is the current U.S. Secretary of Agriculture?
3. Summarize 3 initiatives or programs that support 1890 institutions.
4. Outside the Reading: What is OPPE? Search with “USDA” and “1890 Institution”
5. What are the three main tasks/goals of the Centers for Excellence Program?
6. How many Centers of Excellence are there? At what institutions are they located?
7. How many universities make up the 1890 Land-Grant System?
8. Which example of 1890 projects did you find most interesting? Why? Summarize what they did.

GUIDED READING ACTIVITY 3

Article: Celebrating 1890 Universities and The 130th Anniversary of The Second Morrill Act

<https://www.forbes.com/sites/petermcpherson/2020/08/24/celebrating-1890s-universities-and-the-130th-anniversary-of-the-second-morrill-act/?sh=6af05b9576f7>



1. How many institutions were designated as 1890 land grant universities?
2. What are these land grant institutions addressing? How? What percent of students at 1890 Institutions are awarded Pell Grants?
3. *Outside the Reading:* What are Pell Grants? Who are they awarded to?
4. “The 1890 schools also award _____ of every _____ bachelor’s degrees in _____ earned by Black students in the U.S.”
5. How do you think digital learning during the pandemic has created a barrier to student success?
6. The 1890s institutions have done outstanding work in what areas?
7. How does the author of this article suggest addressing health disparities through 1890 universities?
8. What university is leading pathbreaking computational biology research?
9. North Carolina A&T is working to boost what? In the next generation of who?
10. 1890 universities are _____ in _____, _____, and _____.

GUIDED READING ACTIVITY 4

Article: 4-H Celebrates 1890 Land-Grant Universities

<https://4-h.org/about/blog/4-h-celebrates-1890-land-grant-universities/>



1. What did the signing of this act result in?
2. What did the act require the institution to show?
3. What is a HBCU?
4. List 3 of HBCU Institutions
5. What two historical figures played a major role in the development and advancement of the 1890 land-grant universities?
6. *Outside the Reading:* What did these individuals do?
7. 1890 universities are “finding answers today and preparing for tomorrow” through...?
8. What are two featured activities of the 1890 Land-grant Institutions?
9. *Outside the Reading:* Research one of these activities. What else did you find out about it?
10. These institutions are committed to “serving the _____ and reaching the _____.”
11. Summarize one example of 4-H being involved with the 1890 institutions? *Outside the Reading:* What does STEM stand for?
12. What percent of the HBCU system are land-grant universities?
13. The National Science Foundation found that how many of all African American science and engineering doctorate recipients nationally completed their undergraduate education at an HBCU?
14. _____ patents have been awarded to HBCUs. As of 2011, _____ out of _____ institutions awarded patents are land-grants.
15. What are the top 3 land grant HBCUs that have been awarded patents?

LAND-GRANT MAPPING AND VIRTUAL FIELD TRIP ACTIVITY

Objectives:

1. Locate different land-grant institutions across the nation
2. Explore land-grant universities' websites
3. Describe what educational opportunities are available through Land-Grant Institutions
4. Communicate findings with the rest of the class

Supplies:

- Classroom set of iPads/Laptops/Research Devices
- List of Institutions
- Projector and screen for student presentations

Timeline

Two 50-minute class periods

Task

Day one: Each student will be assigned a different land-grant institution. Using PowerPoint, Prezi, etc. create five slides with the following information:

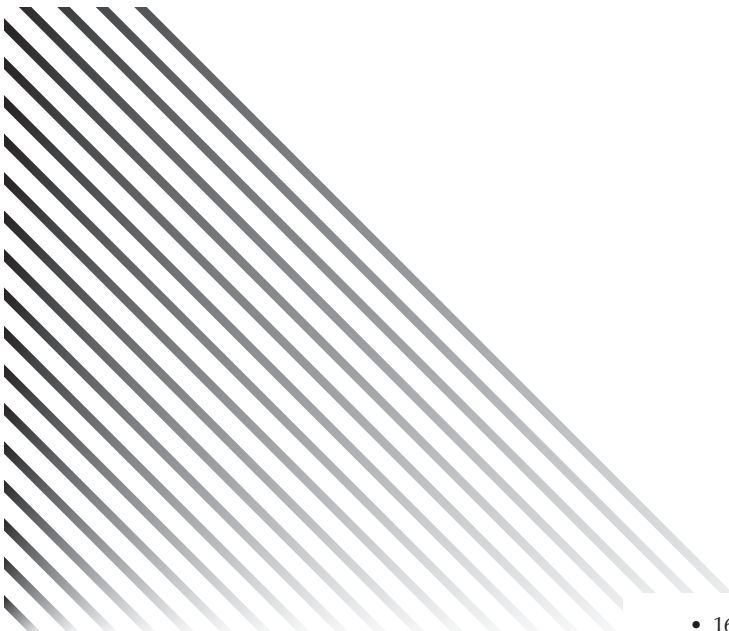
1. Name of the Institution and type of land-grant (1862, 1890, 1994) and photograph
2. Location (using a map of the US to give perspective) and student population
3. The name of the college where agriculture, natural resources and the environment majors are housed
4. List of majors and 3 unique opportunities
5. Three additional photographs of the institution

