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ABSTRACT

This guide is intended to provide local agricultural education tech prep programs throughout Colorado with a framework for updating their own curriculum and developing articulation with postsecondary institutions. First, a primer to standards-based education explains the role of the following items in standards-based education in agriculture: (1) rubrics (written narratives used to evaluate individual students' attainment of particular standards); (2) enablers (subskills that students must possess to demonstrate the ability demanded in a standard); and (3) authentic assessment (tools used to evaluate whether individual students have truly attained the skills and abilities demanded in a standard). Next, a user's guide to standards-based education in agriculture outlines the process of developing a curriculum guaranteeing that students completing the program have met specified standards of knowledge and skill. Suggested standards in agricultural education are listed by grade level and by the following courses: agricultural mechanics; agricultural business; agricultural science; environmental science; agriculture education I; and agriculture education II. Each standard is accompanied by a rubric, sample enablers, and sample assessments. Next, an agricultural tech prep resource guide lists the addresses of 23 resource organizations and the items each supplies. Concluding the guide is a list of 12 useful World Wide Web sites for agricultural education teachers. (MN)

COLORADO AGRICULTURE EDUCATION TECH PREP CURRICULUM GUIDE

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Introduction

The **Colorado Ag Tech Prep Curriculum Guide** which you have in your possession is the culmination of three years of concerted effort on the part of many people involved in agricultural education in Colorado. This guide was produced using funds made available by the Carl D. Perkins Vocational/ Technical Education Act through a grant from the Colorado Community College and Occupational Education System. This guide is meant to provide a framework for local ag-ed programs to use to update their own curriculum as well as to provide a means for developing articulation with post-secondary institutions. Most importantly, this guide was developed in order to put in place a system of agricultural education which will go beyond the traditional 9-12 model to provide a system of K-16 agricultural education which will place a higher trained employee in the industry. If this goal is met, this project and curriculum guide will be a success.

Before we continue, we must come to the understanding that the implementation of tech prep is not simply a matter of changing what we teach. Rather, tech prep is a systemic change which will change the way ag-ed is perceived by ag teachers, students, parents, professors, and industry. With tech prep, it is not important where (and by whom) a skill is taught so much as that the skill is taught and assessed in an authentic manner in order to guarantee the quality of the program graduate as he or she enters the industry of agriculture.

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Standards Based Education in Agriculture- a Primer

Webster's Student Dictionary defines a **standard** as: "n; something set up by authority or general consent as a rule for measuring or as a model (standards of good manners)" or: "adj.; constituting or conforming to a standard established by law or custom (standard weight)."

In the wave of educational reform which we are experiencing at the moment, standards are loosely defined as those measurable and observable skills which the community, parents, and potential employers can expect our students to perform once they have successfully completed our programs of study.

With this in mind, the Colorado Ag Tech Prep Consortium undertook the task of developing model performance standards for ag-ed students in Colorado in the areas of Agricultural Mechanics, Agricultural Business, Agricultural Science, Environmental Science, Ag Education II, and Ag Education I. On the following pages you will find these standards along with the tools needed to implement them.

On each page you will find the standard listed along with its suggested grade level. For example, AM 11/12.1 would designate an Agricultural Mechanics performance standard suggested for the 11th and/or 12th grade level. Below the standard you will find 4 columns which list **rubrics** in descending order of 4-3-2-1. **Rubrics** are written narratives which are used to evaluate an individual student's attainment of a particular standard. Since students learn at different rates and perform at different skill levels, it is necessary to define those skill levels for the student, parent, potential employer, etc. in a concise manner. It should be understood that rubrics are not necessarily a substitute for grades (although they could be used to calculate grades), rather they are a narrative "rating scale" which defines the student's level of performance. It should be further understood that in this model only the levels of 4, 3, and 2 are deemed acceptable.

At this point we have defined the standards and the means for rating student performance, but we have not shown how we will, through sound instruction, raise student achievement to the level established by the standards or the actual measures we will use.

The means for raising student performance to the established standard is the **enabler** or **enabling skill**. Think of an enabler as a sub skill that a student must possess in order to demonstrate their ability on the standard. An example might be that a student must be able to strike an arc and run a flat bead in order to complete a lap weld. These enablers are listed in descending logical sequence at the bottom of each page. As you peruse these enablers you will find some that you already teach and some which you don't (or never intend to teach). This is okay since the enabling skills which are taught will, and should, vary depending upon local community interests, needs, and interpretation of the standards. You will notice that for some standards the enablers may be broken out by content or unit area (ex:arc and oxyacetylene welding). It should be understood at this point that this list of enablers is incomplete, and will remain so until your input is included in the total document.

The final component of a standards based curriculum is **authentic assessment**. Authentic assessments, put simply, are tools used to evaluate whether or not a student has truly attained the skills and abilities defined in the standard. What makes these assessments truly authentic is that the assessment must, as closely as possible, mirror the actual skill defined in the standard. An example may be given for AB 11/12.2 ; "The student will be able to communicate a knowledge of current agricultural issues." In this example, the enabling skills may be: "write an outline for a speech", "use the DTN or FarmDayta to research a current issue", and "access information by utilizing the Internet". These enabling skills are certainly worthy and noble skills, but they don't show us what the student can do in actuality. In order to test what the student knows and can do, it may be necessary to have the student research, outline, and present a 3-5 minute extemporaneous speech on an agricultural topic. In this example, the 3-5 minute extemporaneous speech would be the authentic assessment which proved that the student had attained the skills defined by the standard. This is hardly groundbreaking for agricultural education, but it should serve as a reminder of those traditional philosophies and habits which have made agricultural education what it is today.

For each standard there are listed from one to five **sample assessments** which may be used as a basis for writing your own assessments. Wherever possible, we have omitted "written test" assessments as you are no doubt using these already. Written tests by themselves are not a poor assessment and should be included in your assessment of student skills, but here we are trying to go one step further, wherever possible, to develop assessments which take testing of student skills to the application and synthesis levels.

Standards Based Education in Agriculture- A User's Guide

Now that you know <u>what</u> standards based agricultural education is, hopefully you are asking questions like, "What am I supposed to do with this curriculum?", or, "How am I supposed to use this curriculum?" The answer to the first question is an easy one- whatever you wish to do. You have the option of using all or part of this curriculum or not at all. The answer to the tougher question, "How am I supposed to use this curriculum?" will take some effort to answer. Luckily, the answer may come from this guide or through curriculum inservice provided to your district by the Ag Tech Prep Consortium. Regardless of what the answers to these questions may be in your individual situations, one thing is certain; should you choose to put your program on the "tech-prep pathway", you will be embarking on a period of change which will challenge you as a teacher and improve the quality of students completing your program of study.

Implementation of the Ag Tech Prep curriculum should begin first and foremost with your advisory committee. The curriculum you see before you is simply a shopping list of ideas. It will be up to you to determine what parts, if any, you will use in your local programs. It is our suggestion that you include your advisory committee during each phase of selection and implementation of your updated curriculum.

The process involved in developing curriculum which guarantees that each student completing the program has met certain standards of knowledge and skill requires that we use the "design down and deliver up" model. We design the curriculum with the end result in mind- "<u>What do we want the student to know and be able to do</u>?" Ultimately, the standards we select will shape the graduates we produce. When we design down, we start with the product and build the curriculum downward at each grade or class level all the way to the program entry level (in the case of this curriculum, the Ag-Ed I level). At each of these levels, the local teacher and advisory committee must determine what standards are appropriate for each level (Ag-Ed I, Ag-Ed II, etc). In this model curriculum, some standards may be assigned to grade levels which may not be appropriate for all programs. In this case, you must assign standards to the grade level which best suits your students and their needs. The phenomena which tie all of these standards together regardless of grade or class level are called strands. If you look at the model standards in total, you will find that the themes (strands) which are common to all levels. The strands used in this model are: communication, current issues, technical knowledge and skill, practical experience and teamwork. You may choose to use your school district's standards to determine the strands you will use in your program, since your program standards will need to dovetail with your local district standards. Once the curriculum is in place, we begin delivering at the entry level and enforce standards at each level as students move upward in the program.

As you select standards to apply to your own program, keep in mind the definition of a standard which was outlined on the previous page. Standards are measurable, concrete, and simple. **If it cannot be measured, it cannot be enforced. If it is not concrete, students, parents and patrons will not understand it. If it is not simple, nobody will use it.** When writing your standards please keep these three facts in mind. Remember that patrons of your school district will never support something that they don't understand- save the educationese for your doctoral dissertation and keep your curriculum document simple. The end document which you produce should be understood by the average parent, patron, or student with only a minimal amount of explanation.

One final note on standards before we continue. For standards to do their job in guaranteeing competence in agriculture education graduates they must be enforced. In adopting standards we are saying to patrons, parents, students and employers that our graduates meet an acceptable level of skill in those areas covered in our standards **and** we are informing these groups as to what our standards are. If a student who is not **an** identified special needs student (special needs students will have an individualized education plan, or IEP which will set standards for them individually, and are thus exempt from this process) does not meet **all** of the standards selected for your program, then you cannot allow the student to exit your program (or a given level in your program) with a satisfactory grade. When we say that we are implementing standards in our programs, we are, in effect, saying, "If Johnny can't read, Johnny won't pass."

In order to provide employers, parents, patrons and students with an idea of what a program completer "looks like", we utilize a tool called a rubric. Previously, we said that standards are based upon a picture we have of a program completer. Obviously, not all program completers look the same. Since this is the case, we provide a narrative description of the student's actions and performance called a rubric. The rubric for each standard should describe the attainment of the standard on several different levels. In this curriculum model, the rubric describes the student on four levels with three of these levels being considered satisfactory. These rubrics are used to rate a student's performance on a given standard and are not a substitute for grades. Rather, the rubrics are used to provide a narrative description of the "picture of a program completer." A well written rubric may be used to describe a student to someone who has never met him/her.

When writing rubrics, keep in mind the actions of those students who performed outstandingly well at a particular set of tasks which relate to the standard you are writing the rubric for. In addition, consider the actions of students who performed in an "above average" manner, those who performed in an "acceptable manner", and those who performed in an "unacceptable" manner. Use the actions of each of these sets of students to write the rubric for each standard. Once you have written your rubrics, you may use them as an evaluation tool when calculating grades, documenting the attainment of the standards, describing a student's performance to a parent, or in combination.

So far we have described the standards, the standards development process, and a rating scale to define the attainment of the standards by students. What has been left out is the "meat" of the curriculum, that is, what you must teach students in order to get them to an acceptable performance level for each standard. The tool used for this purpose is the enabling skill or enabler, for short. Simply put, enablers are those skills which you must teach in order for the student to reach the level of skill required by the standard. As you look at the sample list of enablers for each standard, you may find that there is no way that you will ever teach all of these skills. Or you may teach skills which are not listed under the standard. As you develop your curriculum with your advisory committee, you will need to determine which skills are most valuable in your community as they pertain to the standards. For example, identifying range grasses may not be a valuable skill in some communities, but identifying crop plants may be a critical skill. Chances are, both of these skills would pertain to the same standard, but only one might be used due to differences in local values. In this model, the enablers are listed in a logical sequence in descending order with the most basic enablers listed first. You might also notice that for many of the enablers if you were to add an "ing" to the first word in the sentence, it becomes a job or lesson title.

Probably the biggest key to the success of a standards based curriculum is the enablers. If enablers are written correctly, they accomplish three purposes. The most important purpose is to teach higher level skills in agriculture. Many of us are finding that in order to attract an keep quality students in our programs, we must crank our level of instruction up a notch. A challenging set of enablers for a standard accomplishes this purpose. Since these enablers were written with industry input and validated by industry, we are confident that they can bring any program up to speed with the changes and challenges facing the industry of agriculture. Secondly, a well planned and thought out standards based curriculum allows for the integration of academic and vocational education. Finally, a challenging set of enablers may allow programs to articulate credit to post-secondary institutions for standards attained in high school. In order for this to happen, we must first write standards and enablers which are of adequate rigor to assure post-secondary institutions that our students are meeting the same requirements that they would in their classes.

