

High School to College and Career Pathway: Secondary

Career and Technical Education: Preparing Students for College and Career!



Area of Study: Agricultural Education

Pathway: Agricultural Systems Technology

Get the Facts

Utah agriculturists produce crops and livestock worth over \$1.5 billion annually. Students enrolled in high school agricultural courses are looking to join a \$1.5- billion industry in Utah and a \$300-billion industry nationwide.

Workforce Trends

According to the U.S. Department of Labor, the growing interest in worldwide standardization of agricultural equipment should result in increased employment of agricultural engineers. Job opportunities should also result from the increasing demand for agricultural products, the continued efforts for more efficient agricultural production, and the increasing emphasis on the conservation of resources.



CAREER AND TECHNICAL EDUCATION Recommended Pathway Courses

(Students may select individual courses for exploration, or a complete Pathway for an in-depth focus.)

CLASS AVAILABILITY MAY VARY AT YOUR HIGH SCHOOL

Course #	Foundation Courses: (required)	Credit
01.0211	Agricultural Systems Technology I	1.00
01.0221	Agricultural Systems Technology II	1.00
Elective Courses:		
01.0111	Agricultural Business Management	1.00
01.0241	Agricultural Machinery Technology	1.00
01.0231	Agricultural Mechanics, Advanced	1.00
01.0311	Agricultural Science I	1.00
02.0112	Biology-Agricultural Science	1.00
01.0802	Ag. Communications & Leadership (capstone)	1.00
21.0707	Industrial/Agricultural Technology (IAT)	1.00
48.0508	Welding Technician – Entry Level	1.00
45.0510	Welding Technician – Intermediate Level	1.00
48.0512	Welding Technician – Advanced Level	1.00
32.0199	Student Internship (Critical Workplace Skills)	.50
01.0100	Summer Agriculture Program	.25
Supervised Agriculture Experience Program (capstone experience)		

2.00 credits

1.00 credit

3.00 credits for completion

Agricultural Systems Technology is:

- > High skill
- > High demand
- > Nontraditional for females

Sample Career Occupations

- > Agricultural Education Teacher
- > Agricultural Engineer
- > Agricultural Engineer Technician
- > Diesel Mechanic
- > Equipment Parts Manager
- > Environmental Tech.
- > Heavy Equipment Operator
- > Machinist
- > Recycling Technician
- > Welder

Middle School		State Requirements		High School Suggested Education Plan				College and Career
7th Grade	8th Grade	Middle School	High School	9th Grade Suggested	10th Grade Suggested	11th Grade Suggested	12th Grade Suggested	Beyond High School
Language Arts 7 1.00	Language Arts 8 1.00	2.00	Language Arts 4.00	Language Arts 9 1.00	Language Arts 10 1.00	Language Arts 11 1.00	Language Arts 12 1.00	There are a number of options for education and training beyond high school, depending on your career goals. <ul style="list-style-type: none"> > Certificate > Associate degree > Bachelor's degree > Professional degree > On-the-job training > Apprenticeship > Military training For more information on salary projections, labor market demand, and training options, visit www.utahfutures.org .
Math * 1.00	Math * 1.00	2.00	Math 3.00	Math * 1.00	Math * 1.00	Math * 1.00		
Science .50	Science 1.00	1.50	Science 3.00	Earth Systems 1.00	Biology–Agricultural Science or Biological Science 1.00	Agricultural Science I 1.00		
Utah Studies .50	U.S. History I 1.00	1.50	Social Studies 3.00	Geography for Life .50	World Civilizations .50	U.S. History II 1.00	U.S. Government and Citizenship .50	
P.E. 1.00	Health .50	1.50	P.E./Health 2.00	Participation Skills and Techniques .50	Fitness for Life .50 / Health Education .50 Lifetime Activities or Sport .50			
The Arts .50	The Arts .50	1.00	Fine Arts 1.50	Fine Arts Courses 1.50				
Keyboarding .50			Computer Tech. .50	Computer Technology .50				
CTE Intro 1.00		1.00	CTE 1.00	Refer to Career and Technical Education box above.				

* Talk to your school counselor about math requirements in the new common core curriculum. Core curriculum and elective requirements may vary district to district.

Concurrent enrollment course offerings vary by school and district. Many Utah postsecondary programs accept high school courses toward a two- or four-year degree through concurrent enrollment. Check regional postsecondary Pathways for details.

High School to College and Career Pathway: Secondary

Career and Technical Education: Preparing Students for College and Career!