Day two: Presentations

NOTES

LAND-GRANT UNIVERSITIES AND SYSTEMS ASSESSMENT QUESTIONS

1. How were colleges during colonial times established?
2. These European style “Latin Schools” provided what for people of the community?
3. Most of the colleges established before 1776, are known collectively as what group of schools today?
4. What two other schooling options were available for a higher education?
5. What event was going on during the 1860’s to cause urbanization in America?
6. Urbanization in the 1860’s created what two needs?
 - a. Farmers had to...
 - b. Working people needed...
7. Historically, what class of people were able to obtain higher levels of education?
8. What is the purpose of the Morrill Act of 1862?
9. Who is the author of the Morrill Act legislation?
10. How much land was awarded to each state to establish an institution?
11. Which American President signed the Morrill Act into law?
12. What are the three educational priorities of a land-grant institution?
13. The second Morrill Act of 1890 provided land-grant status to what schools?
14. What happened with the passing of the Equity in Educational Land-grant Status Act of 1994?
15. The Land-Grant Universities have a tripartite mission. List the three segments of this mission.
16. What Act provided universities with Agricultural Experiment Stations to help provide research?
17. Which Act established the Cooperative Extension Service?
18. What are two things the Cooperative Extension Service does as part of outreach through the Universities?
19. What is a priority of land-grant institutions in the future?
20. What are the names of three land-grant institutions?



BUILDING THE RELATIONSHIP BETWEEN AGRICULTURAL EDUCATION AND THE LAND-GRANT MISSION

Examples below incorporate the land-grant mission into Career Development Events, Leadership Development Events, FFA Activities/Events and Supervised Agricultural Experiences.

CAREER DEVELOPMENT AND LEADERSHIP DEVELOPMENT EVENTS

Agricultural Issues

- Should secondary agricultural education curriculum include the history of the Morrill Act, the Smith-Lever Act and the Hatch Act and its significance to agricultural education, agriscience and agricultural innovation?
- Should indigenous people be compensated for the land that was expropriated for establishing land-grant universities?
- Today many land-grant universities are cost prohibitive, who should access higher education? The Morrill Act created opportunities for the common man to study agriculture, mechanical arts, and military sciences.

Agricultural Communications

- Develop a media plan to increase awareness of the historical significance of the land-grant mission and its importance to the nation, your state and community
- Many people do not recognize the important of agricultural and mechanical arts today, develop a media plan to highlight the importance of the land grant

Parliamentary Procedure / Conduct of Chapter Meetings

- Main Motion: I move our chapter host “Land-Grant Month” in November.
- Main Motion: I move our chapter adopt a land-grant institution in our state and highlight their majors in chapter meetings.
- Main Motion: I move we contact our state’s land-grant institution(s) to provide a guest speaker at our next meeting.

Employment Skills

- Job Overview: Extension Agents are employed by land-grant universities and serve the citizens of that state by serving as an expert or teacher on a topic relating to economics, community development, agriculture, family, animal production, diet and nutrition
- Job Responsibilities:
 - Actively work with team local, regional, and state teams to identify issues in the interest area you work in
 - Develop and execute educational programs on your interest area for the community
 - Provide learning experiences that will empower people to improve their lives around critical issues
 - Some positions in the academic setting will require you to conduct research
 - Some extension professionals also may teach more formal courses to students enrolled at the land-grant university
 - Investigate, develop and refine value-added content to a variety of delivery platform
 - Create and utilize assessments to evaluate the impact of the programming

