



Arizona Department of Education  
Tom Horne, Superintendent of Public Instruction

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# Arizona Career and Technical Education Curriculum Framework

## Agricultural Business Management - Agriscience 2005

### Division of Educational Services and Resources

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## Overview

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### Arizona Career and Technical Education

**Vision:** Ensure a dynamic workforce by fully developing every student's career and academic potential

**Mission:** Prepare Arizona students for workforce success and continuous learning

#### **Adaptation/Adoption Curriculum Framework Process**

The Arizona Department of Education, Career and Technical Education Division awarded an investigative research report analyzing present practices and format used in developing curriculum resources for the CTE program "frameworks." These findings (presented in May 2001) resulted in recommendations from the Arizona Career and Technical Education Advisory Committee as well as the CTE staff to design and implement a new Adaptation/Adoption Curriculum Process. The new strategies used in order to adapt/adopt program curriculum frameworks focus on:

- Identifying national industry skill standards
- Identifying industry recognized assessments/certificates (local and national)
- Developing a design team consisting of a significant majority of industry representation
- Reviewing other nationally recognized states' CTE program standards/frameworks
- Adapting/adopting existing program competencies
- Soliciting industry and education representative feedback to validate all the components of the curriculum framework
- Increasing technical and academic rigor by applying higher order skills to program standards/measurement criteria
- Applying Arizona Academic Standards to program standards and identifying appropriate Performance Objectives that support improved academic attainment

#### **Arizona CTE Delivery System**

The Arizona CTE Delivery System includes the process of merging Level II and Level III competencies into Career Preparation standards. This program reflects the new delivery system.

Arizona's CTE **Career Preparation** programs use a continuous improvement model as the curriculum process is refined, resources are developed, educators provide feedback, and industry revalidates the curriculum framework components. Our goal is to utilize the Arizona CTE web site (<http://www.ade.az.gov/cte/careerpathways/>) and the Tech Prep web site (<http://www.aztechprep.org/>) to provide an avenue for upgrading and publicizing these frameworks. In today's fast paced, high-tech world, it is imperative to provide continuous response to industry needs in order to effectively prepare our students for success in their career choices.

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# Program Description

## Agricultural Business Management-Agriscience

### CIP No. 01.0100

The Agricultural Business Management-Agriscience (Agriscience) program is a coherently sequenced, four year program, designed to prepare individuals for career employment and gain needed agricultural skills. Leadership and employability skills are a primary influence for this program. The Agriscience program is comprised of a core curriculum that includes:

1. SAE and FFA Integrated Skills-to be utilized throughout the entire four year program and not taught in a single course. These standards integrate the FFA and Supervised Agricultural Experience throughout the entire curriculum during all four years.
2. Applied Biological Systems (ABS) Agriculture-two years (9<sup>th</sup> & 10<sup>th</sup> grades) of biology science instruction designed to meet Arizona State Standards for Biology and for secondary biology credit as well as postsecondary (University level) entrance requirements for biology. Passing the Arizona Science Standards AIMS test will be one of the possible assessments for this area.
3. Laboratory-Based Integrated Science I-to be taught during the 11<sup>th</sup> and 12<sup>th</sup> grades and is designed to meet the Arizona State Standards for Laboratory Science and for secondary lab science credit as well as postsecondary (University level) entrance requirements for lab science. Passing the Arizona Science Standards AIMS test will be one of the possible assessments for this area.
4. Laboratory-Based Integrated Science II, seven options (you choose one)-these standards determine the kind of program you actually teach. The standards also assist in meeting the lab science credit as described in #3 above. The selection of a specific option will determine the emphasis that the program will have for all four years of coherent sequence instruction.

An acceptable Agricultural Business Management-Agriscience (Agriscience) program would include the following items as needed to have an approvable program by the state staff:

1. Acceptable facilities as described in this framework including classrooms, laboratory, shop, greenhouse, and land laboratory facilities as needed for the program to operate at an approvable level.
2. Adequate budgets for textbooks, computers, equipment, supplies, travel, and capital as needed for the program to operate at an approvable level.
3. Teaching staff will carry a student enrollment load of no more than 100 students total or no more per class than there are adequate work stations provided for each student.
4. All students will have Supervised Agricultural Experience programs (SAE) as defined by state definitions and maintain accurate financial records on the SAE.
5. An FFA chapter will operate in good standing according to the State FFA constitution.
6. Teachers will be provided extended contracts and/or FFA stipends in amounts necessary to provide adequate supervision of the entire facilities and program including SAE's and FFA activities. A minimum contract would be 40 additional days (or 2/9 of the teaching contract) to be utilized throughout the year and summer. State staff will provide guidelines for the adequacy of these contracts, such as is included with this framework.

7. All students are assessed and recorded no less than quarterly regarding their attainment of Standards.
8. The program must meet all qualifications of an “Approved CTE program” as defined in the ADE Handbook.
9. An active and acceptable Advisory Committee shall exist consisting of local, statewide or nationwide agriculture industry personnel.
10. All instructors/Advisors will attend district and state Agricultural Education and FFA meeting and events.