Area of Study: Agricultural Education

Pathway: Horticulture Science

Get the Facts
According to the American Farm Bureau Federation, 82 million American households spend \$35.1 billion annually at lawn and garden retail outlets.
U.S. consumers spend \$44.7 billion annually on professional landscape, lawn and tree care services.

Workforce Trends
According to the U.S. Department of Labor, positions in landscape and horticultural services are projected to increase at a fast pace.

**CAREER AND TECHNICAL EDUCATION
Recommended Pathway Courses**

(Students may select individual courses for exploration, or a complete Pathway for an in-depth focus.)

CLASS AVAILABILITY MAY VARY AT YOUR HIGH SCHOOL

Course #	Foundation Courses: (required)	Credit
<i>Choose two credits from the following courses:</i>		
01.0631	Floriculture and Greenhouse Management	1.00
01.0632	Floriculture	.50
01.0633	Greenhouse Management	.50
01.0641	Landscape Management	.50
01.0642	Nursery Operation	.50
02.0411	Plant and Soil Science I	1.00
Elective Courses:		
02.0421	Plant Science II	1.00
01.0111	Agricultural Business Management	1.00
01.0311	Agricultural Science I	1.00
02.0112	Biology-Agricultural Science	1.00
01.0651	Ornamental Horticulture, Applied	1.00
01.0802	Agricultural Communication and Leadership (capstone)	1.00
32.0199	Student Internship (Critical Workplace Skills)	.50
01.0100	Summer Agriculture Program	.25
	Supervised Agriculture Experience Program (capstone experience)	

2.00 credits

1.00 credit

3.00 credits for completion

Horticulture Science is:

- > High demand
- > Nontraditional for females

Sample Career Occupations

- > Agricultural Education Teacher
- > Arborist
- > Botanist
- > Forest Geneticist
- > Golf Course Superintendent
- > Greenhouse Operator
- > Landscape Architect
- > Plant Breeder
- > Soil & Water Specialist
- > Tree Surgeon

Middle School		State Requirements		High School Suggested Education Plan				College and Career
7th Grade	8th Grade	Middle School	High School	9th Grade Suggested	10th Grade Suggested	11th Grade Suggested	12th Grade Suggested	Beyond High School
Language Arts 7 1.00	Language Arts 8 1.00	2.00	Language Arts 4.00	Language Arts 9 1.00	Language Arts 10 1.00	Language Arts 11 1.00	Language Arts 12 1.00	<p>There are a number of options for education and training beyond high school, depending on your career goals.</p> <ul style="list-style-type: none"> > Certificate > Associate degree > Bachelor's degree > Professional degree > On-the-job training > Apprenticeship > Military training <p>For more information on salary projections, labor market demand, and training options, visit www.utahfutures.org.</p>
Math * 1.00	Math * 1.00	2.00	Math 3.00	Math * 1.00	Math * 1.00	Math * 1.00		
Science .50	Science 1.00	1.50	Science 3.00	Earth Systems 1.00	Biology-Agricultural Science or Biological Science 1.00	Plant and Soil Science 1.00		
Utah Studies .50	U.S. History I 1.00	1.50	Social Studies 3.00	Geography for Life .50	World Civilizations .50	U.S. History II 1.00	U.S. Government and Citizenship .50	
P.E. 1.00	Health .50	1.50	P.E./Health 2.00	Participation Skills and Techniques .50	Fitness for Life .50 / Health Education .50 Lifetime Activities or Sport .50			
The Arts .50	The Arts .50	1.00	Fine Arts 1.50	Fine Arts Courses 1.50				
Keyboarding .50			Computer Tech. .50	Computer Technology .50				
CTE Intro 1.00		1.00	CTE 1.00	Refer to Career and Technical Education box above.				

* Talk to your school counselor about math requirements in the new common core curriculum. Core curriculum and elective requirements may vary district to district.

Concurrent enrollment course offerings vary by school and district. Many Utah postsecondary programs accept high school courses toward a two- or four-year degree through concurrent enrollment. Check regional postsecondary Pathways for details.

High School to College and Career Pathway: Secondary

Career and Technical Education: Preparing Students for College and Career!



Area of Study: Agricultural Education

Pathway: Natural Resource Science

Get the Facts
There are 600 bison that roam on Antelope Island State Park, the largest island in the Great Salt Lake; the island herd is the second oldest privately held herd in the United States. Today, the bison on the island are among the most sought-after bison in the country.

Workforce Trends
Utah has a wealth of natural resources, which includes five national parks, seven national monuments, seven national forests, two national recreation areas, 45 state parks, and millions of acres of Bureau of Land Management (BLM)-administered deserts and range land. With the multitude of natural resources in Utah there are a vast amount of career opportunities within eight federal and state divisions.