The final component of a standard based curriculum is authentic assessment. Authentic assessment is a means of determining what a student knows and is able to do. If we look at knowledge in three levels as understanding, application, and synthesis, we can understand how authentic assessment may test a student's level of knowledge. Understanding, the most basic level of knowledge we will look at, requires that the student explain a problem, while application may require that the student solve the problem. Synthesis may require that the student solve the problem in several different ways by manipulating variables in the problem. Assessments, in this situation, are tools which are designed to test the student's skills to verify that he/she has developed the necessary skills required by the standards. Authentic assessment may include such things as written tests or group and individual projects. The key to effective authentic assessment is that it must test students using the highest level possible. For example, if a standard says that a student is to be an effective communicator, a written assessment on the types of speeches would not be acceptable if it were possible for the student to research, prepare and present a speech which would prove him or her to be an effective communicator. As has been stated before, authentic assessment is nothing new to agricultural education and we don't need to reinvent the wheel, rather we need to see that this type of assessment remains at the forefront when we evaluate our students.

Suggested Standards in Agriculture Education by Area and Suggested Grade Level

Agricultural Mechanics

AM 11/12.1	The student will identify a safe work environment and demonstrate safe practices
AM 11/12.2	The student will be able to develop, interpret, and read plans and/or blueprints as well as read and interpret technical manuals
AM 11/12.3	The student will develop products which have a practical purpose and reflect craftsmanship.
AM 11/12.4	The student will demonstrate how to be a cooperative contributor who participates effectively to accomplish a group activity in agricultural mechanics.
AM 11/12.5	The student will demonstrate the use of current technology and principles of ag mechanics.
AM 11/12.6	The student will gain skills in agricultural mechanics through practical experience.

Agricultural Business

AB 11/12.1	The student will possess a knowledge of business ethics.
AB 11/12.2	The student will be able to communicate a knowledge of current agricultural issues.
AB 11/12.3	The student will be able to formulate and analyze financial records and use information for evaluation and planning.
AB 11/12.4	The student will understand the influences of the agricultural economy and its influence on the overall economy.
AB 11/12.5	The student will gain skills in agricultural business operation through practical experience.
AB 11/12.6	The student will demonstrate teaming skills through problem solving activities in agricultural business management.

Agricultural Science

AS 11/12.1	The student will demonstrate/ communicate an understanding of current issues relating to agri-science.
AS 11/12.2	The student will gain practical experience in agriscience through laboratory and field work.
AS 11/12.3	The student will demonstrate an understanding of physiological processes in agriculturally important animals.
AS 11/12.4	The student will demonstrate an understanding of physiological processes in agriculturally important plants.
AS 11/12.5	The student will demonstrate teaming skills through problem solving activities in agriscience.
AS 11/12.6	The student will demonstrate the use of current technology.

Environmental Science

ES 11/12.1	The student will demonstrate the ability to understand and solve environmental science related tasks.
ES 11/12.2	The student will demonstrate the ability to use computer resources
ES 11/12.3	The student will demonstrate understanding of and ability to use current environmental lab and field technology and instrumentation to study and resolve an environmental problem
ES 11/12.4	The student will gain practical experience within the field of environmental science through work experience.
ES 11/12.5	The student will work effectively in teams in group problem solving activities addressing some specific environmental problem

ES 11/12.6	The student will communicate an understanding of work and environmental ethics within the industry, the community, the region, and internationally.
ES 11/12.7	The student will understand the relationships between, and impacts of, industrial and agricultural practices on environmental systems and natural resources.
ES 11/12.8	The student will be able to complete elementary environmental and/or ecological assessment activities.
ES 11/12.9	The student will know and understand the processes and interactions of Earth's major systems and be able to identify, interpret and utilize this understanding in a multi-disciplinary approach to environmental problem solving.
ES 11/12.10	The student will demonstrate understanding of the principles of natural resource management in the context of systematics.
ES 11/12.11	The student will demonstrate knowledge of legal and administrative structures which affect natural resource and environmental planning and management.

Agriculture Education II

AG II 10.1	The student will select an agricultural career of interest for further development and study.
AG II 10.2	The student will implement plans for improvement of the SAE program.
AG II 10.3	The student will demonstrate the use of computers.
AG II 10.4	The student will demonstrate communication skills by selecting, planning, and leading a discussion on an agricultural topic.
AG II 10.5	The student will demonstrate skills in ag mechanics through small group work in project construction.
AG II 10.6	The student will demonstrate proficiency in arc and oxyacetylene welding as evidenced by the completion of quality lap, butt and tee welds and cutting processes.
AG II 10.7	The student will demonstrate power tool safety practices.
AG II 10.8	The student will demonstrate an understanding of the bases of livestock selection.
AG II 10.9	The student will demonstrate an understanding of soil fertility and its effect on crop production.
AG II 10.10	The student will identify the major crop and weed plants of Colorado.
AG II 10.11	The student will identify safe agricultural chemical use practices.
AG II 10.12	The student will participate in the operation of the FFA Chapter.

Agriculture Education I

AG I 9.1	The student will comprehend the scope of careers available in agriculture.
AG I 9.2	The student will prepare and implement plans for and SAE program.
AG I 9.3	The student will recognize computer applications in agriculture.
AG I 9.4	The student will develop skills in speech communication.
AG I 9.5	The student will develop ag mechanics skills through small carpentry project construction.
AG I 9.6	The student will describe and demonstrate arc and oxyacetylene welding practices.
AG I 9.7	The student will understand his/her role in the FFA Organization.
AG I 9.8	The student will demonstrate power tool safety practices.
AG I 9.9	The student will identify the major breeds of livestock.
AG I 9.10	The student will identify the major crop and weed plants of the local community.
AG I 9.11	The student will demonstrate safe operation of tractors.

Standard: AM 11/12.1 - The student will identify a safe work environment and demonstrate safe practices

Rubric:

4	3	2	1
I always complete safety tests without error.	I always complete safety tests without error after further study following the first test.	I complete safety tests without error after considerable further study and require several attempts to do so.	I seldom complete safety tests without error even if I review following each test.
I always maintain a safe working area and assist others in keeping their work areas safe.	I consistently maintain a safe work area and assist others in keeping their work areas safe when requested to do so.	I maintain a safe work area when requested to do so.	I seldom maintain a safe work area even if I am reminded.
I always follow approved safety practices when using the ag mechanics facility and encourage others to do the same.	I always follow approved safety practices when using the ag mechanics facility.	I follow approved safety practices when using the ag mechanics facility after being reminded.	I occasionally follow approved safety practices when using the ag mechanics facility

Sample Enablers:

	Understand emergency procedures for the ag-ed facility
cm	Store tools and equipment properly
cm,rd	Understand and use established shop procedures (policies).
Oc	Organize and maintain a clean, orderly work environment.
	Identify tools used in advanced agriculture mechanics skills
Cm,oc	Understand and demonstrate safe use of tools and power equipment.
Oc	Use appropriate personal safety equipment (coveralls, safety glasses, footwear).
Oc	Demonstrate safe electrical practices.
Oc	Use emergency equipment (fire extinguisher, fire blanket, eye wash).
Cm,rd	Interpret and comply with Material Safety Data Sheets.
	Understand OSHA requirements as they relate to the farm shop
Cm,rd	Interpret information on labels and signs.
Oc	Use proper lifting and carrying techniques.
Cm,sc	Store flammable materials.
Oc	Identify safety zones around equipment.
Cm	Identify proper tools for job requirements.
Oc	Understand tractor safety.
Oc	Understand refueling safety.
Oc,cm	Conduct a farm safety assessment (CSU Extension)
sc,cm	Identify disposal methods for common hazardous agricultural materials

Sample Assessments:

Daily lab and shop grades based upon performance and constant observation
Completion of written general shop safety test with 100% accuracy
Completion of written safety test pertaining to fire safety with 100% accuracy
Completion of written safety test pertaining to electrical safety with 100% accuracy
Completion of written safety tests pertaining to each piece of power equipment with 100% accuracy
Successful completion of a fire drill and evacuation exercise

Identify safe handling, health precautions, and proper disposal directions on a Material Safety Data Sheet

Standard: AM 11/12.2 - The student will be able to develop, interpret, and read plans and/or blueprints as well as read and interpret technical manuals

Rubric:

4	3	2	1
I always utilize a written plan when conducting project work in ag mechanics.	I usually utilize a written plan when conducting project work in ag mechanics.	I utilize a written plan when conducting project work in ag mechanics when required to do so.	I seldom follow a written plan when conducting project work in ag mechanics.
I always utilize available resource materials in solving problems in ag mechanics.	I utilize available resource materials in solving problems in ag mechanics when directed to do so.	I seldom use my own initiative to seek solutions by utilizing available resources in ag mechanics.	I always use trial and error to solve problems in ag mechanics rather than consulting resources.
I develop a written plan for ag mechanics project work when no such plan exists.	I modify existing written plans for ag mechanics project work to suit my needs.	I utilize existing written plans for ag mechanics project work.	

Sample Enablers:

rd,cm	Read and interpret equipment operator's manuals
rd,cm	Read and interpret equipment service manuals
rd	Read blueprints
cm	Develop a procedure list
m,cm	Figure a bill of materials
m	Develop a working drawing
m	Estimate the cost of a project
rd	Read a schematic diagram

Sample Assessments:

Complete an information sheet on a small gas engine or piece of equipment
Develop a working drawing, fabrication procedure list, and bill of materials
Develop a written estimate and fabrication procedure list from a blueprint

Standard: AM 11/12.3 - The student will develop products which have a practical purpose and reflect craftsmanship

Rubric:

4	3	2	1
I always complete useful ag mechanics projects in a timely manner.	I usually complete useful ag mechanics projects in a timely manner.	I sporadically complete useful ag mechanics projects in a timely manner.	I seldom complete useful ag mechanics projects in a timely manner.
My product meets all of the expectations of a high quality product.	My product meets most of the expectations of a high quality project. After revision, my project meets all expectations.	My product meets most of the expectations of a high quality product only after considerable revision and reworking.	My product meets few of the expectations of a high quality product even after revision.

Sample Enablers:

wr,cm	Develop and use a procedure list
wr,cm	Determine a timeline for project construction
cm	Identify and correct project defects using approved methods
oc	Demonstrate time saving habits
cm,m	Select a project and design a project plan
	Use appropriate squaring tools
wr,cm	List tools needed to complete a project
	Distinguish between English and metric measurement units
m	Accurately measure building materials (i.e. steel, wood, concrete, etc.)
cm	Determine processes needed for project completion (ex: GMAW vs. SMAW)
	Select metal materials by weight
cm	Select appropriate materials
m	Construct a plumbing project
m,cm,oc	Construct an ag mechanics project utilizing a variety of processes and materials
wr,m	Survey the community for ag mechanics projects needs

Sample Assessments:

Construct an ag mechanics project

Standard: AM 11/12.4 - The student will demonstrate how to be a cooperative contributor who participates effectively to accomplish a group activity in agricultural mechanics.

Rubric:

4	3	2	1
I always stay on task and take whatever role is needed to help the group accomplish its goal.	I usually stay on task and take an assigned role to help the group do well.	I sometimes must be reminded to stay on task and need assistance to determine my role in the group.	I consistently require a reminder to stay on task.
I participate without being asked and encourage others to participate.	I participate in group work without being asked.	I require some encouragement to participate in group activities.	I seldom contribute fully in group activities.
I consistently assume a leadership role in a group.	I frequently assume a leadership role in a group.	I occasionally assume a leadership role in a group.	I seldom assume a leadership role in a group.