# **Supervised Agricultural Experience (SAE)**

## **Arizona SAE Definition**

In cooperation with the Arizona Agriculture Teachers Association and Arizona Department of Education, the following defines acceptable work-based learning or SAE's for students enrolled in Agricultural Business Management-Agriscience.

### **Agriculture**

Activities concerned with the production and management of plants, animals and renewable natural resources, and the related supplies, services, mechanics, products, processing, research, and marketing.

### **Definition**

Supervised Agricultural Experience (SAE) Programs consist of planned practical activities, entrepreneurial skills, or workplace learning conducted outside of class time in which students develop and apply agricultural knowledge and skills.

### **Application**

SAEs are planned to be broadly relevant to a student's career goals and to the agriculture courses in which they are enrolled. Though supplemental to and associated with classroom and laboratory instruction, SAEs are primarily conducted outside of the classroom. A Supervised Agricultural Experience may be one of three types. Students engaged in any form of SAEs are expected to maintain a record of their time and money. A special record book developed for this purpose is available to schools state wide. Over time, the scope and complexity of students' SAE should increase, maximizing their learning experience.

Each agricultural education program shall establish their own SAE/SE standards for local students. Recognition above the chapter level will require the SAE to fall into one of the approved proficiency award areas with the appropriate records. The State FFA Advisor shall convene the State FFA Advisory Board or committee if disagreements occur over the appropriateness of an SAE for state recognition.

### **Quality SAE Programs**

Quality SAE Programs are:

1. Documented.

Students maintain an accurate and analytical set of records. Students develop an understanding of managerial practices and identify alternatives based on his or her records. Records are maintained in a timely manner. Student also develops a resume.

2. The SAE is curriculum based.

Students use knowledge gained from instruction in planning SAE. Students use agricultural and academic principles to arrive at end products; assesses new situations and selects appropriate knowledge and skills from curriculum.

3. The SAE is student managed.

Student applies classroom-learned skills in real-world settings with student-initiated assistance.

4. The SAE is planned and comprehensive.

Students experience skills that meet or exceed curricular expectations, accomplishing goals and is managed with a collaboration of student, teacher, and parents, developing into a more independent program.

5. Student receives recognition.

Recognition can begin with simple recognition for SAE accomplishments and develop into degree recognition and progress further into state and national recognition through degrees and proficiency awards.

## **Types of SAE**

### **I. Entrepreneurship**

The student plans, implements, operates and assumes financial risks in a farming activity or agricultural business. In entrepreneurship programs, the student owns the materials and other required inputs and keeps financial records to determine return to investments.

Examples:

- Growing an acre of corn
- Operating a Christmas tree farm
- Raising a litter of pigs
- Running a pay-to-fish operation
- Growing bedding plants in the school greenhouse
- Owning and operating a lawn care service
- A group of students growing a crop of poinsettias
- A backyard garden in a 10 x10 foot area

### **II. Placement**

Placement programs involve the placement of students on farms and ranches, in agricultural businesses, school laboratories or community facilities to provide a “learning by doing” environment. This is performed or conducted outside of normal classroom hours and may be paid or non-paid.

Examples

- Placement in a florist shop
  - Working after school at a farm supply store.
  - Working on Saturdays at a riding stable
  - Working in the school greenhouse after school and on weekends and holidays
  - Placement on a general livestock farm
- 
- Working for the local agriculture teacher or another teacher outside of regular class time (for Ag Education Proficiency)

### **III. Research**

**An extensive activity where the student plans and conducts a major agricultural experiment using the scientific process. The purpose of the experiment is to provide students “hands-on” experience in:**

- **Verifying, learning, or demonstrating scientific principles in agriculture.**
- **Discovering new knowledge.**
- **Using the scientific process.**

#### **A. Experimental Research Project**

Experimental activities are particularly suited for those in agricultural classes where there is a strong emphasis on biotechnology or agriscience. Even in more traditional agricultural programs, experimental SAE activities can provide students whose career goals are in the areas of agriscience with valuable learning experiences.

##### Examples

- Comparing the effect of various planting media on plant growth
- Determining the impact of different levels of protein on fish growth
- Comparing three rooting hormones on root development
- Determining if phases of the moon have an effect on plant growth
- Analyzing the effectiveness of different display methods on plant sales in a garden center
- Demonstrating the impact of different levels of soil acidity on plant growth
- Determining the strength of welds using different welding methods

#### **B. Non-Experimental Research**

Students choose an agricultural problem that is not amenable to experimentation and design a plan to investigate and analyze the problem. The students gather and evaluate data from a variety of sources and then produce some type of finished product.

##### Non-Experimental Examples

- A marketing plan for an agricultural commodity
- A series of newspaper articles about the environment
- A land use plan for a farm
- A landscape design for a community facility
- An advertising campaign for an agribusiness

## Supporting Components of SAEs

### **1. Exploratory**

Exploratory SAE activities are designed primarily to help students become literate in agriculture and/or become aware of possible careers in agriculture. Exploratory SAE activities are appropriate for beginning agricultural students, but are not restricted to beginning students.