CAREER AND TECHNICAL EDUCATION
Recommended Pathway Courses
(Students may select individual courses for exploration, or a complete Pathway for an in-depth focus.)
CLASS AVAILABILITY MAY VARY AT YOUR HIGH SCHOOL

Course #	Foundation Courses: (required)	Credit
<i>Choose two credits from the following courses:</i>		
03.0111	Natural Resource Science I	1.00
03.0121	Natural Resource Science II	1.00
01.0351	Aquaculture, Introductory	1.00
Elective Courses:		
01.0111	Agricultural Business Management	1.00
01.0311	Agricultural Science I	1.00
01.0361	Aquaculture, Advanced	1.00
02.0112	Biology-Agricultural Science	1.00
03.0113	Natural Resource Science Semester	.50
01.0802	Agricultural Communication and Leadership (capstone)	1.00
32.0199	Student Internship (Critical Workplace Skills)	.50
01.0100	Summer Agriculture Program	.25
Supervised Agriculture Experience Program (capstone experience)		

2.00 credits

1.00 credit

3.00 credits for completion

Natural Resource Science is:

- > High skill
- > High wage
- > Nontraditional for females

Sample Career Occupations

- > Agricultural Education Teacher
- > Fish & Game Officer
- > Fish Hatchery Manager
- > Forest Worker
- > Mining Engineer
- > Outfitter/Guide
- > Park Manager
- > Water Technician
- > Wildlife Firefighter
- > Wildlife Officer

Middle School		State Requirements		High School Suggested Education Plan				College and Career
7th Grade	8th Grade	Middle School	High School	9th Grade Suggested	10th Grade Suggested	11th Grade Suggested	12th Grade Suggested	Beyond High School There are a number of options for education and training beyond high school, depending on your career goals. > Certificate > Associate degree > Bachelor's degree > Professional degree > On-the-job training > Apprenticeship > Military training For more information on salary projections, labor market demand, and training options, visit www.utahfutures.org .
Language Arts 7 1.00	Language Arts 8 1.00	2.00	Language Arts 4.00	Language Arts 9 1.00	Language Arts 10 1.00	Language Arts 11 1.00	Language Arts 12 1.00	
Math * 1.00	Math * 1.00	2.00	Math 3.00	Math * 1.00	Math * 1.00	Math * 1.00		
Science .50	Science 1.00	1.50	Science 3.00	Earth Systems 1.00	Biology-Agricultural Science or Biological Science 1.00	Plant and Soil Science or Aquaculture 1.00		
Utah Studies .50	U.S. History I 1.00	1.50	Social Studies 3.00	Geography for Life .50	World Civilizations .50	U.S. History II 1.00	U.S. Government and Citizenship .50	
P.E. 1.00	Health .50	1.50	P.E./Health 2.00	Participation Skills and Techniques .50	Fitness for Life .50 / Health Education .50 Lifetime Activities or Sport .50			
The Arts .50	The Arts .50	1.00	Fine Arts 1.50	Fine Arts Courses 1.50				
Keyboarding .50			Computer Tech. .50	Computer Technology .50				
CTE Intro 1.00		1.00	CTE 1.00	Refer to Career and Technical Education box above.				

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Concurrent enrollment course offerings vary by school and district. Many Utah postsecondary programs accept high school courses toward a two- or four-year degree through concurrent enrollment. Check regional postsecondary Pathways for details.

High School to College and Career Pathway: Secondary

Career and Technical Education: Preparing Students for College and Career!



Area of Study: Agricultural Education

Pathway: Production/Processing Animal Science

Get the Facts

Agriculture is a vital industry to Utah's economy. There are 16,700 farms in the state, totaling approximately 11 million acres, where Utah agriculturists produce crops and livestock worth over \$1.5 billion annually.

Workforce Trends

Twenty-one million people (or 18.5 percent of the American workforce) are employed in the agricultural industry. Farmers and ranchers provide food and habitat for 75 percent of the nation's wildlife. One-fourth of the world's beef and one-fifth of the world's grain, milk, and eggs are produced in the United States.



CAREER AND TECHNICAL EDUCATION

Recommended Pathway Courses

(Students may select individual courses for exploration, or a complete Pathway for an in-depth focus.)

