

This is the first course in most secondary Agriscience and Natural Resources programs. It satisfies a graduation requirement of a science with a laboratory component.

July 2007

Florida Department of Education  
STUDENT PERFORMANCE STANDARDS

Course Number: 8106810  
Course Title: Agriscience Foundations I  
Course Credit: 1

COURSE DESCRIPTION:

This course is designed to develop competencies in the areas of agricultural history and the global impact of agriculture; career opportunities; scientific and research concepts; biological and physical science principles; environmental principles; agriscience safety; principles of leadership; and agribusiness, employability, and human relations skills in agriscience. Laboratory-based activities are an integral part of this course. These include the safe use and application of appropriate technology, scientific testing and observation equipment.

01.0 Describe the history of agriculture and its influence on the global economy--The student will be able to:

- 01.01 Investigate the history of agriculture and its relationship to science and technology.  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3; LA.C.1.4.1; LA.C.2.4.1; SS.A.1.4.1, 4; SS.A.2.4.1, 2; SS.A.3.4.1, 5, 8; SS.A.3.4.9; SS.A.5.4.1; SS.B.1.4.1, 4; SC.H.3.4.2, 3, 5, 6; SC.D.1.4.3, 4
- 01.02 Analyze the impact of agriculture on the local, state, national and global economy.  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3; LA.C.1.4.1; LA.C.2.4.1; MA.A.2.4.1, 2; MA.A.3.4.1, 3; MA.E.1.4.1, 2; SS.A.3.4.3, 8, 10; SS.A.4.4.1, 6; SS.A.5.4.3, 5; SS.B.2.4.1, 4; SC.H.3.4.2, 3, 5, 6; SC.B.1.4.5; SC.D.1.4.1, 3; SC.D.2.4.1
- 01.03 Identify significant career patterns/shifts in the history of the agricultural industry.  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3; LA.C.1.4.1; LA.C.2.4.1; SS.A.1.4.1; SS.A.3.4.5; SS.A.5.4.2; SS.B.2.4.4; SC.H.3.4.2, 3, 5, 6; SC.B.1.4.5; SC.D.1.4.1, 3; SC.D.1.4.4; SC.H.1.4.2
- 01.04 Examine the role of the agricultural industry in the interaction of population, food, energy, and the environment.  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3; LA.C.1.4.1; LA.C.2.4.1; MA.D.1.4.1; MA.D.2.4.1; MA.E.1.4.1; SS.A.4.4.1, 2; SS.A.5.4.1, 2; SS.B.1.4.4; SS.B.2.4.1; SS.B.2.4.2, 4, 6; SS.D.1.4.1; SC.H.3.4.2, 3, 5, 6; SC.B.1.4.5; SC.D.1.4.1, 3, 4; SC.D.2.4.1; SC.G.2.4.6

02.0 Practice agriscience safety skills and procedures --The student will be able to:

- 02.01 Identify the common causes of accidents in agriscience operations. LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3; LA.C.1.4.1; LA.C.2.4.1
- 02.02 Demonstrate proper safety precautions and use of personal protective equipment.