Exploratory Examples:

- Observing and/or assisting a florist
- Growing plants in a milk jug “greenhouse”
- Assisting on a horse farm for a day
- Interviewing an agricultural loan officer in a bank
- Preparing a scrapbook on the work of a veterinarian
- Attending an agricultural career day
- Shadowing the local agriculture instructor on SAE visits

### **2. Improvement**

Improvement activities include a series of learning activities that improves the value or appearance of the place of employment, home, school or community, the efficiency of an enterprise or business, or the living conditions of the family. An improvement activity involves a series of steps and generally requires a number of days for completion.

Improvement Examples

- Landscaping the home
- Building a fence
- Remodeling and painting a room
- Overhauling a piece of equipment
- Building or reorganizing a farm shop
- Renovating and restocking a pond
- Computerizing the records of an agricultural business

### **3. Supplementary**

A supplementary activity is one where the student performs one specific agricultural skill outside of normal class time. This skill is not related to the major SAE but is normally taught in an agricultural program, involves experiential learning and does contribute to the development of agricultural skills and knowledge on the part of the student. The activity is accomplished in less than a day and does not require a series of steps.

Supplementary Examples:

- Pruning a fruit tree
- Changing oil in a sod cutter
- Balling & burlaping a tree
- Helping a neighbor castrate pigs
- Cutting firewood with a chain saw
- Staking tomatoes

## Acceptable SAEs for State Degree and Proficiency Awards

In order for a SAE to be acceptable for award eligibility, the SAE must meet all of the following requirements:

1. Fall into one of the accepted FFA Proficiency Award categories.
2. Accurate records are kept and analyzed. Summaries of records have been reported and found on ADE Form 6.
3. Students shows development and application of agricultural knowledge and skills.
4. Must be closely associated with one of the following:
  - a. student's agricultural career choice
  - b. competencies taught in the local agriculture department
  - c. agricultural products, renewable natural resources, related supplies, services, mechanics, processing, research, or marketing.

### **Acceptable SAE Areas**

For a SAE and its records to be acceptable for FFA awards and recognition above the chapter level, the SAE must fit into one of the following proficiency award areas. This list is subject to change by the state and national level each year.

**Agricultural Communications** typically includes programs in which students work at newspapers or other agricultural print facilities, such as magazines, to obtain training and practical experience in writing and publicizing in preparation for a writing or communications career. SAE programs may occur at radio or television stations, fair media rooms or other businesses that require speaking skills and a knowledge of agriculture. This area includes any use of communication technology, such as web sites, aimed at communicating about agriculture.

**Agricultural Education** Involves students who are seeking a career as an agricultural educator. Students will conduct activities related to classroom and laboratory instruction preparation, FFA program management, and SAE supervision.

**Agricultural Mechanics Design and Fabrication** involves designing and constructing agricultural equipment, structural land improvements and/or buildings and structures. It also includes selecting structural materials and/or implementing plans that use concrete, plumbing, heating, ventilation and/or air conditioning in agricultural settings.

**Agricultural Mechanics Repair and Maintenance** involves repairing and maintaining agricultural structures, machinery and/or equipment, including lawn equipment.

**Agricultural Mechanics Energy Systems** involves adjusting, repairing and maintaining agricultural power systems, which includes those that run by the way of mechanical, electrical, chemical, wind, solar, fluid and/or water power.

**Agricultural Processing** involves students who assemble, transport, process, fabricate, mix, package and store food and nonfood agricultural products. Programs may include the processing of meat, milk, honey, cheese, raisins and other dried fruits, maple syrup and/or other food items. Nonfood products can include the processing of by-products such as meat, bone, fish and blood meal; tallow; compost; hides; wool and cotton. It can include the cubing and pelleting of forages, as well as producing birdseed and other pet foods.

**Agricultural Sales** involves students who sell feed, seed, fertilizer or agricultural chemicals. Students can also own businesses that involve the sales of agricultural equipment, machinery or structures. Activities can include the merchandising of crops, livestock, processed agricultural commodities, horticultural or forestry items at either the retail or wholesale level.

**Agricultural Services** involves students who work in services offered through agricultural enterprises that deal with custom equipment operation and maintenance, agricultural management and finance, agricultural education, animal breeding, custom baling, crop scouting, horseshoeing, taxidermy, animal hospitals, custom and contract feeding or other appropriate services.

**Aquaculture** involves programs that use the best management practices available to produce and market aquatic plants and animals. Programs can include catfish, shrimp and crawfish farming; mollusks; salmon ranching; tropical fish rearing and tilapia culture.

**Beef Production** includes programs that use the best management practices available to produce and market beef efficiently.

**Dairy Production** involves programs that use the best management practices available to produce and market dairy cattle and dairy products efficiently.

**Diversified Agricultural Production** involves the use of the best management practices available to produce and market efficiently at least one livestock and at least one crop related proficiency.

**Diversified Crop Production** involves the use of the best management practices available to produce and market efficiently two or more crop related proficiency areas such as grain, fiber/oil, forage, specialty crop, non-horticultural vegetable or fruit production.

**Diversified Horticulture** typically involves producing, processing and marketing plants used principally for ornamental or aesthetic purposes and fruits and vegetables traditionally related to horticulture. This diversified proficiency area encompasses student SAEs with at least two of the following areas: floriculture, nursery operations, landscape management, turf grass management, as well as fruit and vegetable production, such as viticulture (grapes), pomology (fruit trees) and horticultural fruits and vegetables (not including fruit and vegetable row crops).