Sample Enablers:

oc	Respect, accept and work with all individuals in the workplace
oc	Plan a team project and identify individual member's responsibilities
oc	Perform engine disassembly
oc	Perform engine assembly
m,oc	Lay out a foundation
m,oc	Lay out a fenceline
m,oc	Operate a transit
m,oc	Use a line level
cm	Evaluate your own performance as a member of a group
cm	Plan and construct a BOAC project
m	Measure land
m,oc	Pour cement
cm	Conduct a farm safety assessment
m,cm,oc	Design and construct an irrigation system

Sample Assessments:

Build a storage shed as a group project
Build a trailer as a group project
Rebuild an engine as a group project
Construct/carry out a BOAC group project
Have students evaluate themselves and their team members at the conclusion of the project

Standard: AM 11/12.5 - The student will demonstrate the use of current technology and principles of ag mechanics.

Rubric:

4	3	2	1
I utilize appropriate technology to improve my product.	I consistently utilize appropriate technology to improve my product.	I utilize appropriate technology to improve my product after considerable directions.	I do not utilize appropriate technology to improve my product.
I utilize my own resources and technological skills to solve problems prior to seeking assistance.	I usually utilize my own resources and technological skills to solve problems prior to seeking assistance.	I sometimes utilize my own resources and technological skills to solve problems prior to seeking assistance.	I consistently rely on others to solve problems in ag mechanics.

Sample Enablers:

Farm Power

oc	Disassemble, repair, and reassemble a small gas engine
oc	Service ignition system *Install/adjust breaker points*
oc	Service exhaust system
oc	Service cooling system
oc	Service lubrication system
oc	Service fuel system
oc	Understand carburetion
cm	Understand engine nomenclature and operating principles
cm	Troubleshoot engines
cm	Understand requirements for engine storage
oc	Service hydraulic systems
oc	Identify tire care procedures
oc	Service wheel bearings
cm	Understand oil classification
oc	Select and service spark plugs
cm	Determine battery needs
oc	Service batteries
cm	Determine maintenance schedules
oc	Hitch equipment
oc	Start and stop diesel engines
oc	Perform tractor prechecks
oc	Operate a tractor safely
oc	Identify tractor electrical components
oc	Identify electronic equipment components and their functions

Welding

cm,oc	Selection and use of welding equipment and materials
oc	Complete the following welds using the GMAW and SMAW processes: vertical up, vertical down, overhead, and horizontal
oc	Weld cast iron
oc	Weld stainless steel
oc	Weld aluminum
oc	Hardface steel
oc	Control distortion

oc	Braze mild steel
cm	Identify metal
oc	Identify methods of cutting metal
m,oc	Cut metal to size and shape
m,oc	Construct welding jigs and templates

Concrete

m	Estimate quantities of material for a job
	Layout a building site using a transit and batterboards
m,oc	Lay out, set, and treat forms
m,oc	Construct support forms
	Calculate cement slump
	Identify material proportions for concrete
m,oc	Mix and pour cement
oc	Finish cement
m	Reinforce concrete
oc	Set anchors in concrete
oc	Lay concrete blocks
m	Determine appropriate admixtures
cm	Understand different applications/uses for concrete
oc	Lay brick and cinderblock
oc	Drill and place anchors in concrete

Carpentry

	Layout a building site using a transit and batterboards
m,oc	Lay out and design a building
r.cm	Identify local building permit requirements
r,cm	Identify requirements of the Uniform Building Code
t	Utilize computer aided design programs in designing a structure
r,cm	Define construction terminology
cm	Select construction materials
m	Estimate materials and costs
	Place/attach sill plates and joists
m,oc	Frame *and plumb* a floor, roof, and wall
m,oc	Frame window and door openings
m,oc	Build trusses
	Cut and install common, hip, valley, jack and lookout rafters
m,oc	Apply subfloor/subroof
m,oc	Roof a building
m,oc	Select appropriate insulation materials
	Select and apply appropriate waterproofing materials and vapor barriers
m,oc	Apply siding and sheathing
m,oc	Install doors and windows
	Install, tape and texture drywall
m,oc	Trim and paint a building
m,oc	Select and mix paint
oc	Apply paint with low and high pressure sprayers
t,m,oc	Set up transit/farm level
m	Measure elevation
m	Lay out a contour line

Electricity

oc	Identify electrical components
	Identify appropriate electrical testing devices
m,oc	Identify wire types, sizes and uses
	Make appropriate wire splices
r,cm	Understand circuit theory and design
	Identify series and parallel circuits
m	Calculate the cost of electrical power
oc	Wire a single pole switch, 3 way switch, duplex outlet and light fixture
	Test an electrical circuit using the appropriate testing device
	Bend and fasten conduit and BX cable
oc	Start, stop and install electric motors
oc	Identify and select electric motors
r,cm	Understand practical applications of the National Electric Code
cm	Identify overcurrent devices and applications
sc,cm,	Understand/determine electrical charges

Plumbing

Identify/select plumbing materials and their applications
Identify/select plumbing fittings
Identify plumbing tools and their uses
Understand the Uniform Building Code as it applies to simple plumbing projects
Sweat joints in copper pipe
Identify the different types of plastic pipe and their applications
Cut and thread galvanized pipe
Cut and thread steel pipe
Cut, prep, and glue plastic pipe
Install flare nuts and compression fittings
Identify uses for assorted valves
Calculate the required slope of waste pipe
Measure line flow in gallons per minute

Painting

Understand surface preparation requirements for common building materials/substrates
Select the correct paint for common substrates
Select the correct primer for common substrates
Understand methods of paint application
Apply paint with a high pressure paint gun
Apply paint/stain with a high volume/low pressure (HVLP) paint gun
Apply paint with an airless sprayer
Clean paint brushes, rollers, guns and sprayers
Identify correct solvents, thinners and admixtures/stabilizers

Hydraulics

Identify hydraulic system components
Recognize safe procedures for using/servicing hydraulic equipment
Attach and operate hydraulic equipment
Select hydraulic fluids
Replace O rings in a hydraulic system
Locate and stop leaks in a hydraulic system
Drain and flush a hydraulic system
Bleed a hydraulic system
Replace line and hose connections in a hydraulic system
Troubleshoot a hydraulic system

Farm

Machinery

Locate the proper service manual for a given piece of equipment
Identify the different categories of farm equipment
Describe the basic types of work performed by each category of farm equipment
Change oil and oil filters
Change air and fuel filters
Drain and refill transmissions and differentials
Maintain and service batteries
Calibrate sprayers
Determine proper spray patterns
Calibrate planters
Calibrate grain drills
Prepare equipment for storage
Calibrate a fertilizer spreader
Identify 6 causes of engine failure
Service the radiator and cooling system
Service and adjust brakes
Service and adjust clutches
Identify engine by fuel type
Adjust drawbar height
Attach drawbar mounted equipment
Attach 3 point mounted equipment
Determine wheel and suitcase weight requirements
Adjust wheel spacing
Calculate wheel slippage
Determine horsepower requirements for farm equipment

Irrigation Systems

Start, stop and service a deep well turbine pump
Understand applications, operating procedures and service procedures for deep well turbine, low lift, and booster pumps
Calculate the amount of water needed for a field to be planted to a specified local crop
Determine motor and pump efficiency levels
Understand applications of furrow, contour furrow, contour ditch, level border, center pivot, side-roll and surge irrigation systems
Identify field irrigation system components
Measure the amount of water applied by means of a weir or flume
Identify control systems (pump timers, waterman valves, etc.) and their applications
Understand local requirements for irrigation scheduling
Pull a level or contour ditch
Lay out gated pipe
Determine siphon tube size requirements
Determine head requirements for soil type, crop, and length of run
Select the correct irrigation system based on affordability, soil type, crop, and topography

Sample Assessments:

Rebuild a small gas engine
Complete coupon welds (butt, lap, and tee in horizontal, vertical up and vertical down positions using arc and oxyacetylene processes
Pour a cement pad
Construct a storage shed
Build a dummy wall

Wire a single pole switch, *three way switch,* duplex outlet, and light fixture according to the NEC
Construct a metal fabrication project
Perform the 10 hour service procedures on a tractor
Hitch an implement to a tractor
Shoot elevations with a transit
Square a mock building site with batterboards and determine needed cuts and fill with a transit
Construct a lawn sprinkler
Paint an ag mechanics project
Attach hydraulic equipment
Service a hydraulic system

Standard: AM 11/12.6 - The student will gain skills in agricultural mechanics through practical experience.

Rubric:

4	3	2	1
I conduct a realistic SAE program which may lead to future employment in an ag mechanics occupation.	I conduct a realistic SAE program which may lead to future employment in an agricultural occupation.	I conduct an SAE program which lacks either realism or scope yet may lead to further employment in an agricultural occupation.	I conduct an unrealistic SAE program which lacks size and scope.
I always maintain a complete, up to date recordbook.	I consistently maintain a complete, up to date recordbook.	I infrequently maintain a complete, up to date recordbook.	I seldom have a complete, up to date recordbook.
I actively seek out job shadowing experiences in ag mechanics.	I require encouragement to seek out job shadowing experiences in ag mechanics.	I seek out job shadowing experiences in ag mechanics only when required to do so.	I do not seek out job shadowing experiences in ag mechanics.

Sample Enablers:

cm,wr,m	Maintain an SAE recordbook for use in analyzing the enterprise for efficiency
cm	Schedule regular SAE visits
oc	Construct projects relating to the SAE program
cm	Explore career opportunities in ag mechanics
oc	Complete a job shadowing experience
wr	Develop a resume and cover letter
wr	Complete an employment application
sp	Interview for a job
cm	Plan a field trip to an ag mechanics business
cm	Tour a post-secondary ag mechanics program
m,wr,cm	Complete proficiency award application in ag mechanics

Sample Assessments:

Complete and update SAE recordbooks on a monthly basis
Complete the job interview process (resume, application, interview)
Complete a job shadowing experience
Complete the proficiency application and/or State FFA Degree application
Complete a major project in agricultural mechanics

Standard: AB 11/12.1 - The student will possess a knowledge of business ethics.

Rubric:

4	3	2	1
I always exhibit ethical behavior in my interactions with my fellow students.	I consistently exhibit ethical behavior in my interactions with my fellow students.	I usually exhibit ethical behavior in my interactions with my fellow students.	I seldom exhibit ethical behavior in my interactions with my fellow students.

Sample Enablers:

oc	Identify and evaluate employer expectations regarding performance, work habits, attitude, personal appearance and hygiene	2
cm,oc	Distinguish between the skills and traits contributing to agribusiness employee success and failure	2
cm	Understand employment practices	1
sp,cm	Understand telephone etiquette	2
cm	Understand principles of labor efficiency	1
cm	Understand labor relations	1
oc	Utilize official dress at relevant functions	
sp,oc	Demonstrate effective public relations skills	

Sample Assessments:

Successfully complete a cooperative placement SAE program
Complete a self-inventory
Interview agribusiness personnel regarding the importance of sound ethic in business

Standard: AB 11/12.2 - The student will be able to communicate a knowledge of current agricultural issues.

Rubric:

4	3	2	1
I explain the pros and cons of complex issues relating to agriculture in a manner that my fellow students can understand.	I consistently utilize appropriate technology to solve complex problems and to arrive at a solution.	I utilize appropriate technology to solve complex problems after considerable direction is given.	I do not utilize appropriate technology to solve complex issues.
I demonstrate my knowledge of agricultural issues in a manner which my fellow students can understand by utilizing verbal and written means.	I usually utilize my own resources and technology to solve complex problems prior to seeking assistance.	I sometimes utilize my own resources and technological skills to solve problems prior to seeking assistance.	I consistently rely on others to solve problems in ag business.