- Answer questions of local/ state residents regarding your field of expertise
- Speak at industry events on topics that you may specialize in or even at local civic organization meetings
- Develop volunteer networks to sustain programs
- Work with local 4-H clubs by leading or teaching programming
- Maintain a high level of visibility and facilitate communications with a wide range of clientele including traditional and non-traditional learners, elected officials, agricultural and non-agricultural stakeholders, and environmental and special interest groups to promote the understanding of agriculture and natural resource issues
- Education and Training:
 - Can vary depending on the level of role as well as area of experience. Primarily a bachelors or master's degree are required in either your subject area or agricultural and extension education. Those doing research and teaching at the university level, may have a doctorate

Extemporaneous Public Speaking

- Do land-grant institutions provide adequate agricultural education opportunities for FFA members?
- What role does your FFA Chapter and school play in the land-grant mission?
- What collaborative steps can be taken to further bridge the gap between extension education and school-based agricultural education?
- Who benefits from the Morrill act in 2021 and beyond?

Marketing Plan Contest

- Create a marketing plan for expanding the knowledge base of the land-grant mission and system for your school and community

Prepared Public Speaking

- Is the land-grant mission relevant in today's academic culture?
- How has the land-grant system affected the dissemination of research to the public?
- Is the Morrill act of 1862 relevant in all states?
- The National Institute of Food and Agriculture (USDA) and the land-grant university system- partners in agriscience education!
- How has the land-grant system evolved over the last 150 plus years?
- Is the land-grant system what Justin Morrill intended and how has it changed?

SUPERVISED AGRICULTURAL EXPERIENCE

- Encourage FFA members to find employment/internships/shadowing opportunities in the local extension office/ faculty member
- Utilize available resources at the local extension office to enhance a FFA member's SAE
- Utilize resources for Agriscience Fair project ideas, research opportunities and resources at the local extension office
- Utilize the extension network and land-grant faculty and staff to seek out opportunities for educational experiences

BACHELOR OF SCIENCE IN AGRICULTURAL AND EXTENSION EDUCATION



1 OF 2 northeastern states with an **agricultural education program of its kind**

POTENTIAL CAREERS

- // AGRICULTURAL SCIENCES TEACHERS
- // AGRICULTURAL TECHNICIANS
- // SECONDARY SCHOOL TEACHERS
- // NATURAL SCIENCES MANAGERS
- // COUNTY EXTENSION AGENTS
- // NURSERY AND GREENHOUSE MANAGERS

ABOUT THE PROGRAM

As the global population continues to grow so, too, does the demand for food production and experienced agricultural educators. One of only two agricultural and extension education programs of its kind in the northeast, we're preparing future leaders to fill that need.

The Agricultural and Extension Education program will prepare you for careers in educating and communicating about agriculture through teaching, extension, production and technical agriculture positions or other professional employment in government, industry or entrepreneurship where competence in communications and leadership is required.

Tailor this major to your interests by selecting one of three areas of emphasis:

- Agricultural Teacher Education
- Agricultural and Environmental Technology
- Extension Education

While you'll graduate with the knowledge and skills necessary to succeed in those areas, you'll also be ready to take on other career paths — from marketing and selling to research and development.

"I chose to major in Agricultural and Extension Education because of an inborn fondness for the agricultural industry and the potential for educating young people of the importance they play in the field."

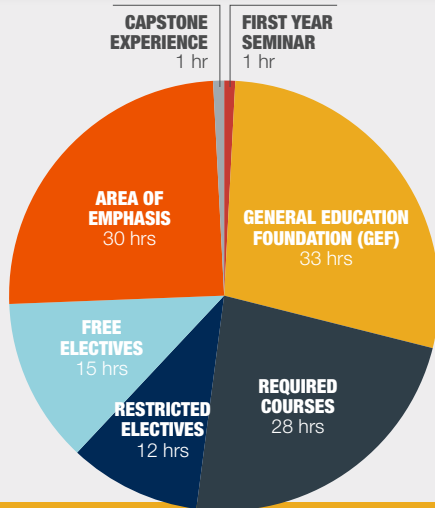
Travis Veach, Class of 2020



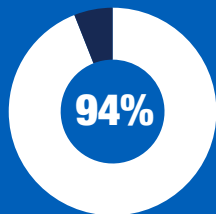
BACHELOR OF SCIENCE IN

AGRICULTURAL AND EXTENSION EDUCATION CURRICULUM AT A GLANCE

admissions.wvu.edu/academics/majors



TOTAL: 120 HRS



of **AGRICULTURE TEACHERS** in West Virginia graduated from WVU

GET CONNECTED

CONTACT US

davisinfo@mail.wvu.edu

SCHEDULE A VISIT

304-293-3489

tour.wvu.edu

visitwvu@mail.wvu.edu

FOLLOW US

@wvudavis

@wvudavis

/wvudavis

REQUIRED COURSES THAT FULFILL GENERAL EDUCATION FOUNDATION (GEF)