**Diversified Livestock Production** involves the use of the best management practices available to produce and market efficiently a combination of two or more livestock related proficiency areas such as beef, dairy, swine, equine, specialty animal, small animal production and care or poultry.

**Emerging Agricultural Technology** involves programs where students gain career experiences in new and emerging agricultural technologies such as agriscience, global positioning, biotechnology, lab research, computers and others that are covered by none of the existing award categories.

**Environmental Science and Natural Resources Management** typically results in FFA members receiving practical experiences in the principles and practices of managing and/or improving the environment and natural resources. Activities can involve managing agriculture waste, recycling agriculture products, cleaning the environment or serving in the conservation corps. This area can include multiple resource uses; wildlife surveys; erosion prevention practices; public relations and pollution education; land use regulations that pertain to soil, water and air quality; as well as wetlands, shorelines and grasslands preservation.

**Equine Science** typically provides insights into horse production, breeding, marketing, showing and other aspects of the equine industry. Programs can also include calf roping, barrel racing, rodeo, racing, riding lessons and therapeutic horseback riding if horses are owned and/or managed by a member.

**Fiber and/or Oil Crop Production** involves the use of the best management practices available to produce and market efficiently fiber and/or oil crops such as cotton, sisal, hemp, soybeans, flax, mustard, canola, castor beans, sunflower, peanuts, dill, mint and safflower.

**Floriculture** involves the use of the best management practices available to produce and market efficiently fresh and dried field or greenhouse flowers, foliage and related plant materials, including the arranging, packaging and marketing of these materials, for ornamental purposes.

**Food Science and Technology** involves students who work for wages and/or experiences in applying microbiology, food biochemistry or food product research and development to improve taste, nutrition, quality and/or the value of food. Programs can include research, new product development, food testing, grading and inspecting. Work experience could be obtained at research facilities, in classroom/lab facilities or through the quality and safety testing of milk or other foods. **Food science does not** involve the processing, marketing and sale of food products or food preparation and/or service.

**Forage Production** involves the use of the best management practices available to produce and market efficiently forage crops such as nongrain sorghum, alfalfa, clover, bromegrass, orchard grass, grain forages, corn or grass silages and pastures.

**Forest Management and Products** involves the use of the best management practices available to conserve or increase the economic value of a forest and/or forest products through such practices as thinning, pruning, weeding, stand improvement, reforestation, insect and disease control, planting and harvesting. It can include experiences with the Forest Service, Christmas tree farming, as well as making and selling cedar shakes, firewood and wood chips/mulch.

**Fruit Production** involves the use of the best management practices available to produce and market efficiently fruit crops such as stone, pome and citrus fruits; pineapples; coconuts; berries; watermelon; grapes; nuts and all common fruits. (Pome fruits include apples, mayhaws and pears. Stone fruits include peaches, nectarines, plums, apricots and cherries).

**Vegetable Production** involves the use of the best management practices available to produce and market efficiently crops such as beans, potatoes, pumpkins, sweet corn, tomatoes, onions, zucchini, hot peppers, as well as all canning and common garden vegetables.

**Grain Production** involves the use of the best management practices available to produce and market efficiently grain crops such as corn, barley (including the malting types), millet, buckwheat, oats, grain sorghum, milo, wheat, rice and rye. *Grain Production does not* include any of the aforementioned crops with an intended use for forage.

**Home and/or Community Development** typically involves improving and protecting the beauty of an area by using natural vegetation or commercial ornamental plants, as well as modernizing a home for better health and comfort by installing or improving water and sanitary facilities, heating and air conditioning or labor saving devices. It can include community betterment and development activities such as volunteerism to improve the community.

**Landscape Management** typically involves experiences of planting and maintaining plants and shrubs, landscaping and outdoor beautification, installing sprinklers and improving recreational areas.

**Nursery Operations** typically provides students with job-entry experiences in areas such as shrubs, trees or other plant production for the purpose of transplanting or propagation. It can include water garden plants produced for sale.

**Outdoor Recreation** typically involves outdoor recreational activities as the primary land use. Some activities best suited to family use or as income-producing enterprises include vacation cabins and cottages, camping areas, fishing, hunting, shooting preserves, guide services, riding stables, vacation farms and guest ranches, natural scenic or historic areas and rodeo events where members do not own or manage horses.

**Poultry Production** involves the use of the best management practices available to produce and market efficiently domestic fowl such as ducks, geese and guinea; chickens; as well as turkeys and their products.

**Sheep Production** involves the use of the best management practices available to produce and market sheep and wool efficiently.

**Small Animal Production and Care** involves the use of the best management practices available to manage, produce, care for and/or market efficiently small pet animals such as rabbits as companion animals, cats, dogs, mice, hedgehogs and guinea pigs. Programs can typically provide a service where students care for the well-being of pets.

They can also include working at a pet shop or kennel, grooming or training dogs, as well as serving as a veterinary assistant or providing pet sitting services.