Sample Enablers:

sp,cm	Present an extemporaneous and/or prepared public speech on an agricultural topic	5
wr	Compose a business letter and office memorandum	2
wr	Write a position paper on an agricultural topic	
t,cm	Collect and organize information from the Internet, satellite information services, library databases, scientific journals, magazines, newspapers and/or other current media	2
cm	Understand legislative processes as they relate to agriculture	
cm	Understand farm legislation	
cm,rd	Identify government legislation and regulations and their effects on agriculture	
cm	Understand water law	
cm	Understand wastewater requirements	
rd,cm	Review Ag-Ed Today on a daily basis	
cm	Understand the implications of Workman's Comp regulations	
cm	Understand property taxes	
cm	Understand the income tax structure	
cm	Understand the environmental impact of agriculture	
sc,cm	Identify animal welfare issues	
sc,t	Understand biotechnology	
cm	Understand grazing issues	
cm	Identify the impact of urbanization on agriculture	
cm	Identify landowner's rights issues	
cm	Identify the legal aspects of open range	
cm	Identify local groundwater issues	
sp,cm	Present a Food For America Program	

Sample Assessments:

Present a 3-5 minute extemporaneous speech on a current issue in agriculture
Present a 6-8 minute prepared speech on a current issue in agriculture
Write a position paper on an agricultural topic
Periodic quizzes on current agricultural issues

Standard: AB 11/12.3 - The student will be able to formulate and analyze financial records and use information for evaluation and planning.

Rubric:

4	3	2	1
I synthesize information derived from financial records for the purpose of analyzing the efficiency of an enterprise as it relates to enterprise planning.	I understand the information derived from financial records and can use that information to make management decisions.	I am able to complete financial records but need assistance to analyze records.	I cannot complete financial records or understand the information generated from those records.

Sample Enablers:

m,oc	Identify the components of a farm/agribusiness accounting system
m,cm	Develop and utilize inventories and depreciation schedules
cm	Distinguish between fixed and variable costs
cm	Distinguish between types of assets and liabilities
cm	Understand purchasing procedures
m,cm	Complete and analyze cash flow projections, income statements, and balance sheets
wr,m	Complete a loan application
cm	Understand the 5 c's of credit
m,cm	Use financial measures (ratios and trends)
m,cm	Determine capital debt repayment capacity
rd,wr	Determine requirements of contracts
m	Develop a partial budget
m	Develop an enterprise budget
m	Develop a whole farm budget
m	Calculate cost of credit
cm	Understand credit risks
m	Establish break even cost
t,m	Utilize computer accounting and analysis software
m	Understand cash and accrual accounting methods
m	Set up and use a general ledger and chart of accounts
cm	Distinguish between supplementary, complementary, competitive, and independent enterprises
cm	Develop a farm business plan
m,cm	Understand loan repayment
m,cm	Understand types of interest
m,cm	Understand depreciation
m,cm	Understand taxation
cm	Describe the types of tax credits
cm	Understand sources of credit
cm	Understand estate planning
cm	Understand property deeds
cm	Understand business structure
cm	Define the types of insurance
cm	Determine insurance needs
cm	Understand liability laws relating to agriculture
cm	Describe the property rights of landowners
cm	Identify the legal requirements of contracts
cm	Understand leases
cm	Understand government programs
m,wr,cm	Complete proficiency award application
m,wr,cm	Complete State FFA Degree Application

Sample Assessments:

Complete an income statement, cash flow projection, and balance sheet
Complete a credit application
Utilize financial ratios to determine the health of a business
Develop a farm business plan
Complete a proficiency and/or State FFA Degree application

Standard: AB 11/12.4 - The student will understand the influences of the agricultural economy and its influence on the overall economy.

Rubric:

4	3	2	1
I consistently demonstrate my knowledge of the agricultural economy through active discussion, questioning, and listening.	I can demonstrate my knowledge of the agricultural economy through discussion.	I listen to discussions of the agricultural economy but cannot demonstrate my understanding of the issues.	I do not understand how the ag economy functions.
I demonstrate my understanding of the law of supply and demand in all applicable class activities.	I describe the law of supply and demand.	I partially describe the law of supply and demand.	I do not understand the law of supply and demand.

Sample Enablers:

m,cm	Understand the law of supply and demand
cm	Illustrate how supply and demand influence price
cm	Identify major economic indicators (GNP, GDP)
m,cm	Understand the law of diminishing returns
cm	Utilize raw statistical data (U.S. Census of Agriculture, Colorado Agricultural Statistics)
m,cm	Determine the economic impact of a marketing chain
cm	Define internal and external trends and issues which affect local markets
wr,sp,cm	Explain the economic importance of world trade to U.S. agriculture
m,cm	Identify the economic costs of environmental regulations
cm	Understand cooperatives
wr,cm	Develop a marketing plan
cm	Understand market alternatives
m,cm	Understand the futures market
cm	Understand forward contracts
m,cm	Determine livestock shrinkage loss
cm	Identify storage requirements for grain
cm	Understand business organizations

Sample Assessments:

Develop a marketing plan for an agricultural business
Complete the Commodity Challenge activity
Complete the FFA Agricultural Marketing activity

Standard: AB 11/12.5 - The student will gain skills in agricultural business operation through practical experience.

Rubric:

4	3	2	1
I conduct a realistic SAE program which may lead to future employment in agribusiness.	I conduct a realistic SAE program which may lead to future employment in an agricultural occupation.	I conduct an SAE program which lacks either realism or scope yet may lead to further employment in an agricultural occupation.	I conduct an unrealistic SAE program which lacks size and scope.
I always have a complete, up to date recordbook.	I consistently maintain a complete, up to date recordbook.	I infrequently maintain a complete, up to date recordbook.	I seldom have a complete, up to date recordbook.
I actively seek out job shadowing activities in agribusiness.	I require encouragement to seek out job shadowing experiences in ag business.	I seek out job shadowing experiences in ag business only when required to do so	I do not seek out job shadowing experiences in ag business.

Sample Enablers:

wr,m,cm	Maintain an SAE recordbook for use in analyzing the enterprise for efficiency
wr,m	Develop an entrepreneurship program
wr,cm	Develop a business plan
oc	Schedule regular SAE visits
oc	Explore career opportunities in agribusiness
oc	Complete a job shadowing experience in agribusiness
wr,oc	Develop a resume and cover letter
wr	Complete a job application
oc	Obtain occupational information
oc	Understand job requirements
oc,cm	Prepare for an interview
oc	Evaluate personal traits for job requirements
sp,oc	Interview for a job
oc	Plan a field trip to and agricultural business
oc	Participate in CSU Opportunity Day
m,wr	Complete a proficiency award application
oc	Participate in or conduct a school career fair

Sample Assessments:

Complete the job application process (resume, application, interview)
Complete a job shadowing experience in an ag business
Develop and maintain a school based agricultural business
Successfully complete an SAE program in an ag business area
Complete and update an SAE recordbook on a monthly basis

Standard: AB 11/12.6 - The student will demonstrate teaming skills through problem solving activities in agricultural business management.

Rubric:

4	3	2	1
I always stay on task and take whatever role is needed to help the group reach its goal.	I consistently stay on task and take different roles in the group.	I need encouragement to stay on task and participate in group activities.	I do not stay on task and seldom participate in group activities.
I participate without being asked and encourage others to participate.	I participate in group activities without being asked.		
I consistently assume a leadership role in a group.			

Sample Enablers:

cm	Identify situations where compromise is necessary
sp,wr,cm	Give and receive constructive criticism
cm	Conduct a sales/promotionactivity
sp	Prepare and present a group presentation
oc	Participate in carrying out the POA
m,cm	Participate in the Commodity Marketing Activity
cm	Conduct an ag product marketing activity

Sample Assessments:

Complete the FFA Ag Marketing Activity
Evaluate your performance as a group member
Evaluate the performance of others in your group
Develop and present a business plan as a group activity
Develop and present a marketing plan as a group activity

Standard: AS 11/12.1 - The student will demonstrate/ communicate an understanding of current issues relating to agriscience.

Rubric:

4	3	2	1
I explain the pros and cons of complex issues relating to agriscience in a manner that my fellow students can understand.	I identify the pros and cons of complex issues relating to agriscience and communicate those traits to my fellow students.	I identify current issues relating to agriscience.	I do not identify substantially the current issues relating to agriscience.

Sample Enablers:

sp	Present an extemporaneous and/or prepared public speech on an agricultural topic
wr	Write a research paper and/or prepare a display on an agricultural topic
cm	Collect and organize information from the Internet, satellite information systems, library databases, scientific journals, magazines, newspapers, and/or other current media
wr	Write a position paper on an agriscience issue
wr	Write a news article on an agricultural topic
cm,sp	Present a Food For America Program
cm	Review Ag-Ed Today on a daily basis

Sample Assessments:

Present a 6-8 minute prepared speech on an agricultural topic
Present a 3-5 minute extemporaneous speech on an agricultural topic
Write a position paper on an agricultural topic
Periodic quizzes on current ag issues

Standard: AS 11/12.2 - The student will gain practical experience in agriscience through laboratory and field work.

Rubric:

4	3	2	1
I understand and explain the factors which affect the growth and development of plants and animals.	I conduct a realistic SAE program which may lead to future employment in an agricultural occupation.	I conduct an SAE program which lacks either realism or scope yet may lead to future employment in an agricultural occupation.	I conduct an unrealistic SAE program which lacks size and scope.
I apply economic principles to the growth and development processes of plants and animals.	I consistently maintain a complete, up to date recordbook.	I infrequently maintain a complete, up to date recordbook.	I seldom have a complete, up to date recordbook
I always utilize all current resources in solving problems in agriscience.	I require encouragement to seek out job shadowing experiences in agriscience.	I seek out job shadowing experiences in agriscience when required to do so.	I do not seek out job shadowing experiences in ag mechanics.

Sample Enablers:

m,oc,t	Analyze soil
m,oc,t	Analyze water
oc,t	Conduct plant tissue analysis
t	Conduct laboratory experiments utilizing plants and animals
oc	Conduct a job shadowing experience
wr	Utilize proper research reporting format
cm,m	Determine fertilizer requirements
cm,m	Select an irrigation method
cm,m	Utilize scientific data to formulate best management practices (BMP)
cm	Understand the scientific method of problem solving
cm	Analyze rations for efficiency
cm	Design an animal health plan
cm	Understand livestock grades and grading
cm	Evaluate live animals
cm	Identify methods of selection
oc	Identify major plant diseases and pests
oc	Castrate swine, beef or sheep
oc	Control parasites in livestock
cm,oc	Recognize and control diseases in livestock
m,oc	Measure land and calculate acreage
oc,wr,m	Write legal land descriptions
oc	Groom livestock
oc	Identify livestock exhibition techniques
oc	Collect a soil sample
cm	Interpret a soil test report
cm	Evaluate a range site
cm	Determine stocking rates

oc	Participate in CSU Opportunity Day
m,oc	Complete a proficiency award application

Sample Assessments:

Conduct a nutrient test on crop plants and organize data to make conclusions
Conduct a nutrient test on a soil sample
Conduct a nutrient test on a feed sample
Evaluate market livestock- live and carcass
Measure land and calculate area

Standard: AS 11/12.3 -The student will demonstrate an understanding of physiological processes in agriculturally important animals.

Rubric:

4	3	2	1
I explain the interrelationships which exist between physiological processes in livestock.	I identify and explain the functions of physiological processes in livestock.	I identify the important physiological processes in livestock.	I cannot identify the important physiological processes in livestock.

Sample Enablers:

cm,sc	Understand the functions of the digestive system
cm,sc	Understand the digestion and absorption of feeds by livestock
cm,sc	Understand the functions of the major body systems (circulatory, respiratory, nervous, lymphatic, etc.)
cm,sc	Determine nutrient requirements for beef, swine, sheep, and dairy
cm,sc	Determine the sources and uses of nutrients
cm,sc	Identify vitamins, minerals and essential amino acids, their sources and functions
t,m,sc,cm	Develop a balanced ration
sc,cm	Determine rations for different classes of livestock
sc,cm	Identify feed additives and their functions
sc,cm	Identify proper feed preparation techniques
sc,cm	Understand the use of growth regulators
m,sc.cm	Evaluate rations using the net energy method
sc,cm	Identify the symptoms of and causes of nutritional diseases
sc	Identify the parts of the male and female reproductive tracts and their functions
sc	Understand principles of inheritance
sc,cm	Understand protein synthesis
sc,cm	Understand gene interactions
sc,cm	Understand sex determination
sc,cm	Estimate genetic change
sc,cm	Determine factors affecting livestock growth and development
sc,cm	Understand artificial insemination, embryo transfer, and estrus synchronization
sc,cm	Understand production cycles
sc,cm	Identify breeding systems
sc,oc	Recognize breeds of swine, sheep and beef
cm	Understand selection principles for swine, beef, and sheep
oc,t	Identify equipment for A.I.
t,oc,cm	Understand A.I. procedures
oc	Detect heat in livestock
oc,cm	Determine facility requirements for A.I.
oc	Maintain breeding records
sc,cm	Identify symptoms, causes, and treatments of common infectious diseases
sc,cm	Identify vital signs in livestock
sc,cm	Identify control methods for internal and external parasites
m,sc,cm	Calculate dosages of medications

Sample Assessments:

Develop a balanced ration
Artificially inseminate livestock
Conduct a feed trial
Develop a breeding calendar
Select/evaluate a breeding herd using performance data as a guide

Standard: AS 11/12.4 - The student will demonstrate an understanding of physiological processes in agriculturally important plants.