ENGL	101/102	Intro to Composition and Rhetoric	6 hrs
PLSC	206	Principles of Plant Sciences	4 hrs
PSYC	101	Introduction to Psychology	3 hrs
PSYC	241	Introduction to Human Development	3 hrs

+

YOU CAN EXPECT TO TAKE COURSES SUCH AS:

AGEE	101	Global Food and Agricultural Industry	3 hrs
AGEE	103	Basics of Agricultural Mechanization	2 hrs
AGEE	203	Agriculture Mechanics Practica	3 hrs
AGEE	220	Group Organization and Leadership	3 hrs
AGEE	421	Agricultural and Natural Resource Communications	3 hrs
AGEE	431	Adult Education in Agriculture and Natural Resources	2 hrs
AGEE	440	Principles of Cooperative Extension	2 hrs
AGRN	202/203	Principles of Soil Science	4 hrs
ARE	204	Agribusiness Management	3 hrs
AVS	251	Principles of Animal Science	4 hrs

+

CHOOSE AN AREA OF EMPHASIS

AGRICULTURAL AND EXTENSION EDUCATION STUDENTS CAN CHOOSE A SPECIALIZATION (courses are selected examples)

AGRICULTURAL TEACHER EDUCATION

AGEE	330	Shop Theory and Methods	3 hrs
AGEE	426	Directing Future Farmers of America	3 hrs
AGEE	430	Methods of Teaching Agriculture	3 hrs
AGEE	438	Agriculture Education Curriculum Development	2 hrs
SPED	360	Differentiation of Instruction for Students with Special Needs	3 hrs
	+	Semester-Long Student Teaching Experience	12 hrs

EXTENSION EDUCATION

JRL	101	Media and Society	3 hrs
POLS	220	State and Local Government	3 hrs
POLS	240	Introduction to Public Administration	3 hrs
PR	215	Introduction to Public Relations	3 hrs
	+	Extension Experience/Internship	12 hrs

AGRICULTURAL AND ENVIRONMENTAL TECHNOLOGY

AGEE	303	Small Engines and Hydraulics	3 hrs
AGEE	305	Metal Fabrication	3 hrs
AGEE	452	Advanced Farm Machinery	3 hrs
	+	Internship or Field Experience	12 hrs

For full suggested course schedule, class descriptions and more information on General Education Foundations (GEF), visit go.wvu.edu/aged.

MAJORS

Agribusiness Management

This program blends business basics such as accounting, economics, marketing, management and finance with a focus area of the student's choice. Students learn to apply business principles to real world issues in agriculture and life science industries.

Agricultural & Extension Education

This program is designed to prepare students for entry into agricultural teaching, extension, production and technical agriculture positions, or other professional employment. A broad understanding of agriculture is required so that students will be able to communicate effectively agricultural information to a variety of audiences.

Animal & Nutritional Sciences (BS.Ag)

Prepares students with the necessary background in agricultural economics, agronomy, breeding, nutrition and physiology to prepare for a career in livestock, dairy, or poultry production and food processing.

Animal & Nutritional Sciences (B.S.)

A pre-professional program designed to prepare students for admission to graduate and professional schools in a variety of fields including veterinary medicine, human medicine, dentistry and law.

Biochemistry

This interdisciplinary program provides students with a strong background in the basic principles of physical and life sciences. With courses in biology, chemistry, mathematics, physics and molecular biology, the biochemistry program provides strong preparation for professional or graduate school.

Design Studies

A flexible program that accommodates a wide range of interests and career paths with design as a focus, this program is ideal for students interested in working in the design profession but don't want to perform studio based activities.

Energy Land Management

Designed to provide students an education focused on energy land management and how it relates to energy development, this program places an emphasis on the management, coordination and development of surface and mineral interests.