CLASS AVAILABILITY MAY VARY AT YOUR HIGH SCHOOL

Course #	Foundation Courses: (required)	Credit
Choose two credits from the following courses:		
02.0211	Animal Science I	1.00
02.0221	Equine Science	1.00
02.0231	Veterinary Assistant	1.00
02.0241	Animal Science II	1.00
Elective Courses:		
01.0111	Agricultural Business Management	1.00
01.0311	Agricultural Science I	1.00
01.0351	Aquaculture, Introductory	1.00
01.0361	Aquaculture, Advanced	1.00
02.0112	Biology-Agricultural Science	1.00
02.0251	Dairy Herd Management	1.00
02.0222	Equine Science A	.50
02.0223	Equine Science B	.50
02.0261	Swine Herd Management	1.00
02.0235	Veterinary Technician	1.00
01.0802	Agricultural Communication and Leadership (capstone)	1.00
32.0199	Student Internship (Critical Workplace Skills)	.50
01.0100	Summer Agriculture Program	.25
	Supervised Agriculture Experience Program (capstone experience)	

2.00 credits

1.00 credit

3.00 credits for completion

Production/Processing Animal Science is:

- > High skill
- > High wage
- > Nontraditional for females

Sample Career Occupations

- > Agricultural Education Teacher
- > Animal Geneticist
- > Animal Nutritionist
- > Animal Scientist
- > Animal Technician
- > Aquaculturalist
- > Feed Sales Representative
- > Herdsman
- > Livestock Inspector
- > Veterinarian
- > Veterinary Technician

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Language Arts 7 1.00	Language Arts 8 1.00	2.00	Language Arts 4.00	Language Arts 9 1.00	Language Arts 10 1.00	Language Arts 11 1.00	Language Arts 12 1.00	There are a number of options for education and training beyond high school, depending on your career goals. <ul style="list-style-type: none"> > Certificate > Associate degree > Bachelor's degree > Professional degree > On-the-job training > Apprenticeship > Military training For more information on salary projections, labor market demand, and training options, visit www.utahfutures.org .
Math * 1.00	Math * 1.00	2.00	Math 3.00	Math * 1.00	Math * 1.00	Math * 1.00		
Science .50	Science 1.00	1.50	Science 3.00	Earth Systems 1.00	Biology-Agricultural Science or Biological Science 1.00	Agricultural Science I 1.00		
Utah Studies .50	U.S. History I 1.00	1.50	Social Studies 3.00	Geography for Life .50	World Civilizations .50	U.S. History II 1.00	U.S. Government and Citizenship .50	
P.E. 1.00	Health .50	1.50	P.E./Health 2.00	Participation Skills and Techniques .50	Fitness for Life .50 / Health Education .50 Lifetime Activities or Sport .50			
The Arts .50	The Arts .50	1.00	Fine Arts 1.50	Fine Arts Courses 1.50				
Keyboarding .50			Computer Tech. .50	Computer Technology .50				
CTE Intro 1.00		1.00	CTE 1.00	Refer to Career and Technical Education box above.				

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High School to College and Career Pathway: Secondary

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Area of Study: Agricultural Education

Pathway: Production/Processing Plant and Soil Science

Get the Facts

Approximately 24 percent of all U.S. agricultural products are exported yearly, including 114 million tons of grains and feed, 4 million tons of poultry meats, and 2 million tons of fresh vegetables.

Workforce Trends

Agronomy is a specialized field where many agronomists are independent consultants.



CAREER AND TECHNICAL EDUCATION Recommended Pathway Courses

(Students may select individual courses for exploration, or a complete Pathway for an in-depth focus.)

CLASS AVAILABILITY MAY VARY AT YOUR HIGH SCHOOL

Course #	Foundation Courses: (required)	Credit
02.0411	Plant and Soil Science I	1.00
02.0421	Plant and Soil Science II	1.00
	Elective Courses:	
01.0111	Agricultural Business Management	1.00
01.0311	Agricultural Science I	1.00
02.0112	Biology-Agricultural Science	1.00
01.0802	Agricultural Communication and Leadership (capstone)	1.00
32.0199	Student Internship (Critical Workplace Skills)	.50
01.0100	Summer Agriculture Program	.25
	Supervised Agriculture Experience Program (capstone experience)	

2.00 credits

1.00 credit

3.00 credits for completion

Production/Processing Plant & Soil Science is:

- > High skill
- > Nontraditional for females

Sample Career Occupations

- > Agricultural Education Teacher
- > Agronomist
- > Agronomy Department Manager
- > Agronomy Production Specialist
- > Agronomy Technician Specialist
- > Plant Pathologist
- > Seed Sales Manager