**Specialty Animal Production** involves the use of the best management practices available to produce and market efficiently specialty animals covered by none of the existing award categories, including bees, goats, mules, donkeys, miniature horses, meat rabbits, mink, worms, ostriches, emus, alpacas or llamas. Placement experiences can involve working at a zoo or at any specialty animal facility.

**Specialty Crop Production** involves the use of the best management practices available to produce and market efficiently crops covered by none of the existing award categories, including sugar beets, dry edible beans, gourds, tobacco, popcorn, Indian and other specialty corns, grass seed, herbs and spices, mushrooms, sugar cane, hops, sorghum cane, confectionary sunflowers or crop seed.

**Swine Production** involves the use of the best management practices available to produce and market swine efficiently.

**Turf Grass Management** typically involves the planting and maintaining of turf for outdoor beautification, owning a lawn mowing service, improving recreational areas, producing sod for sale and managing golf courses.

**Wildlife Production and Management** typically involves activities to improve the availability of fish and wildlife through practices such as trapping, stocking fish and wild game or those that develop new or improve existing land and water habitat for wildlife. This proficiency can include experiences with Fish and Wildlife Departments and the Department of Natural Resources. Wildlife, wild species of ducks, geese, quail and pheasants are eligible in this area if used as an income enterprise.

## SAE Visits

Any time spent outside of class time, to instruct and supervise the student in planning, selecting, conducting or evaluating their SAE program, which contributes to the development of agricultural standards.

Mere observation is not considered as on site instruction (SAE visit). Communication between teacher and student and/or parent is essential for on-site instruction.

The following concepts shall be followed when keeping records on a SAE.

1. 1<sup>st</sup> year students record period from June or July 1 till Dec 31 of following year (18 - 19 months) is based on local program needs. Thereafter, the record period is January 1 till December 31.
2. Entrepreneurship, Placement or Research SAEs are required for state awards.
3. Inventory and net worth calculations are taken at the end of the recordbook period and transferred to the beginning values for the following year. Ending inventory and net worth = Beginning inventory and net worth of the following year.
4. Projects must be owned by the student for Entrepreneurship SAEs, otherwise it is placement SAE with unpaid hours.
5. Animal Entrepreneurship projects must record feed and other expenses associated with owning an animal. Unpaid hours are not kept on entrepreneurship SAEs.
6. Fair market value is used for an animal's inventory value.
7. Records on Research SAEs include time spent (unpaid hours) with detail description. Students may keep records on expenses and income of the research.
8. The value of vehicles (productively invested) used in SAEs should reflect the percent of the mileage used exclusively for SAE activities. The remainder of the value is shown in non-productively invested assets.
9. Non cash expenses must be offset by barter income or non cash labor income or by income other than SAE (see state FFA degree, page AZ14, item #12).

Directed Lab Experiences / FFA / Ag Ed

1. Directed lab experience, unpaid hours and research, must be done before or after the student is officially finished with their school day.
2. Supervised CDE practices are acceptable as unpaid directed lab experience outside of class time, if that CDE is directly related with the student's agricultural career choice or SAE Program.
3. Serving as a FFA Officer, attending State Camp, SLC, or National Convention do not count as unpaid SAE hours.
4. If the student pays their own way to a conference/convention/camp they can financially count it as educational expense and investment. (like tuition)

## **GUIDELINES FOR EXTENDED CONTRACTS AND FFA STIPENDS**

**Notice it doesn't say SUMMER contract?**

**That's because it should be for more than the summer days!!**

(Extended contracts should be a minimum of 40 days or 2/9 of the teaching contract)

1. SOE/SAE visitations—3 to 5 hours per student for the summer/3 to 5 hours per student for school year
2. Land lab upkeep—4hrs/wk X 12 to 16 weeks (summer months) depending on when your normal contract begins/ends. During school year 5hrs per week X 38 weeks
3. Greenhouse upkeep—same as land lab
4. Other laboratory upkeep (shop, aquaculture, environmental, veterinary, etc.—same as land lab
5. Supervising hired students—8 hrs per week
6. Records upkeep—16-48 hrs depending on number of students

### **JUSTIFICATIONS OF A STIPEND FOR FFA ADVISOR**

1. Career Development Team training—8-hrs/school week. Add 80-120 if you win a state contest.
2. Officer training—Summer 40-80 hours/winter 3 hrs per school week
3. State Leadership Conference in June—60-80hrs
4. State Career Development Day (field day)—30-60 hrs
5. Awards/scholarship applications— 80-120hrs
6. Other Career Development Events (ANLS, County Fair and State Fair Landscaping, livestock showing/judging)—80-100 hrs each
7. Chapter development events/activities (from Pof A) 20-80 hrs each
8. Chapter community development events/activities—20-80 hrs each
9. Student development events/activities—20-80 hrs each

From each of these lists develop your own schedule and hours needed to perform your job, as it needs to be done in your local area. You should be paid at the same daily (8 hrs) rate as calculated within your basic teaching contract.