Environmental and Community Planning

A flexible major ideal for both first-time freshman and transfer students, this program is aimed at enabling students to create functional and sustainable spaces where people live, work and play.

Environmental and Energy Resources Management (E*Quad)

This program provides a strong foundation for students interested in a career in the growing energy and environmental sectors of the economy by focusing on the relationships between the business of energy production and the associated environmental management, regulatory, and policy issues.

Environmental Microbiology

This pre-professional program focuses on microorganisms, their uses and impacts on multiple aspects of our daily lives. It's ideal for those who desire a career at the forefront of human and plant health, the pharmaceutical industry, food science and the environment.

Environmental and Natural Resource Economics

Students in this program explore the interdisciplinary nature of environmental problems and links between natural resource and economic development issues.

Environmental, Soil and Water Sciences

Students in this program learn to safeguard the environment and can gain specialization in either soil and water conservation, or environmental assessment and remediation.

Fashion, Dress and Merchandising

Obtain design experience as well as exposure to the technical side of fabric production and product merchandising. Students are able to get hands-on experience in studios that will help prepare them for a variety of fashion industry careers.

Forest Resources Management

Learn about the balancing act of managing land for timber production and wood products while giving consideration to other forest aspects such as wildlife habitat, recreational opportunities and water quality.

/// Horticulture

This program focuses on processing and marketing of fruit, vegetable, greenhouse and landscape crops. Students can choose a focus area in public horticulture, specialty crop production, landscape and turf management, plant health management, or plant science.

/// Human Nutrition and Foods

This nationally accredited, four-year program prepares students for a variety of careers in the nutrition and dietetics fields, or professional programs.

/// Interior Architecture

Learn to identify, research and creatively solve problems related to the design of functional and high quality interior environments while gaining specialized knowledge of interior construction, sustainable practices, building codes and social and ethical responsibilities of designers.

/// Landscape Architecture

With a special commitment to improving the quality of urban and rural life, landscape architects utilize both art and science to achieve the best use of land. Students acquire hand and computer skills, study design theory and site engineering, and apply the knowledge to a series of environmental design projects.

/// Multidisciplinary Studies

A flexible degree program combining the completion of three minors, the MDS program allows students to tailor a set of courses to meet their interests and career goals.

/// Pre-Agriculture, Forestry, and Consumer Sciences

This pre-major is designed as a temporary major for students who want to explore various areas of agriculture, forestry and design.

/// Sustainable Food and Farming

The study of how agricultural production of plants and animals affects and is affected by the local environment. Sustainable Food and Farming emphasizes sustainable and environmentally friendly approaches to agricultural production.

/// Recreation, Parks and Tourism Resources

This program prepares students for careers providing outdoors recreation and tourism opportunities. Emphasis areas include park and outdoor recreation, adventure recreation, and sustainable tourism.

/// Wildlife and Fisheries Resources

Receiving a solid background in biology, ecology and natural resource management, students are fully trained in both wildlife and fisheries fields. Students completing the program meet the requirements for professional certification as either a wildlife or fisheries biologist.

/// Wood Science and Technology

To meet society's needs for green materials and biofuels, the wood products industry must sustainably harvest and efficiently utilize renewable natural resources. Students are prepared for the challenges of a careers in bioenergy, renewable materials, forest utilization and sustainable construction.



Please visit davis.wvu.edu if you would like additional information on any of these programs or the WVU Davis College.

CALS INFO

MAJORS

- Agricultural Education and Communication
- Agricultural Operations Management
- Animal Sciences*
- Biology*
- Botany
- Dietetics
- Entomology and Nematology*
- Environmental Management in Agriculture and Natural Resources
- Environmental Science
- Family, Youth and Community Sciences
- Food and Resources Economics
- Food Science
- Forest Resources and Conservation
- Geomatics
- Horticultural Science
- Marine Sciences
- Microbiology and Cell Science*
- Natural Resource Conservation
- Nutritional Sciences*
- Plant Science
- Soil and Water Sciences
- Wildlife Ecology and Conservation*

* *Pre-professional majors*

ONE-ON-ONE ADVISING

View the advising list at

www.cals.ufl.edu/undergraduate

ENRICHMENT OPPORTUNITIES

CAREER RESOURCES

- Hands-on experience in your field
- Financial assistance for legislative internships
- Annual CALS Career Expo

RESEARCH

- Create and apply knowledge
- Available for freshmen to seniors
- Funding available
- Opportunities to publish and present

INTERNATIONAL EXPERIENCES

- CALS offers programs in 15 different countries
- Study abroad for a week, a semester or a year
- Minor in International Studies in Agricultural and Life Sciences

SCHOLARSHIPS

CALS awards more than \$550,000 in scholarships each year! Many CALS departments also offer scholarships.