- 02.03 Extract and utilize pertinent information from a container label and/or Material Safety Data Sheet (MSDS) following Environmental Protection Agency (EPA), Worker Protection Standard, and Occupational Safety and Health Agency (OSHA) regulations.  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3; LA.C.1.4.1; LA.C.2.4.1; MA.A.1.4.1; MA.A.3.4.1; MA.B.1.4.1, 2; MA.B.2.4.2; MA.B.3.4.1; MA.B.4.4.1, 2; MA.E.1.4.1
- 02.04 Identify proper disposal of hazardous waste materials and biohazards.  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3; LA.C.1.4.1; LA.C.2.4.1
- 02.05 Describe emergency procedures.  
LA.C.3.4.1; LA.C.3.4.2; LA.C.3.4.3
- 03.0 Apply scientific and technological principles to agriscience issues--The student will be able to:
- 03.01 Employ scientific measurement skills.  
MA.A.1.4.1; MA.A.2.4.2; MA.B.2.4.1, 2; MA.B.4.4.1; SC.B.1.4.3; SC.H.1.4.1
- 03.02 Demonstrate safe and effective use of common laboratory equipment.  
SC.H.1.4.1
- 03.03 Identify the parts and functions of plant and animal cells.  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3; LA.C.1.4.1; LA.C.2.4.1; SC.B.1.4.1, 2; SC.F.1.4.1, 2, 3, 7, 8; SC.F.2.4.1
- 03.04 Describe the phases of cell reproduction.  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3; LA.C.1.4.1; LA.C.2.4.1; SC.B.1.4.1, 2; SC.F.1.4.1, 2, 3, 7, 8; SC.F.2.4.1; SC.G.1.4.1
- 03.05 Implement the scientific method and science process skills through the design and completion of an agriscience research project.  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3; LA.C.1.4.1; LA.C.2.4.1; MA.E.3.4.1, 2; SC.H.1.4.1, 2, 3; SC.H.2.4.1, 2
- 03.06 Interpret, analyze, and report data.  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3; LA.C.1.4.1; LA.C.2.4.1; MA.E.1.4.1, 2, 3; MA.E.2.4.1, 2; SC.B.1.4.3, SC.H.1.4.1, 2, 3, 4, 7
- 03.07 Investigate DNA and genetics applications in agriscience including the theory of probability.  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3; LA.C.1.4.1; LA.C.2.4.1; MA.E.2.4.1, 2; SC.F.2.4.2, 3; SC.G.2.4.3
- 03.08 Evaluate advances in biotechnology that impact agriculture (e.g. transgenic crops, biological controls, etc.).  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3; LA.C.1.4.1; LA.C.2.4.1; SC.F.2.4.2, 3; SC.G.2.4.3
- 04.0 Apply environmental principles to the agricultural industry --The student will be able to:
- 04.01 Determine how different climactic and geological activity influences agriculture.  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3; LA.C.1.4.1; LA.C.2.4.1; SS.B.1.4.1; SS.B.2.4.4; SC.B.1.4.5; SC.D.1.4.1, 2, 3; SC.D.2.4.1; SC.G.1.4.1
- 04.02 Describe various ecosystems as they relate to the agriculture industry.  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3; LA.C.1.4.1; LA.C.2.4.1; SC.B.1.4.1, 2; SC.D.1.4.1, 2, 3; SC.D.2.4.1; SC.G.1.4.1; SC.G.2.4.2, 4; SC.G.2.4.5, 6