Rubric:

4	3	2	1
I explain the interrelationships which exist between physiological processes in agriculturally important plants.	I identify and explain the functions of physiological processes in agriculturally important plants.	I identify the important physiological processes in agriculturally important plants.	I cannot identify the important physiological processes in agriculturally important plants.

Sample Enablers:

oc,cm	Select varieties of economically important crops
oc	Identify economically important crop and weed plants and their seeds
sc,cm	Understand plant taxonomy and classification
cm	Determine weed control measures
sc,cm	Understand nutrient uptake in plants
sc,cm	Understand plant propagation and fertilization
sc,cm	Understand photosynthesis and respiration
sc	Identify plant structures and their functions
sc,cm	Understand tropic influences on plants
sc,cm	Identify plant life cycles and their importance
oc,cm	Determine harvest methods for major crops
oc,cm	Determine primary and secondary tillage methods for major crops
oc,cm	Select an appropriate irrigation method
oc,cm	Determine planting methods and procedures for major crops
sc,cm	Understand the requirements for seed germination
sc,cm	Identify sources of plant stress

Sample Assessments:

Develop a cropping plan
Conduct a field trial
Propagate plants in the greenhouse
Develop an Integrated Pest Management plan for a farm
Scout a field to identify stress factors

Standard: AS 11/12.5 - The student will demonstrate teaming skills through problem solving activities in agriscience.

Rubric:

4	3	2	1
I always stay on task and take whatever role is needed to help the group reach its goal.	I consistently stay on task and take different roles in the group	I need encouragement to stay on task and participate in group activities.	I do not stay on task and seldom participate in group activities.
I participate without being asked and encourage others to do the same.	I participate without being asked.		

Sample Enablers:

oc	Identify situations where compromise is necessary
oc	Give and receive constructive criticism
oc	Conduct a sales/promotion activity
sc,oc	Conduct a group experiment
cm,oc	Participate on judging teams

Sample Assessments:

Evaluate your performance as a group member
Evaluate the performance of others in your group
Conduct a fertility experiment on crop plants in the greenhouse
Test soil samples as a group activity
Conduct a variety trial as a group activity

Standard: AS 11/12.6 - The student will demonstrate the use of current technology.

Rubric:

4	3	2	1
I always utilize current technology to solve complex problems and to arrive at a solution.	I consistently utilize appropriate technology to solve complex problems and to arrive at a solution.	I utilize appropriate technology to solve complex problems after considerable direction is given.	I do not utilize appropriate technology to solve complex problems.
I always utilize my own resources and technological skills to solve problems prior to seeking assistance.	I usually utilize my own resources and technological skills to solve problems prior to seeking assistance.	I sometimes utilize my own resources and technological skills to solve problems prior to seeking assistance	I consistently rely on others to solve problems in agriscience.

Sample Enablers:

t,oc	Utilize computerized data entry and analysis
t,oc	Utilize soil testing equipment
t,oc	Utilize water testing equipment
t,oc	Utilize microscopes
t,oc	Utilize artificial insemination equipment
m,t,oc	Utilize tissue analysis equipment
m,t,oc	Utilize feed analysis equipment
t,oc	Access information utilizing computerized media
t,oc,cm	Interpret precision farming technology (satellite mapping)

Sample Assessments:

Test soil samples for nutrient content
Test water samples for nitrate, salinity, etc.
Test plant tissue samples for nutrient content
Test feed samples for nutrient content
Utilize a microscope to evaluate sperm viability and motility

Standard: ES 11/12.1 - The student will demonstrate the ability to understand and solve environmental science related tasks.

Rubric:

4	3	2	1
I always recognize the nature of an environmental problem and derive an appropriate solution.	I usually recognize the nature of an environmental problem after further study and derive an appropriate solution.	I recognize the nature of an environmental problem after considerable further study and can derive an appropriate solution with guidance.	I seldom recognize the nature of an environmental problem even after considerable further study and am unable to derive an appropriate solution with guidance.

Sample Enablers:

cm	Show understanding of the steps taken in field identification of an environmental problem or question that requires testing
cm	Describe the logical progression required to determine potential presence or absence of sensitive resources on site
cm	List the sequence of problem solving methodologies appropriate to the task
cm	Acquire and evaluate previous research, use and express good judgment through establishing criteria for validity based upon experience and knowledge gained in classroom and field exercises
t,oc	Select appropriate technology and geographic tools for problem assessment in the field such as Global Positioning System and Geographic Information Systems or maps such as USGS quads, Landsat Photographs, and SCS Soil Series maps
cm,oc	Acquire and evaluate various kinds of field data
sc,oc	Determine soil pH and other characteristics using commonly used tools such as field test kits and Munsell Charts
cm,oc	Become familiar with the kinds of information contained in a commercial soil test report
cm,oc	Become familiar with the kinds of information contained in professionally prepared site assessment for hazardous wastes
sc	Discuss the basics of watershed morphology and create a map of a local watershed that includes: ridgelines, hydrology by stream classification, vegetation communities, geology, soils and wildlife
t,oc,m	Conduct the following tests for water quality: biological oxygen demand, dissolved oxygen, chemical dissolved oxygen, total dissolved solids, total suspended solids, total volatile solids, total solids, chlorine, pH, organic nitrogen, ammonia, nitrate, nitrite, orthophosphate, total organic carbon, total phosphorus, total coliform, fluoride, arsenic,
t,oc	Participate in the water sampling tests such as spectrophotometer and titration
sc,wr	Discuss various concepts associated with fish and wildlife habitat relationships such as habitat components and concepts, habitat management techniques, watershed planning and management approaches
sc	Visit and assess relative use and success of habitat restoration and enhancement projects and structures undertaken by resource management agencies and private landowners
cm,oc	Collect and evaluate data on the condition of fish and wildlife habitat

Sample Assessments:

Design and perform a test or experiment which shows and understanding of the scientific method
Give an oral presentation of research methodology and findings
Given elevations and contours, render an accurate horizontal sketch or series of cross-sections of the landscape understudy

Standard: ES 11/12.2- The student will demonstrate the ability to use computer resources

Rubric:

4	3	2	1
I understand well and often utilize computer technology and equipment to solve complex environmental science problems and produce a professional report with little or no supervision or further study.	I usually understand and can utilize computer technology and equipment to solve complex environmental science problems and produce a professional report with little supervision or further study.	I can understand and utilize computer technology and equipment to solve complex environmental science problems and produce a professional report only after considerable further study.	I seldom understand and utilize computer resources of any kind to solve environmental science problems and am not able to produce a professional report without close supervision.

Sample Enablers:

t	Understand the capabilities of computer networking through the Internet or other resources
t	Access information using computerized media
cm	Organize and maintain files of information
t	Use computerized data entry and analysis
rd,cm	Organize written materials in logical fashion using standard formats as part of a project report
t,cm	Be able to create a report on an environmental science topic using word processing and computer graphics

Sample Assessments:

Produce a report using a common word processing program on a personal computer. Know the thesaurus and spell check features. Use correct grammar and sentence structure. Interpret information and present findings through a written report that identifies the major parameters involved in the formation of, and solutions to, an environmental problem
Publish a brochure on an environmental science theme using desktop publishing and graphics programs such as PageMaker, Paintbrush, Microsoft Word, WordPerfect or others

Standard: ES 11/12.3- The student will demonstrate understanding of and ability to use current environmental lab and field technology and instrumentation to study and resolve an environmental problem

Rubric:

4	3	2	1
I understand well the principles and proper use of technology and instruments to analyze environmental problems and can demonstrate this knowledge to other students with little or no supervision or further study.	I usually understand the basic principles and proper use of technology and instruments to analyze environmental problems and can sometimes demonstrate this knowledge to other students with little or no supervision or further study.	I often need help to understand the basic principles and proper use of technology. I can handle instruments with supervision. I will be able to handle the equipment with further instruction.	I need close supervision and further study before I can handle instruments in the field of laboratory. I can handle the equipment with further instruction but must be checked out on proper procedures before I can handle the equipment myself.

Sample Enablers:

t,cm,oc	Practice using field and laboratory equipment, know proper maintenance or equipment and be able to perform elementary repairs in the field and laboratory
cm,oc	Learn and follow protocol for personal and equipment safety
m	Measure objects correctly with a ruler, tape, calipers, and micrometer
m	Calculate and solve basic measurement problems such as calculation of board feet, cubic measurements and standard liquid measurements
m	Show familiarity with units of measure used by each piece of equipment or procedure
m	Differentiate between U.S. Customary and metric measurement units and be able to calculate and convert linear, areal, weight, and volumetric quantities
m	Use various methods to determine the mass and volume of regularly and irregularly shaped objects
cm,m	Understand calibration and standards involved in use of testing and monitoring equipment
t,oc	Use water quality, air quality, and soil testing and monitoring tools with precision and competence
cm,oc	Demonstrate ability to interpret results yielded by field and laboratory equipment
t,oc	Perform field equipment/computer interface for data analysis
t,oc	Discuss watershed habitat monitoring methods (measurement of sediment loads and stream temperatures) and explain reasons why the continual collection of such data is important for the management of natural resources and environmental quality
t,oc	Demonstrate the use and maintenance of electronic and mechanical measuring and metering devices such as stream flow recorder, stream temperature recorder, gauges, planimeters, levels, stadia, compass, clinometer, logger's tape, prism, and densimeter

Sample Assessments:

Research and design a monitoring plan for one of the various "non-game" populations indigenous to your area. Include baseline data in the report collected in the field.
Identify four types of water caused erosion (take photographs from local fields, no copies from textbooks allowed). Describe conservation practices that can be used for each.
Determine the acre feet of water required to efficiently irrigate 20 acres of a local crop allowing for no more than 10% surface run-off

Standard: ES 11/12.4- The student will gain practical experience within the field of environmental science through work experience

Rubric:

4	3	2	1
I participated in an appropriate SAE program which may lead to future employment in environmental science.	I participated in an appropriate SAE program which may lead to future employment in environmental science.	I participated in an SAE program.	I participated in an SAE program.
I actively pursue internship possibilities within the industry.	I am somewhat interested in internship possibilities within the industry.	I am almost ready to explore internship possibilities within the industry but need adequate supervision.	I am not ready for an internship in the industry until I have gained further academic discipline and experience under supervision.
I am reliable and self motivated.	I am fairly reliable and sometimes show initiative.	I am reliable after being reminded of its importance.	