**PROGRAM:** Agricultural Business Management-Agriscience

**PROGRAM  
CIP CODE:** 01.0100

**DESCRIPTION:** *The **Agricultural Business Management-Agriscience** program is designed to prepare students for employment in the Agriculture, Food and Natural Resources career cluster as defined by the USDE Office of Vocational and Adult Education. Students completing this program will possess the appropriate cluster technical knowledge and skills associated with the production, processing, marketing, distribution, financing, and development of agricultural commodities and resources including food, fiber, wood products, natural resources, horticulture, and other plant and animal products/resources. In addition to the required technical skills, students will also develop leadership, advanced employability, critical thinking, applied academic, and life management skills. The program utilizes a delivery system made up of three essential components: formal instruction, experiential education through Supervised Agricultural Experiences (SAE), leadership and personal development through the Career and Technical Student Organization, FFA.*

**RECOMMENDED PROGRAM SEQUENCE OF COURSES:**

**Career  
Exploration  
Grades 7-9** *The following course is recommended as part of a Comprehensive Career and Technical Education (CTE) Program:*

90.0000.10 **Technological Foundations or Career Exploration:** All students **should** complete the Level I experience or attain these standards (competencies).

**Career  
Preparation  
Grades 9-12** *The following describes the recommended Career Preparation courses developed from industry-validated skills for initial employment or continued related education. All the State-designated **AGRICULTURAL BUSINESS MANAGEMENT-AGRISCIENCE** standards are addressed in this instructional sequence.*

01.0101.10 **Applied Biological Systems-Agriculture:** Students must attain these competencies in a coherent sequence of courses. Biology credit for college entrance and secondary graduation is available if these competencies are met. It is recommended that

these standards are covered in a two-course sequence during the 9th and 10th grades.

01.0100.10 ***Agricultural Business Management-Agriscience:***  
This standards set is designed to deliver the science standards associated with the Agriculture, Food and Natural Resources career cluster. Lab science credit for college entrance and secondary graduation is available if these competencies are met. It is recommended that these standards be covered in course sequences during the 10th through 12th grades.

***One of the following Career Preparation options will be included as part of the instructional sequence for this program:***

01.0100.20 ***Food Products and Processing Systems Agribusiness Systems Option A:*** Course description is under development

01.0100.30 ***Plant Systems Option B:*** Course description is under development.

01.0100.40 ***Animal Systems Option C:*** Course description is under development.

01.0100.50 ***Natural Renewable Resources Systems Option D:*** Course description is under development.

01.0100.60 ***Power, Structural and Technical Systems Option E:*** Course description is under development.

01.0100.90 ***Agribusiness Systems Option F:*** Course description is under development.

01.0100.00 ***Environmental Service Systems Option G:*** Course description is under development.

***-And program may elect to add:***

01.0100.80 ***Agricultural Business Management-Agriscience-Cooperative Education:*** This course utilizes a cooperative education methodology to combine school based and supervised work-based learning experiences directly related to the standards identified for the ***Agricultural Business Management-Agriscience*** program.

# Occupational Information Network (O\*NET)

## Standard Occupational Classification System (SOC)

<http://online.onetcenter.org>

The O\*NET database includes information on skills, abilities, knowledge, work activities, and interests associated with occupations. This information can be used to facilitate career exploration, vocational counseling, and a variety of human resources functions, such as developing job orders and position descriptions and aligning training with current workplace needs. Information in O\*NET is available for 900+ occupations. Each occupational title and code is based on the most current version (2005) of the Standard Occupational Classification system. The O\*NET system is continually being updated.

O\*NET is a unique, powerful source for continually updated occupational information and labor market research. By using a contemporary, interactive skills-based database and a common language to describe worker skills and attributes, O\*NET coding structure has been aligned to the newly revised Standard Occupational Classification (SOC).

### Agricultural Business Management - Agriscience CIP No. 01.0100

O*NET SOC OCCUPATION TITLE	O*NET SOC CODE	**Job Zone (see end of section)
<b><u>Food Products and Processing Systems Pathway</u></b>		
Sales Representative, Agricultural	41-4011.01	2
Business Teachers, Postsecondary	25-1011.00	
Food Scientists and Technologists	19-1012.00	4
Medical Scientists, Except Epidemiologists	19-1042.00	4
Butchers and Meat Cutters	51-3021.00	3
Meat, Poultry, and Fish Cutters and Trimmers	51-3022.00	1
Slaughterers and Meat Packers	51-3023.00	
Food and Tobacco Roasting, Baking, and Drying Machine Operators and Tenders	51-3091.00	1
Food Batch-makers	51-3092.00	3
Food Cooking Machine Operators and Tenders	51-3093.00	1
Biochemists	19-1021.01	5
Dietitians and Nutritionists	29-1031.00	5
Purchasing Agents and Buyers, Farm Products	13-1021.00	4
Agricultural Inspectors	45-2011.00	4
Meat, Poultry, and Fish Cutters and Trimmers	51-3022.00	1
First-Line Supervisors and Manager/Supervisors -Animal Husbandry Workers	45-1011.02	3
Microbiologists	19-1022.00	5
Environmental Engineers	17-2081.00	5