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Language Arts 7 1.00	Language Arts 8 1.00	2.00	Language Arts 4.00	Language Arts 9 1.00	Language Arts 10 1.00	Language Arts 11 1.00	Language Arts 12 1.00	There are a number of options for education and training beyond high school, depending on your career goals. <ul style="list-style-type: none"> > Certificate > Associate degree > Bachelor's degree > Professional degree > On-the-job training > Apprenticeship > Military training For more information on salary projections, labor market demand, and training options, visit www.utahfutures.org .
Math * 1.00	Math * 1.00	2.00	Math 3.00	Math * 1.00	Math * 1.00	Math * 1.00		
Science .50	Science 1.00	1.50	Science 3.00	Earth Systems 1.00	Biology-Agricultural Science or Biological Science 1.00	Agricultural Science I 1.00		
Utah Studies .50	U.S. History I 1.00	1.50	Social Studies 3.00	Geography for Life .50	World Civilizations .50	U.S. History II 1.00	U.S. Government and Citizenship .50	
P.E. 1.00	Health .50	1.50	P.E./Health 2.00	Participation Skills and Techniques .50	Fitness for Life .50 / Health Education .50 Lifetime Activities or Sport .50			
The Arts .50	The Arts .50	1.00	Fine Arts 1.50	Fine Arts Courses 1.50				
Keyboarding .50			Computer Tech. .50	Computer Technology .50				
CTE Intro 1.00		1.00	CTE 1.00	Refer to Career and Technical Education box above.				

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High School to College and Career Pathway: Secondary

Career and Technical Education: Preparing Students for College and Career!



Area of Study: Agricultural Education

Pathway: Production/Processing Science

Get the Facts
Farmers and ranchers provide food and habitat for 75 percent of the nation's wildlife. One-fourth of the world's beef and one-fifth of the world's grain, milk, and eggs are produced in the United States.

Workforce Trends
According to the Utah Farm Bureau Federation, more than 100,000 people are employed by agriculture and agribusiness in the state of Utah.

**CAREER AND TECHNICAL EDUCATION
Recommended Pathway Courses**

(Students may select individual courses for exploration, or a complete Pathway for an in-depth focus.)

CLASS AVAILABILITY MAY VARY AT YOUR HIGH SCHOOL

Course #	Foundation Courses: (required)	Credit
01.0311	Agricultural Science I	1.00
01.0321	Agricultural Science II	1.00
Elective Courses:		
01.0111	Agricultural Business Management	1.00
01.0331	Agricultural Science III	1.00
02.0211	Animal Science I	1.00
02.0241	Animal Science II	1.00
01.0351	Aquaculture, Introductory	1.00
01.0361	Aquaculture, Advanced	1.00
02.0112	Biology-Agricultural Science	1.00
02.0251	Dairy Herd Management	1.00
02.0221	Equine Science	1.00
02.0222	Equine Science A	.50
02.0223	Equine Science B	.50
02.0411	Plant and Soil Science I	1.00
02.0421	Plant and Soil Science II	1.00
02.0261	Swine Herd Management	1.00
02.0231	Veterinary Assistant	1.00
02.0235	Veterinary Technician	1.00
01.0802	Agricultural Communication and Leadership (capstone)	1.00
32.0199	Student Internship (Critical Workplace Skills)	.50
01.0100	Summer Agriculture Program	.25
Supervised Agriculture Experience Program (capstone experience)		

2.00 credits

1.00 credit

3.00 credits for completion

Production/Processing Science is:

- > High skill
- > High wage
- > High demand
- > Nontraditional for females

Sample Career Occupations

- > Ag. Commodity Broker
- > Ag. Economist
- > Ag. Ed. Teacher
- > Ag. Journalist
- > Ag. Lender
- > Ag. Loan Officer
- > Ag. Marketing Specialist
- > Ag. Products Buyer
- > Farm/Ranch Manager
- > Feed/Farm Supply Mgr.
- > Livestock Buyer/Seller
- > Meat Inspector
- > Pesticide Applicator
- > Produce Buyer

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Science .50	Science 1.00	1.50	Science 3.00	Earth Systems 1.00	Biology–Agricultural Science or Biological Science 1.00	Animal Science or Plant and Soil Science 1.00		
Utah Studies .50	U.S. History I 1.00	1.50	Social Studies 3.00	Geography for Life .50	World Civilizations .50	U.S. History II 1.00	U.S. Government and Citizenship .50	
P.E. 1.00	Health .50	1.50	P.E./Health 2.00	Participation Skills and Techniques .50	Fitness for Life .50 / Health Education .50 Lifetime Activities or Sport .50			
The Arts .50	The Arts .50	1.00	Fine Arts 1.50	Fine Arts Courses 1.50				
Keyboarding .50			Computer Tech. .50	Computer Technology .50				
CTE Intro 1.00		1.00	CTE 1.00	Refer to Career and Technical Education box above.				

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