Sample Enablers:

wr,cm	List and describe the types of supervised experience programs
cm	Obtain occupational information
cm	Establish a training plan
cm	Plan and carry out a supervised environmental science experience plan
oc	Identify skills improvement projects and supplementary exercises
t,m,oc	Set up a computerized cooperative experience recordkeeping system
oc	Complete self interest and skills inventory
oc	Identify future employment opportunities in environmental science
cm,oc	Understand employer's expectations for technicians and professionals in environmental science work
oc	Demonstrate pride in work and aspire to craftsmanship
oc	Show willingness to help and receive help from others and show respect for persons, equipment and deadlines
rd,cm	Read and listen to directions with care, show flexibility and adjust to changes

Sample Assessments:

Conduct a supervised environmental science experience program

Standard: ES 11/12.5- The student will work effectively in teams in group problem solving activities addressing some specific environmental problem

Rubric:

4	3	2	1
I always stay on task and take whatever role is needed to help the group accomplish its goal. I participate without being asked and encourage others to participate.	I usually stay on task and often take whatever role is needed to help the group accomplish its goal. I often participate without being asked.	I often stray from the task at hand but can contribute some of the time. Some group roles are not appropriate for me and I need peer encouragement to help the group accomplish its goal.	I have difficulty working with groups and can seldom contribute to the goals of the group..
I can assume a role of leadership in the group as appropriate to the group's needs.	I might assume a leadership role in the group if called upon to do so.	I seldom participate without being asked.	I seldom participate without being asked

Sample Enablers:

cm,sp	Participate as a leader on a group project
cm	Participate as a subordinate on a group project
cm,sp	Give and receive constructive criticism in a way that builds stronger teamwork
cm	Explore and practice interpersonal skills necessary to efficient team work
cm	Identify situations where compromise is necessary
cm	Learn to identify and utilize the special skills and talents of each team member, self included, on a team project
cm,oc	Understand employer's expectations for technicians and professionals in environmental science work
cm	Participate in a simulation which explores compromise and problem solving between conflicting user or special interest groups

Sample Assessments:

Participate in a simulation which explores compromise and problem solving between conflicting user and special interest groups. Write up your experience from a third person perspective, being as objective about your own and other's words and actions as if you were a newspaper reporter covering the meeting rather than participating in it.

Standard: ES 11/12.6- The student will communicate an understanding of work and environmental ethics within the industry, the community, the region, and internationally.

Rubric:

4	3	2	1
I always exhibit ethical behavior in my interactions with fellow students, instructors, and SAE supervisors.	I usually exhibit ethical behavior in my interactions with fellow students, instructors, and SAE supervisors.	I sometimes exhibit ethical behavior in my interactions with fellow students, instructors and SAE supervisors.	I seldom exhibit ethical behavior in my interactions with students, instructors, and SAE supervisors.
I understand the principles and importance of environmental ethics and can express the basic concepts of ethics without difficulty.	I understand most of the principles and the importance of environmental ethics and can express basic ethical concepts.	I don't always understand the principles and importance of environmental ethics and need more work in this area.	I don't understand the principles of environmental ethics and need considerable work in this area.

Sample Enablers:

cm	Form an individual awareness and personal ethic relative to the work place and the environment
cm	Show how individual and collective ethics affect the community, region and global environments
sp	Articulate understanding of ethics in mock orals or other simulated situations
m,oc	Plan and carry out a supervised environmental science experience program
oc	Understand employer's expectations for technicians and professionals in environmental science work
oc,cm	Discuss watershed management concepts focusing on management versus stewardship
oc,cm	Discuss water as a non-renewable resource; supply vs. demand, aquifer mining, etc.
oc,cm	Discuss policies which regulate the operation of dams for flood control, irrigation and power generation
sp,cm	Debate the ideas of cost to society for cleanup of polluted air, land and water vs. cost to business for prevention and treatment
cm	Discuss regulations pertaining to nonpoint pollution
cm,oc	Understand the economic, social, and legal factors which lead to environmental problems from global to regional in scale
s,cm,oc	Examine and discuss environmental change caused by human interaction and be able to project probable future scenarios

Sample Assessments:

Present a prepared speech on a current environmental science topic, including defensible conclusions drawn from research in various media

Standard: ES 11/12.7- The student will understand the relationships between, and impacts of, industrial and agricultural practices on environmental systems and natural resources.

Rubric:

4	3	2	1
I understand the basic concepts of interactions between human caused influences on the environment and earth's natural systems.	I can explain most of the basic concepts of interactions between human caused influences on the environment and earth's natural systems.	I can explain some of the basic concepts of interactions between human caused influences on the environment and earth's natural systems.	I have difficulty understanding and explaining the interactions between human caused influences on the environment and earth's natural systems.
I can fluently discuss the pros and cons of complex and controversial issues relating to environmental systems with fellow students.	I usually understand the major pros and cons of environmental issues.	I need more work to understand the major pros and cons of the issues.	I need considerable work to understand the major environmental issues.

Sample Enablers:

cm	Understand the economic, social, and legal factors which lead to environmental problems from global to regional in scale
cm	Examine and discuss environmental change caused by human interaction and be able to project probable future scenarios
sc	Explore environmental factors that can affect plant functions such as transpiration
sc	Discuss the concept of stress on plants and animals and the environmental factors that cause or alleviate stress
sc,cm	Identify requirements necessary for seed germination and discuss environmental factors that might decrease seed germination rates
cm	Distinguish between pest prevention, suppression, and eradication
sc,cm	Define integrated pest management and explain the differences between cultural, mechanical, biological, and chemical pest control
sc,oc	Identify and discuss the impacts of herbicides on the environment, and identify the difference between a contact and systemic pesticide and compare and contrast the environmental impacts of each
sc,cm	Describe the four toxicity categories of pesticides and the safety regulations governing them
cm,oc	Discuss the effects of wind erosion and list management procedures used to control it
cm,oc	Discuss contemporary concepts in Fish and Wildlife Management such as holistic resource management, managing for biodiversity, transitioning from game to non-game management and landscape/ecosystem planning
cm	Discuss the impact of introduced species
cm	Discuss treaties and Indian tribes and the U.S. Government and their relationships with fish and wildlife management, harvest management, and protection and restoration
cm,oc	Discuss applications of taxonomy in the field of agriculture and environmental science
m,oc	Explain the importance of fish/wildlife resource impacts on the local and regional economy
cm	Describe the ways in which supply and demand affect fish and wildlife resources

Sample Assessments:

Evaluate data on the condition of fish and wildlife habitat and present a written summary of findings

Determine the acre feet of water needed to efficiently irrigate 20 acres of a local crop

Standard: ES 11/12.8- The student will be able to complete elementary environmental and/or ecological assessment activities.

Rubric:

4	3	2	1
I consistently use the knowledge and skills that I have gained to effectively delineate the parameters of an environmental/ecological problem or area.	I often use the knowledge and skills I have gained to correctly delineate the parameters of an environmental/ ecological problem or area.	I use the knowledge and skills I have gained to delineate the parameters of an environmental/ ecological problem or area only after further study.	I require more knowledge and skills and considerable further study before I can delineate ecological/ environmental parameters.
I always understand and utilize the appropriate tools for the job.	I usually use the appropriate tools for the job.	I sometimes require assistance in using the appropriate tool for the job.	I usually require assistance and supervision in using the tools for the job.

Sample Enablers:

cm	Discuss the National Environmental Policy Act and know the parameters of environmental compliance
wrmcm	Be familiar with standard formats for presenting written findings based on field research and laboratory analysis
sc,cm	Concisely describe the environment under study from a geological, biological, hydrological and chemical standpoint
sc,cm	Know the principles of plant and animal classification (morphology, physiology and evolution)
wr,oc	Display observational skills and keep a field notebook recording observations
oc	Discuss the general approaches used to monitor various populations of fish and wildlife (e.g. mark/recapture, transect surveys, pellet groups, roadside counts, breeding bird surveys, in-stream amphibian searches, ungulate herd composition)
cm	Explain the importance of and specific methods for monitoring various indicator species
oc	Identify general methods for testing soil deficiency and/or hazardous waste
oc	Be familiar with general methods for identifying potential archeological, historical, aesthetic, or recreational resources
cm	Describe methodology used in analysis in clear, concise terms
m,sc,oc	Collect data using a variety of tools, perform field tests and assessments and represent this data using statistical processes
m,oc	Interpret results using inductive reasoning and be able to predict changes over time based upon likelihood of events
cm	Be able to form recommendations for minimizing harm, performing remediation or any combination of actions for problem solving
cm,pc	Discuss various concepts associated with fish and wildlife habitat relationships such as habitat components and concepts, habitat management techniques, watershed planning and management approaches; know the legal status of fish and wildlife law enforcement as it pertains to management and conservation of populations.
Cm	Discuss the legal status of fish and wildlife with focus on law enforcement as is pertains to management and conservation of populations
cm	Discuss the roles of existing federal and state agencies, tribes, and other entities relative to fish and wildlife management
cm	Discuss policies for designation of wilderness, primitive and roadless areas
cm	Discuss zoning issues which affect natural resources
cm	Discuss restrictions on land use for protection of threatened and endangered species and understanding the meaning and implications of associated terms such as "takings", "jeopardy", "candidate species", and "listed."
t,cm	Research federal, state and local acts that affect water, timber, and mineral resources such as the National Clean Water Act, the Surface Mining and Reclamation Act and others

Sample Assessments:

Keep a field notebook recording field observations which will be due at the end of the course
Evaluate data on the condition of fish and wildlife habitat and present a written summary of findings
Meet with or conduct a telephone interview with local agency personnel on a recent change in legislation affecting that agency. Compare that agency's past mandates and practices with what will be expected under new laws or policies. Provide a complete transcript of the interview to the instructor along with summary containing personal observations on the implications of effects of changes discussed on the environment
Prepare and initial report which defines and delineates an environmental problem using only remote sensed data. Then perform and on-site field inspection and prepare a supplementary report reflecting ground-truthing. Compare and contrast the findings of the primary report with the supplementary report.

Standard: ES 11/12.9- The student will know and understand the processes and interactions of Earth's major systems and be able to identify, interpret and utilize this understanding in a multi-disciplinary approach to environmental problem solving.

Rubric:

4	3	2	1
I can always recognize the different factors and principles which are involved in environmental problems and draw upon the skills and knowledge needed to characterize all dimensions of the problem.	I often recognize that different factors and principles are involved in environmental problems and frequently draw upon the skills and knowledge needed to characterize most dimensions of the problem.	I sometimes recognize that different factors and principles are involved in environmental problems and after further study can determine the skills and knowledge needed. I often require assistance in characterizing the dimensions of the problem.	I seldom recognize different factors and principles involved in environmental problems even after considerable study. I require assistance in making connections between disciplines and find the interconnections confusing.
I can communicate my perceptions and suggest solutions.	I usually communicate my perceptions and sometimes suggest solutions.	I can occasionally communicate my perceptions.	I am unable to communicate the basic concepts.

Sample Enablers:

sc,cm	Understand how systems interact and how disturbances in one can lead to problems in another
sp,wr	Be able to draw upon a number of disciplines and skills from many areas to work on group and individual projects
t,rd,cm	Explore library resources and other media that explain the factors that effect the distribution and characteristics of local ecosystems
cm,t	Know where and how to access natural and physical science resources to discover cause and effect linkages
wr,cm	Discuss the attributes and formation of soil horizons and sketch a profile of a soil series in your area using the USDA classification system
cm	Discuss the concept of stress on plants and animals and the environmental factors that cause or alleviate stress
t,cm	Perform field, laboratory, computer and classroom exercises designed to reflect environmental complexities
sp,wr,m,o	Show and ability to converse fluently (both orally and in writing) about the concepts and tools involved in the most common disciplines needed for environmental analysis
m,cm	Be able to analyze probabilities involved in all courses of action discussed through the use of algebra, statistics and other quantitative means

Sample Assessments:

Design, build and maintain a healthy native plant terrarium. Final grade will depend upon the vitality of your artificial ecosystem at the end of the course as well as note keeping of observations, initial plantings and soil treatments, corrective actions for emerging problems detected during the course.

Standard: ES 11/12.10- The student will demonstrate understanding of the principles of natural resource management in the context of systematics.

Rubric:

4	3	2	1
I fully understand the cyclical nature of natural resource management and can converse on the long-term versus the short-term productivity and sustainability.	I generally understand the cyclical nature of natural resources management and the principles of long-term versus short-term productivity and sustainability.	I understand somewhat the cyclical nature of natural resource management but need more study.	I cannot understand the cyclical nature of natural resource management without considerable further study.
I am familiar with the current trends and economics and their implications for earth systems.	I understand most of the implications of the current trends and economics of natural resource management.	I understand a few of the implications of the current trends and economics of natural resource management.	The implications of current trends and economics of natural resource management are not clear to me.