**O\*NET SOC OCCUPATION TITLE****O\*NET  
SOC CODE****\*\*Job Zone  
(see end of  
section)****Food Products (con't)**

Agricultural Engineers

17-2021.00

5

Supervisors, Transportation and Material Moving Workers

53-1000.00

Industrial Engineers

17-2112.00

4

**O\*NET SOC OCCUPATION TITLE****O\*NET  
SOC CODE****\*\*Job Zone**  
(see end of  
section)**Plant Systems Pathway**

Microbiologists	19-1022.00	5
Plant Scientists	19-1013.01	5
Biological Technicians	19-4021.00	2
Forest and Conservation Technicians	19-4093.00	
Farm, Ranch, and Other Agricultural Managers	11-9011.00	4
Agricultural Sciences Teachers, Postsecondary	25-1041.00	5
Soil and Plant Scientists	19-1013.00	5
Sales Representatives, Agricultural	41-4011.01	2
Biological Scientist	19-1020.00	
Tree Trimmers and Pruners	37-3013.00	2
Farm and Home Management Advisors	25-9021.00	4
Loan Officers	13-2072.00	4
Reporters and Correspondents	27-3022.01	
Sales Agents, Securities and Commodities	41-3031.01	4
Transportation, Storage, and Distribution Managers	11-3071.00	4
First-Line Supervisors/Managers of Production and Operating Workers	51-1011.00	3
Farm workers, Farm and Ranch Animals	45-2093.00	1
Foresters	19-1032.00	4
Managers, All Other	11-9199.99	
First-Line Supervisors and Manager/Supervisors -Landscaping Workers	37-1012.02	3
Nursery and Greenhouse Managers	11-9011.01	4
Agricultural Crop Farm Managers	11-9011.02	4
Farmers and Ranchers	11-9012.00	3

**O\*NET SOC OCCUPATION TITLE****O\*NET  
SOC CODE****\*\*Job Zone**  
(see end of  
section)**Animal Systems Pathway**

Agricultural Sciences Teachers, Postsecondary	25-1041.00	5
Animal Breeders	45-2021.00	3
Farm workers, Farm and Ranch Animals	45-2093.00	1
Farm, Ranch, and Others Agricultural Managers	11-9011.00	4
Animal Scientists	19-1011.00	5
Veterinarians	29-1131.00	5
Veterinary Assistants and Laboratory Animal Caretakers	31-9096.00	3
Veterinary Technologists and Technicians	29-2056.00	3
Purchasing Agents and Buyers, Farm Products	13-1021.00	4
Sales Representatives, Agricultural	41-4011.01	2
Zoologists and Wildlife Biologists	19-1023.00	5
Farmers and Ranchers	11-9012.00	3
Agricultural Inspectors	45-2011.00	4
Sales Representatives, Services, All Other	41-3099.99	
Biological Scientists, All Other	19-1029.99	
Non-farm Animal Caretakers	39-2021.00	1
First-Line Supervisors/Managers of Retail Sales Workers	41-1011.00	2
Geological Data Technicians	19-4041.01	3

**O\*NET SOC OCCUPATION TITLE****O\*NET  
SOC CODE****\*\*Job Zone**  
(see end of  
section)**Natural Resources Systems Pathway**

Cartographers and Photogrammetrists	17-1021.00	4
Natural Sciences Managers	11-9121.00	5
Range Managers	19-1031.02	5
Forest and Conservation Technicians	19-4093.00	
Environmental Scientists and Specialists, Including Health	19-2041.00	5
General and Operations Managers	11-1021.00	4
Social and Community Service Managers	11-9151.00	4
Fish and Game Wardens	33-3031.00	3
Fallers	45-4021.00	1
Logging Equipment Operators	45-4022.00	
Logging Tractor Operators	45-4022.01	2
Log Graders and Scalers	45-4023.00	2
Industrial Production Managers	11-3051.00	4
Geological Sample Test Technicians	19-4041.02	3
Geologists	19-2042.01	5
Mining and Geological Engineers, Including Mining Safety Engineers	17-2151.00	4
Biological Technicians	19-4021.00	2
Environmental Science and Protection Technicians, Including Health	19-4091.00	4
Hydrologists	19-2043.00	5
Fish Hatchery Managers	11-9011.03	4
Excavating and Loading Machine Operators	53-7032.01	2
Operating Engineers	47-2073.02	3
Transportation, Storage, and Distribution Managers	11-3071.00	3,4
Hazardous Materials Removal Workers	47-4041.00	
Medical Scientists, Except Epidemiologists	19-1042.00	4
Fishers and Related Fishing Workers	45-3011.00	1
Able Seaman	53-5011.01	2
Ordinary Seaman and Marine Oilers	53-5011.02	2

**O\*NET SOC OCCUPATION TITLE****O\*NET  
SOC CODE****\*\*Job Zone**  
(see end of  
section)**Power Structural and Technical Systems Pathway**