- 04.03 Describe the environmental resources (soil, water, air) necessary for agriculture production.  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3; LA.C.1.4.1; LA.C.2.4.1; SS.B.2.4.1, 6; SC.B.1.4.1, 2, 5; SC.D.1.4.1, 2, 3; SC.D.2.4.1; SC.G.1.4.1; SC.G.2.4.2, 4, 5, 6
- 04.04 Identify regulatory agencies that impact agricultural practices.  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3; LA.C.1.4.1; LA.C.2.4.1; SC.B.1.4.5; SC.D.1.4.1, 2, 3; SC.D.2.4.1; SC.G.1.4.1; SC.G.2.4.2, 4; SC.G.2.4.5, 6
- 04.05 Apply Best Management Practices that enhance the natural environment.  
SC.B.1.4.5; SC.D.1.4.1, 2, 3; SC.D.2.4.1; SC.G.1.4.1; SC.G.2.4.2, 4, 5, 6
- 04.06 Identify conservation practices related to natural resources.  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3; LA.C.1.4.1; LA.C.2.4.1; SC.B.1.4.1, 2, 5; SC.D.1.4.1, 2, 3; SC.D.2.4.1; SC.G.1.4.1; SC.G.2.4.2, 3, 4, 5, 6
- 05.0 Investigate and utilize basic scientific skills and principles in plant science --The student will be able to:
- 05.01 Identify and describe the specializations within the plant science industry.  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3; LA.C.1.4.1; LA.C.2.4.1
- 05.02 Categorize plants based on specific characteristics according to industry and scientific standards.  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3; LA.C.1.4.1; LA.C.2.4.1; SC.G.1.4.1
- 05.03 Examine the processes of plant growth including photosynthesis and respiration.  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3; LA.C.1.4.1; LA.C.2.4.1; SC.B.1.4.1, 2; SC.D.1.4.1; SC.F.1.4.1, 2, 3, 7, 8; SC.G.2.4.2
- 05.04 Identify the nutrients required for plant growth from the periodic table and explain their functions.  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3; LA.C.1.4.1; LA.C.2.4.1; SC.D.1.4.1, 2; SC.F.1.4.1, 2, 3, 7, 8; SC.G.2.4.2
- 05.05 Analyze information from a fertilizer label.  
MA.E.1.4.1; MA.B.1.4.1, 2; MA.B.2.4.1, 2; MA.B.3.4.1; MA.B.4.4.1, 2; SC.A.2.4.5
- 05.06 Propagate and grow plants through sexual and/or asexual reproduction.  
SC.B.1.4.1, 2; SC.D.1.4.1, 2; SC.F.1.4.1, 2, 3, 7, 8; SC.F.2.4.1, 3; SC.G.2.4.3
- 05.07 Investigate the impacts of various pests and propose solutions for their control.  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3; LA.C.1.4.1; LA.C.2.4.1; SC.B.1.4.1, 2; SC.D.1.4.1; SC.F.1.4.1, 2, 3, 7, 8; SC.G.1.4.1; SC.G.2.4.2
- 05.08 Investigate the nature and properties of food, fiber, and by-products from plants.  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3; LA.C.1.4.1; LA.C.2.4.1; SC.B.1.4.1, 2, 3; SC.F.1.4.1, 2, 3, 7, 8; SC.G.1.4.1
- 05.09 Explore career opportunities in plant science.  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3; LA.C.1.4.1; LA.C.2.4.1
- 06.0 Investigate and utilize basic scientific skills and principles in animal science --The student will be able to:

- 06.01 Investigate the origin, history, and domestication of animals.  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3;  
LA.C.1.4.1; LA.C.2.4.1; SC.D.1.4.3, 4; SC.G.1.4.1
- 06.02 Explain the economic importance of animals and the products  
obtained from animals.  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3;  
LA.C.1.4.1; LA.C.2.4.1; MA.D.1.4.1; MA.E.1.4.1; MA.A.1.4.1, 2, 3, 4;  
MA.A.2.4.2; SC.D.1.4.1; SC.G.1.4.1
- 06.03 Categorize animals according to use, type, breed, and scientific  
classification.  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3;  
LA.C.1.4.1; LA.C.2.4.1; SC.G.1.4.1
- 06.04 Employ correct terminologies for animal species and conditions  
(e.g. age, sex, etc.) within those species.  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3;  
LA.C.1.4.1; LA.C.2.4.1
- 06.05 Compare basic internal & external anatomy of animals.  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3;  
LA.C.1.4.1; LA.C.2.4.1; SC.F.1.4.1, 2, 3, 7, 8; SC.F.2.4.1
- 06.06 Demonstrate approved practices in the management, health,  
safety, and technology of the animal industry.  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3;  
LA.C.1.4.1; LA.C.2.4.1; SC.B.1.4.1, 2; SC.D.1.4.1; SC.F.1.4.1, 2, 3, 7,  
8; SC.F.2.4.1, 3; SC.G.1.4.1; SC.G.2.4.2, 3
- 06.07 Discuss animal welfare issues.  
LA.C.3.4.1; LA.C.3.4.2; LA.C.3.4.3; SC.D.1.4.1
- 06.08 Investigate the nature and properties of food, fiber, and by-  
products from animals.  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3;  
LA.C.1.4.1; LA.C.2.4.1; SC.B.1.4.1, 2; SC.B.1.4.3; SC.F.1.4.1, 2, 3, 7,  
8; SC.G.1.4.1
- 06.09 Explore career opportunities in animal science.  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3;  
LA.C.1.4.1; LA.C.2.4.1
- 07.0 Demonstrate the use of agriscience tools, equipment, and instruments --  
The student will be able to:
- 07.01 Select and demonstrate the use of agriscience tools, equipment,  
and instruments.  
MA.A.1.4.1, 4; MA.B.1.4.1, 2, 3; MA.B.2.4.1; MA.B.1.4.2; MA.B.4.4.1, 2;  
SC.B.1.4.1, 2
- 07.02 Describe various physical science principles as applied in  
selected mechanical applications (e.g. levers, pulleys,  
hydraulics, and internal combustion).  
LA.A.1.4.1; LA.A.1.4.2; LA.A.1.4.3; LA.A.1.4.4; MA.B.1.4.1, 2, 3;  
MA.B.2.4.1, 2; MA.B.3.4.1; MA.B.4.4.1, 2; SC.B.1.4.1, 2, 3; SC.C.2.4.6
- 07.03 Solve time, distance, area, volume, ratio, proportion, and  
percentage problems in agriscience.  
SC.B.1.4.1, 2, 3
- 07.04 Service and maintain agriscience equipment, instruments,  
facilities, and supplies.  
LA.A.1.4.1; LA.A.1.4.2; LA.A.1.4.3; LA.A.1.4.4; SC.B.1.4.1, 2
- 08.0 Demonstrate agribusiness, employability & human relation skills --The  
student will be able to:
- 08.01 Develop, implement, and maintain work based learning through  
Supervised Agricultural Experiences (SAE).  
LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3;  
LA.C.1.4.1; LA.C.2.4.1
- 08.02 Utilize a record keeping system to collect, interpret, and  
analyze data.

- LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3;  
 LA.C.1.4.1; LA.C.2.4.1; MA.B.2.4.1; MA.B.3.4.1; MA.B.4.4.2; MA.E.1.4.1;  
 SC SC.H.1.4.7, SC.H.3.4.3
- 08.03 Enhance oral communications through telephone, interview and presentation skills.  
 LA.C.1.4.3; LA.C.3.4.1; LA.C.3.4.2; LA.C.3.4.3; LA.C.3.4.4; LA.C.3.4.5;  
 SC.H.1.4.7
- 08.04 Enhance written communication by developing resumes and business letters.  
 LA.B.1.4.1; LA.B.1.4.2; LA.B.1.4.3; LA.B.2.4.1; LA.B.2.4.2; LA.B.2.4.3;  
 SC.H.1.4.7
- 08.05 Demonstrate interpersonal (nonverbal) communication skills.  
 LA.C.3.4.1; LA.C.3.4.2; LA.C.3.4.3; LA.C.3.4.4; LA.C.3.4.5
- 08.06 Demonstrate good listening skills.  
 LA.C.1.4.1; LA.C.1.4.2; LA.C.1.4.3; LA.C.1.4.4
- 09.0 Apply leadership and citizenship skills --The student will be able to:
- 09.01 Identify and describe leadership characteristics.  
 LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3;  
 LA.C.1.4.1; LA.C.2.4.1
- 09.02 Identify opportunities to apply acquired leadership skills.  
 LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3;  
 LA.C.1.4.1; LA.C.2.4.1
- 09.03 Identify and demonstrate ways to be an active citizen.  
 LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3;  
 LA.C.1.4.1; LA.C.2.4.1; SC.H.1.4.7
- 09.04 Participate in community based learning activities.  
 SC.H.1.4.7
- 09.05 Demonstrate the ability to work cooperatively.  
 SC.H.1.4.4
- 09.06 Conduct formal and informal meetings using correct parliamentary procedure skills.  
 LA.C.3.4.1; LA.C.3.4.2; LA.C.3.4.3; SC.H.1.4.7
- 09.07 Identify the opportunities for leadership development available through the National FFA Organization and/or professional organizations.  
 LA.A.1.4.1, 2, 3, 4; LA.A.2.4.4; LA.B.1.4.1, 2, 3; LA.B.2.4.1, 2, 3;  
 LA.C.1.4.1; LA.C.2.4.1