Sample Enablers:

sc,cm	Understand how systems interact and principles of natural and artificial fluctuations in ecological systems
sc,cm	List and discuss the principles of dynamic equilibrium, biodiversity, sustainable harvest, and ecosystem stability
sp,wr,cm	Incorporate into oral and written reports understanding of the constants, patterns and cycles in the natural world
sc,oc	Participate in field studies which describe and illustrate normal and abnormal conditions in natural systems
sc,oc	Participate in field trips to observe and become familiar with the important ecosystems in the region
t,oc	Show understanding of the role of the environmental science technician in restoring integrity to disturbed natural systems through emerging technologies
t,oc	Be familiar with old and new technologies for environmental restoration and show ability to select approaches appropriate to the situation
cm	Be able to defend decisions for recommendations based upon sound logic and investigative skills

Sample Assessments:

Prepare and curate a museum exhibit; collect and mount three beneficial insects and discuss how they are helpful; collect and mount five harmful insects and list their natural predators; collect, press and mount ten weeds common to your area (concentrate on flowering) and list insects and other herbivores which consume them. In text, or with graphics, show interrelationships.

Standard: ES 11/12.11- The student will demonstrate knowledge of legal and administrative structures which affect natural resource and environmental planning and management.

Rubric:

4	3	2	1
I know and can discuss current laws and policies on environmental compliance and how these laws and policies impact the industries of environmental science and natural resource management.	I understand many of the current laws and policies on environmental compliance and can discuss most impacts to environmental science and natural resource management.	I understand some of the current laws and policies on environmental compliance can discuss implications for the industry after further study.	I am not familiar with the current laws and policies on environmental compliance and will need considerable further study before I can discuss implications for the industry.

Sample Enablers:

cm,oc	Understand constraints on the industry presented by local, state, and federal laws
cm,oc	Understand environmental protection laws, policies, and guidelines and how environmental science workers fit within a framework of local, state and federal regulations
cm,oc	Know how laws and constraints can affect the environmental worker's decision making process when planning investigations and remediation/restoration activities
cm,oc	Know relevant safety restrictions and the regulations associated with them
cm,oc	Be familiar through classroom and field exercises with the current laws and policies involved in conservation of natural resources
cm	Be able to demonstrate knowledge of the laws in a field setting
cm,wr	Incorporate this knowledge in all reports on projects in which compliance is an issue
cm,sp	Know the reasons behind legislation and laws and be able to discuss them with understanding in a mock situation

Sample Assessments:

Standard: AG II 10.1 - The student will select an agricultural career of interest for further development and study.

Rubric:

4	3	2	1
I select a career for study, conduct an interview and prepare a report.	I select a career for study, research the career using department resources and prepare a report.	I select a career for study and prepare a report.	I have not selected a career for further study.

Sample Enablers:

oc Select a career of interest
sp Interview a resource person in this career
wr,cm Prepare a written report on a career of interest
sp,cm Present an oral report on a career of interest

Sample Assessments:

Complete a job shadowing experience
Present a 3-5 minute oral report on an agricultural career
Complete a 3-5 page written report on an agricultural career

Standard: AG II 10.2 - The student will implement plans for improvement of the SAE program.

Rubric:

4	3	2	1
I always have a complete, up to date recordbook.	I usually have a complete, up to date recordbook.	I require outside motivation to maintain a complete, up to date recordbook	I do not maintain a complete, up to date recordbook
I have expanded my SAE program in scope and quality.	I have expanded my SAE program in scope or quality.	The scope of my SAE program is realistic.	The scope of my SAE program is not realistic.

Sample Enablers:

oc,wr	Revise your long time plan
t,m,wr,cm,oc	Complete a proficiency application
wr,rd	Complete the Chapter FFA Degree Application
t,m,wr,cm,oc	Complete a preliminary State FFA Degree application
cm,oc	Understand secondary enterprises

Sample Assessments:

Complete a long-time plan
Complete a proficiency application
Successfully earn the Chapter FFA Degree

Standard: AG II 10.3 - The student will demonstrate the use of computers.

Rubric:

4	3	2	1
I always maintain a current, up to date record of my SAE program using the approved recordbook program.	I require assistance in order to maintain a current, up to date record of my SAE program using the approved recordbook program.	I require assistance and outside motivation in order to maintain a current, up to date record of my SAE program using the approved recordbook program.	I do not maintain a current, up to date record of my SAE program using the approved recordbook program.
I always use the word processor when completing written assignments.	I usually use the word processor when completing written assignments.	I use the word processor when completing written assignments if required to do so.	I do not use the word processor to complete written assignments even when I am required to do so.

Sample Enablers:

cm,t,oc	Understand word processing
cm,t,m,oc	Understand computer spreadsheets
cm,t,m,oc	Understand computer databases
t,cm,oc	Understand the use of on-line communication

Sample Assessments:

Complete a written paper utilizing a word processing program
Develop a spreadsheet with addition, subtraction, multiplication and division capabilities
Utilize a database to develop a mailing list

Standard: AG II 10.4 - The student will demonstrate communication skills by selecting, planning, and leading a discussion on an agricultural topic.

Rubric:

4	3	2	1
I always state my thesis clearly and check to see that my audience understands it.	I always state my thesis clearly.	I must sometimes restate my thesis in order for the audience to understand it.	I do not clearly state my thesis.
I show respect for the ideas of others and encourage my classmates to do so.	I show respect for the ideas of others and encourage my classmates to do so.	I show respect for the ideas of others.	I do not show respect for the ideas of others.
I listen actively and ask questions.	I listen actively and ask questions when called upon.	I listen actively and ask questions when the topic is of direct interest to me.	I do not ask questions even if the topic is of interest to me.

Sample Enablers:

sp,cm	Effectively lead a group discussion
cm,oc	Participate in a POA committee
rd,cm,t	Research a current agricultural topic
oc	Understand group dynamics
sp,rd	Present a Food For America Program
sp,cm,oc	Participate in District/Area FFA Contests

Sample Assessments:

Effectively lead a 15 minute discussion on an agricultural topic
Conduct an informative discussion with 4th graders as a part of the Food For America program

Standard: AG II 10.5 - The student will demonstrate skills in ag mechanics through small group work in project construction.

Rubric:

4	3	2	1
I always stay on task and take whatever role is needed to help the group do well.	I always stay on task and take whatever role is needed to help the group do well.	I stay on task but require direction in taking a role in the group.	I seldom stay on task.
I participate without being asked and encourage others to participate My product meets all of the expectations of a high quality product.	I participate without being asked My product meets all of the expectations of a high quality product after minor revision.	I usually participate without being asked My product meets all of the expectations of a high quality product after several attempts.	I require outside motivation in order to participate My product does not meet expectations after several attempts to revise and improve the product

Sample Enablers:

cm,oc,r Plan and carry out a team project and identify individual member's responsibilities
cm Evaluate my own performance in the group

Sample Assessments:

Construct a BOAC project as a group activity
Build a small storage shed as a group activity
Build a small utility trailer as a group activity

Standard : AG II 10.6 - The student will demonstrate proficiency in arc and oxyacetylene welding as evidenced by the completion of quality lap, butt and tee welds and cutting processes.

Rubric:

4	3	2	1
I always complete coupon welds which are of high quality following instruction.	I usually complete coupon welds which are of high quality following instruction.	I complete coupon welds which are of acceptable quality following group instruction and individual assistance.	I do not complete coupon welds which are of acceptable. quality even after individual assistance is rendered.
I always practice welds until their quality improves to an acceptable level for grading.	I usually practice welds until their quality improves to an acceptable level for grading.	I require direction in order to practice welds until their quality improves to an acceptable level for grading.	I do not practice the assigned weld until quality improves.

Sample Enablers:

t,sc,oc,cm	Identify welding processes
t,sc,oc	Select electrodes
cm,t,sc	Understand the characteristics of each gas in the oxyacetylene process
t,sc,oc,cm	Identify the function of oxyacetylene welding unit components
t,sc,cm	Understand the fusion process
t,sc,oc,cm	Select amperage based upon the type of metal and electrode to be used
t,cm,oc	Complete an outside corner bead without rod- oxyacetylene
t,cm,oc,sc	Complete a built up pad- arc
t,cm,oc,sc	Complete a butt weld- oxyacetylene and arc
t,cm,oc,sc	Complete a lap weld- oxyacetylene and arc
t,cm,oc,sc	Complete a tee weld- oxyacetylene and arc
t,cm,oc,sc,m	Cut with an oxyacetylene torch
t,cm,oc,sc,m	Cut with a plasma arc torch
t,cm,oc,sc,m	Cut with an abrasive saw, hydraulic shear, and bandsaw

Sample Assessments:

Complete butt, lap, tee and outside corner welds in the flat position utilizing the oxyacetylene process
Complete a built up pad, butt, lap and tee welds in the flat position utilizing the arc welding process
Complete a cut in 1/2" steel using the oxyacetylene cutting torch

Standard: AG II 10.7 - The student will demonstrate power tool safety practices.

Rubric:

4	3	2	1
I always follow approved safety practices when using the ag mechanics facility and encourage others to do the same.	I always follow approved safety practices when using the ag mechanics facility and usually encourage others to do the same.	I always follow approved safety practices when using the ag mechanics facility.	I seldom follow approved safety practices when using the ag mechanics facility unless I am reminded.
I always successfully complete safety tests on power equipment with 100% accuracy.	I usually complete safety tests on power equipment with 100% accuracy on the first attempt.	I successfully complete safety tests on power equipment with 100% accuracy after further instruction following the first attempt.	I do not successfully complete safety tests on power equipment with 100% accuracy after further instruction following the first attempt.

Sample Enablers:

oc,rd,cm	Demonstrate proper operation techniques with power tools
cm,oc	Understand safety rules
rd,wr,cm	Complete safety tests
cm,rd,oc	Understand safety procedures for all power tools
oc,rd	Follow a cleanup schedule

Sample Assessments:

Complete written tests on general shop, electrical, and fire safety and each piece of power equipment with a score of 100%
Successful completion of a fire drill and evacuation exercise
Daily lab and shop scores based upon performance and constant observation

Standard: AG II 10.8 - The student will demonstrate an understanding of the bases of livestock selection.

Rubric:

4	3	2	1
I interpret and evaluate visual, pedigree and performance data when selecting livestock.	I utilize visual, pedigree and performance data when selecting livestock.	I utilize visual data when selecting livestock.	I rely solely on visual data when selecting livestock.
		I utilize pedigree and performance data when selecting livestock if directed to do so.	I cannot evaluate livestock based on performance and pedigree.

Sample Enablers:

cm,sc,oc	Select livestock to fit a production program
cm,m,sc,rd,oc	Understand and interpret performance data
cm,rd,sc,oc	Read and evaluate a pedigree
cm,rd,sc,m,oc	Understand expected progeny differences and indexes
oc,sc	Identify parts of animals
rd,wr,cm,sc,oc	Define livestock terms

Sample Assessments:

Evaluate a class of livestock and present oral reasons

Standard: AG II 10.9 - The student will demonstrate an understanding of soil fertility and its effect on crop production.

Rubric:

4	3	2	1
I identify soil structure and texture classes and their effect on major crops.	I identify soil structure and textural classes and their effect on major crops.	I identify soil structure and textural classes and their effect on major crops.	I do not identify soil structure and textural classes or their effect on major crops.
I evaluate land sites for multiple uses based upon physical composition of the soil and topography.	I evaluate land sites for multiple uses based upon physical composition of the soil and topography.		
I evaluate land sites and make recommendations for production practices.			