LEADERSHIP

- More than 50 CALS student organizations
- CALS Ambassador Program
- CALS Leadership Institute
- Minors in Leadership and Nonprofit Organizational Leadership
- Global Leadership and Change Certificate

FOR MORE INFORMATION CONTACT:

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352-392-1963 | cemer@ufl.edu
www.cals.ufl.edu | @UFCALS

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UNIVERSITY of FLORIDA



College Requirements and Shared Majors

REQUIRED COURSEWORK

The College of Agricultural and Life Sciences (CALs) requires three specific courses of all students:

- Economics (AEB 2014 or ECO 2013 or ECO 2023)
- Public Speaking (AEC 3030C or SPC 2608)
- Advanced Writing (AEC 3033C or ENC 2210 or ENC 3254)

In addition, all CALs students will complete a minimum of 10 credits of physical and biological sciences, including 1 credit of laboratory science. For most majors, specific courses in science are required.

SHARED MAJORS

The College of Agricultural and Life Sciences “shares” four degree programs with the College of Liberal Arts and Sciences (CLAS):

- Biology
- Botany
- Marine Sciences
- Microbiology and Cell Science

The main difference between CALs and CLAS majors is college requirements. CALs requirements are listed above. CLAS requires all students to complete 2 semesters of foreign language or otherwise demonstrate proficiency in a foreign language.

There are also some differences in the specializations that are available for Biology and Botany. Students interested in these majors should look at the semester plans in the Guide to Majors to see where they differ.

Biology

Biology Specializations in CALS

- Applied Biology
- Biotechnology
- Natural Science
- Pre-Professional

Biology Specializations in CLAS

- Pre-Professional
- Integrative Biology
- Secondary Education (B.A.)

Botany

Botany Specializations in CALS

- Botanical Research
- General Botany

Botany Specializations in CLAS

- Botanical Research
- General Botany

Marine Sciences

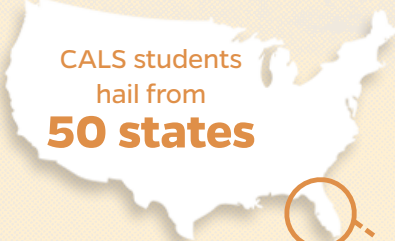
The foundational courses are the same for both colleges. Through upper-division required and elective courses, CALs majors focus on marine ecology and resource management while CLAS majors integrate marine biology with marine geology and geochemistry.

FAST FACTS

Fall 2020



CALS awards the largest undergraduate scholarship portfolio at UF with nearly **\$1 million** of college and departmental scholarships



CALS students hail from **50 states**



CALS has one of the **top 5 highest enrollments in study abroad** programs at UF, with **20+ college-specific programs** across **6 continents**.

89%

Undergraduate students from Florida



33%
Male Undergraduates



67%
Female Undergraduates

11:1
Student-to-Faculty Ratio



CALS hosts Florida Youth Institute, a week-long summer program for high schoolers to explore science careers that help solve global food insecurity

29%
Undergraduate Minority Students

22 Graduate Majors

23 Undergraduate Majors

18 STEM Majors in CALS, the most out of all colleges at UF

6 Undergraduate Pre-Health Majors

8 Master's & **2** Bachelor's programs **ONLINE**



One of the 5 largest colleges of agriculture and related sciences in the U.S.

55+
CALS Student Organizations

CALS has **MORE USDA teaching awards** than any other land-grant institution

1,997 Graduate Students
6,627 Total Students
428 Non-Degree Students
4,202 Undergraduate Students
40,000+ Living Alumni Around the World



Home of the **ONLY** formal undergraduate upper-division Honors Certificate Program at UF

Questions?
Contact us at
cals-dean@ufl.edu
352-392-1963



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[DAVIS.WVU.EDU](https://davis.wvu.edu)





UF | College of Agricultural
and Life Sciences
UNIVERSITY *of* FLORIDA

 West Virginia University
DAVIS COLLEGE OF AGRICULTURE,
NATURAL RESOURCES AND DESIGN