Agricultural Equipment Operators	45-2091.00	2
Electrical and Electronic Engineering Technicians	17-3023.01	4
Agricultural Sciences Teachers, Postsecondary	25-1041.00	5
Farm and Home Management Advisors	25-9021.00	4
Mobile Heavy Equipment Mechanics, Except Engines	49-3042.00	4
Environmental Science and Protection Technicians, Including Health	19-4091.00	4
Water and Liquid Waste Treatment Plant and System Operators	51-8031.00	3
Parts Salesperson	41-2022.00	2
Welders and Cutters	51-4121.02	2
Welder-Fitters	51-4121.03	4
Machinists	51-4041.00	3
Broadcast and Sound Engineering Technicians and Radio Operators	27-4040.00	
Audio and Video Equipment Technicians	27-4011.00	4
Broadcast Technicians	27-4012.00	4
Sound Engineering Technicians	27-4014.00	3
Computer Systems Analysts	15-1051.00	3
Database Administrators	15-1061.00	4
Computer Support Specialists	15-1041.00	3

# Job Zone Definitions

The “Five Zone” rating system does not represent occupations in a developmental sequence. However, due to the limited amount of jobs available in zones 1 (little or no preparation needed) and 2 (some preparation needed); it is evident that industry is requiring additional training and education of the workforce. Students will need to explore the “assistant” or “entry-level” positions that may be available (but not identified in O\*NET) within the occupation areas. By utilizing this tool, students should begin to see a significant number of skills as “transferable” to many related job opportunities within the program area.

## Job Zone One

Little or No Preparation Needed. No previous work-related skill, knowledge, or experience is needed for these occupations. For example, a person can become a general office clerk even if s/he has never worked in an office before. These occupations may require a high school diploma or GED certificate. Some may require a formal training course to obtain a license. Employees in these occupations need anywhere from a few days to a few months of training. Usually, an experienced worker could show you how to do the job. These occupations involve following instructions and helping others. Examples include: bus drivers, forest and conservation workers, general office clerks, home health aides, and waiters/waitresses. (Below 4.0)

## Job Zone Two

Some Preparation Needed. Some previous work-related skill, knowledge, or experience may be helpful in these occupations, but usually is not needed. For example, a drywall installer might benefit from experience installing drywall, but an inexperienced person could still learn to be an installer with little difficulty. These occupations usually require a high school diploma and may require some vocational training or job-related course work. In some cases, an associate’s or bachelor’s degree could be needed. Employees in these occupations need anywhere from a few months to one year of working with experienced employees. These occupations often involve using your knowledge and skills to help others. Examples include drywall installers, fire inspectors, flight attendants, pharmacy technicians, salespersons (retail), and tellers. (4.0 to < 6.0)

## Job Zone Three

Medium Preparation Needed. Previous work-related skill, knowledge, or experience is required for these occupations. For example, an electrician must have completed three or four years of apprenticeship or several years of vocational training, and often must have passed a licensing exam, in order to perform the job. Most occupations in this zone require training in vocational schools, related on-the-job experience, or an associate’s degree. Some may require a bachelor’s degree. Employees in these occupations usually need one or two years of training involving both on-the-job experience and informal training with experienced workers. These occupations usually involve using communication and organizational skills to coordinate, supervise, manage, or train others to accomplish goals. Examples include dental assistants, electricians, fish and game wardens, legal secretaries, personnel recruiters, and recreation workers. (6.0 to <7.0)

## **Job Zone Four**

Considerable Preparation Needed. A minimum of two to four years of work-related skill, knowledge, or experience is needed for these occupations. For example, an accountant must complete four years of college and work for several years in accounting to be considered qualified. Most of these occupations require a four-year bachelor's degree, but some do not. Employees in these occupations usually need several years of work-related experience, on-the-job training, and/or vocational training. Many of these occupations involve coordinating, supervising, managing, or training others. Examples include accountants, chefs and head cooks, computer programmers, historians, pharmacists, and police detectives. (7.0 to < 8.0)

## **Job Zone Five**

Extensive Preparation Needed. Extensive skill, knowledge, and experience are needed for these occupations. Many require more than five years of experience. For example, surgeons must complete four years of college and an additional five to seven years of specialized medical training to be able to do their jobs. A bachelor's degree is the minimum formal education required for these occupations. However, many also require graduate school. For example, they may require a master's degree, and some require a Ph.D., M.D., or J.D. (law degree).

Employees may need some on-the-job training, but most of these occupations assume that the person will already have the required skills, knowledge, work-related experience, and/or training. These occupations often involve coordinating, training, supervising, or managing the activities of others to accomplish goals. Very advanced communication and organizational skills are required. Examples include athletic trainers, lawyers, managing editors, physicists, social psychologists, and surgeons. (8.0 and above)

**Sample Research**

**<http://online.onetcenter.org>**

**For information regarding requirements for employment:**

Click on **“Find Occupation”**.

Type in (**selected occupation**) or use code if you know it. (click on **Go**)

Select one of the more specific related occupations on the list.

On the **“Summary Report for:”** page, you may choose **Summary, Details,** and/or **Custom**

**For information regarding wages and employment:**

Go the bottom of any of the pages under **“Summary Report for:”** and select the Link: **“Wages and Employment”**.

Under **“Select a State”**, choose **“Arizona”**. (click on **Go**)

This gives wages (hourly and annual) for Arizona compared with USA from Bureau of Labor Statistics, Office of Employment Projections and Arizona Department of Security. You will also see national trends in USA over a ten year period.

**Note:** To print any of these, scroll to top of page, right corner, where it says **“Printer-Friendly Version”**.

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