Sample Enablers:

sc,cm	Understand the soil formation process
sc,oc	Identify soil texture and structure
sc,oc,cm	Identify soil color and its causes
sc,oc,m	Determine slope's effect on land use
m,oc	Measure slope
rd,cm,sc,oc,m	Understand the USDA Land Classification System
cm,sc,m	Understand soil pH's effect on fertility and land use
cm,sc,m	Understand soil organic matter's effect on fertility and land use
sc,cm	Understand soil environment
sc,cm,m,oc	Make fertilizer recommendations
sc,cm,oc	Determine appropriate land use and classification
sc,cm,oc	Identify causes of soil erosion
cm,sc,m,oc	Evaluate a homesite
cm,sc,m,oc,rd	Utilize the local soil survey

Sample Assessments:

Evaluate a homesite using the homesite scorecard
Evaluate a field site using the land classification scorecard
Complete an information sheet on a land site using the soil survey
Evaluate a field site for fertility using a soil test kit

Standard: AG II 10.10 - The student will identify the major crop and weed plants of Colorado.

Rubric:

4	3	2	1
I consistently identify all major crop and weed plants following initial instruction	I consistently identify all major crop and weed plants following initial Instruction.	I identify all major crop and weed plants following initial instruction and further study.	I do not identify all major crop and weed plants following initial instruction and further study.
I identify the damaging aspects of specific weed plants.			

Sample Enablers:

sc,t Identify plant structures
sc,oc Identify crop life cycles
sc,oc Identify locally important agricultural plants
sc,oc Define/differentiate between grain and forage crops
sc,oc Define prohibited noxious, restricted noxious, and common weeds

Sample Assessments:

Identify grain crop plants and seeds by sight
Identify forage crop plants and seeds by sight
Identify prohibited, restricted and common weed plants and seeds by sight

Standard: AG II 10.11 - The student will identify safe agricultural chemical use practices.

Rubric:

4	3	2	1
I identify the safe practices to be utilized when handling and applying pesticides.	I identify the safe practices to be utilized when handling and applying pesticides.	I identify the safe practices to be utilized when handling and applying pesticides.	I do not identify the safe practices to be utilized when handling and applying pesticides
I always identify the toxicity categories of pesticides with 100% accuracy.	I always identify the toxicity categories of pesticides with 100% accuracy.		
I identify the methods of applying pesticides for different conditions, target pests and crops.			
I read and interpret the label prior to the application of any pesticide.	I read the label prior to the application of any pesticide.	I read the label prior to the application of any pesticide.	

Sample Enablers:

cm,rd,sc	Read and understand a pesticide label
cm,rd,sc,oc	Understand the different manners in which chemicals do their job: (i.e. systemic, contact, selective, non selective)
oc,sc,m	Identify the different methods of applying chemicals
cm,oc,sc	Understand the uses of chemicals (i.e. herbicide, insecticide, fungicide)
cm,oc,sc	Select pesticides according to the class of pest
cm,oc	Identify safety equipment for pesticide application
cm,oc,rd	Understand Worker Protection Standards for use with pesticides

Sample Assessments:

Complete the EPA Private Applicator Pesticide Certification Questionnaire
Calibrate a sprayer
Make pesticide application recommendations using a pesticide label as a guide

Standard: AG II 10.12 - The student will participate in the operation of the FFA Chapter.

Rubric:

4	3	2	1
I always take an active role in FFA activities and encourage others to do so.	I always take an active role in FFA activities.	I require outside motivation to take an active role in FFA activities.	I do not take an active role in FFA activities.
I always work to reach the group's goals and help others to do so.	I always work to reach the group's goals.	I require direction in order to work to reach the group's goals.	I do not work to reach the group's goals even after direction is provided.

Sample Enablers:

oc,sp	Participate in a POA committee
oc	Attend FFA meetings
sp,cm	Demonstrate 5 parliamentary procedure abilities
t,m,wr,cm,oc	Complete a proficiency application
wr,rd	Complete the Chapter FFA Degree Application
oc	Attend district leadership conference
oc	Attend State FFA Leadership Conference
sp,cm,oc	Participate in judging contests at the local level
m,sp,oc,rd,cm	Participate in fundraising activities
oc	Participate in at least one community service activity

Sample Assessments:

Demonstrate 5 parliamentary procedure abilities
Complete a proficiency application
Participate in the district leadership conference
Participate in at least one fundraising activity
Participate in at least one community service activity

Standard: AG I 9.1 - The student will comprehend the scope of careers available in agriculture.

Rubric:

4	3	2	1
I describe the 7 major career areas in agriculture and the careers found in each.	I describe the 7 major career areas in agriculture.	I describe several career areas in agriculture.	I cannot describe the major career areas in agriculture I do not have a detailed career plan.
I develop a detailed career plan for myself which includes plans for education, leadership and SAE development.	I develop a detailed career plan for myself which includes plans for education, leadership and SAE development.	I develop a detailed career plan after several attempts and considerable individual instruction.	

Sample Enablers:

cm,rd,oc	Understand the agriculture industry
cm,oc	Identify the 7 major career areas in agriculture
cm,rd	Select an agricultural career which is of interest to me
rd,t,cm	Research an agricultural career which is of interest to me
rd,wr,sp,cm	Report on an agricultural career which is of interest to me
oc,wr	Complete a long time plan for agricultural education

Sample Assessments:

Present a 3-5 minute report on an agricultural career
Complete a long-time plan for agricultural education

Standard: AG I 9.2 - The student will prepare and implement plans for an SAE program.

Rubric:

4	3	2	1
I have prepared and implemented plans for an SAE program which is of adequate size and scope given my own resources.	I have prepared plans for an SAE program which is of adequate size and scope given my own resources.	I have prepared plans for an SAE program which is of adequate size and scope given my own resources.	I have not prepared plans for an SAE program which is of adequate size and scope given my own resources.
I have opened a Colorado Vo-Ag Recordbook, a Colorado Cooperative Placement Recordbook, or both.	I have opened a Colorado Vo-Ag Recordbook or Colorado Cooperative Placement Recordbook.	I have opened a Colorado Vo-Ag Recordbook or Colorado Cooperative Placement Recordbook.	I have not started a Colorado Vo-Ag Recordbook or Colorado Cooperative Placement Recordbook.
I have scheduled at least two SAE visits with my instructor.	I have scheduled at least two SAE visits with my instructor.	I have scheduled at least two SAE visits with my instructor.	I have not scheduled at least two SAE visits with my instructor.

Sample Enablers:

cm	Understand the types of SAE programs
rd,cm	Evaluate resources needed for SAE programs
wr,oc,t	Write a parent/student agreement
m,wr,t,oc	Complete a beginning inventory
m,wr,t,oc	Complete an enterprise budget
m,wr,t,oc	Maintain an expense record
m,wr,t,oc	Maintain an income record
m,t,cm,oc	Maintain a financial summary (income statement)
m,t,cm,oc	Complete a beginning net worth statement
m,cm,oc,t	Set production goals and determine efficiency factors
wr,t,oc	Maintain a diary
wr,t,oc	Maintain a breeding record
wr,t,oc	Write a description of a placement station
wr,t,oc	Complete a placement and training agreement
m,wr,t,oc	Complete a placement budget
wr,t,oc	Maintain a training record
wr,t,oc,m	Maintain a record of work experience
wr,t,oc,m	Maintain a record of wages earned

Sample Assessments:

Complete an updated SAE recordbook on a monthly basis
Establish a relevant SAE program which is of adequate size and scope
Complete an SAE visit upon enrollment in the program for the purpose of SAE planning
Complete an SAE visit once the program is in place for the purpose of evaluation

Standard: AG I 9.3 - The student will recognize computer applications in agriculture.

Rubric:

4	3	2	1
I complete a project utilizing the word processor, spreadsheet and database without error.	I complete a project utilizing the word processor, spreadsheet and database without error following revision.	I complete a project utilizing the word processor, spreadsheet and database without error following several revisions.	I do not complete a project utilizing the word processor, spreadsheet and database.

Sample Enablers:

t,cm,oc	Identify computer components and their functions
t,cm,oc	Identify keyboard components and their functions
t,cm,oc	Log on to the network
t,oc	Boot up a computer program
t,oc	Save information to a disk or file
t,oc	Print information from a disk or a file
t,oc	Initialize a disk
t,wr,cm,oc	Utilize a word processing program to write a report
t,m,cm,oc	Utilize a spreadsheet program to solve a mathematical problem
t,cm,oc,wr	Utilize a database to organize data
t,cm,oc	Access electronic information systems

Sample Assessments:

Complete assigned written work on the word processor
Complete a simple spreadsheet which solves a mathematical problem
Organize an address list using a database

Standard: AG I 9.4 - The student will develop skills in speech communication.

Rubric:

4	3	2	1
I recite the FFA Creed from memory without prompting.	I recite the FFA Creed from memory with minimal prompting.	I recite the FFA Creed from memory with considerable prompting.	I do not recite the FFA Creed from memory even after considerable prompting is provided.
I utilize several non-verbal methods of communication in my presentation.	I utilize at least one non-verbal method of communication in my presentation.	I do not utilize non-verbal methods of communication in my presentation.	I do not explain the meaning of the FFA Creed.
I explain the meaning of the FFA Creed.	I explain the meaning of the FFA Creed.	I explain the meaning of the FFA Creed.	

Sample Enablers:

rd	Memorize the FFA Creed
rd,cm	Learn the meaning of key words and phrases in the FFA Creed
cm,rd,sp	Recite the FFA Creed
s[,rd	Present a Food For America Program
sp	Present proficiency awards at the Chapter Banquet

Sample Assessments:

Present the FFA Creed at the Chapter Creed Speaking Contest
Participate in presenting awards at the Chapter Banquet
Present a 3-5 minute career speech

Standard: AG I 9.5 - The student will develop ag mechanics skills through small carpentry project construction.

Rubric:

4	3	2	1
I produce a carpentry project which is of acceptable quality without revision.	I produce a carpentry project which is of acceptable quality with minor revision.	I produce a carpentry project which is of acceptable quality with several revisions.	I do not produce a carpentry project which is of acceptable quality even after several revisions.
I always stay on task and encourage others to do the same.	I always stay on task.	I always stay on task after direction is given.	I do not stay on task after direction is given.
I always utilize tools and equipment for their intended purpose.	I usually utilize tools and equipment for their intended purpose.	I usually utilize tools and equipment for their intended purpose.	I do not utilize tools and equipment for their intended purpose.

Sample Enablers:

cm,oc	Identify hand tools and their uses
cm,oc	Select, identify and use hardware
cm,oc	Select, identify and use fasteners
cm,oc	Select, identify and use lumber
oc,m	Calculate board feet
cm,oc	Identify power tools and their uses
oc,m,cm	Figure a bill of materials
wr,cm,oc	Develop and order of fabrication
cm,oc	Select a finish
oc,cm	Prepare wood for finishing
oc	Apply a finish to wood
oc	Clean paint brushes

Sample Assessments:

Complete a carpentry project
Daily shop grades derived from constant observation
Prepare a bill of materials
Prepare a fabrication list

Standard: AG I 9.6 - The student will describe and demonstrate arc and oxyacetylene welding practices.

Rubric:

4	3	2	1
I always set up and adjust welding equipment prior to operation.	I set up and adjust welding equipment prior to operation when reminded to do so.	I set up and adjust welding equipment prior to operation when reminded to do so.	I seldom set up and adjust welding equipment prior to operation.
I always practice prior to completing a coupon weld for evaluation My coupon welds are always of acceptable quality.	I usually practice prior to completing a coupon weld for evaluation My coupon welds are always of acceptable quality following several attempts.	I practice prior to completing a coupon weld for evaluation if directed to do so My coupon welds are always of acceptable quality following several attempts.	I seldom practice prior to completing a coupon weld for evaluation even when directed to do so. My coupon welds are seldom of acceptable quality following several attempts.
I always utilize proper safety equipment and practices while welding.	I always utilize proper safety equipment and practices while welding.	I always utilize proper safety equipment and practices while welding.	I do not utilize proper safety equipment or practices while welding.

Sample Enablers:

t,sc,oc,cm	Define the arc welding process
t,sc,oc,cm	Define the oxyacetylene welding process
t,s,oc	Select electrodes
t,sc,oc,cm	Identify arc welding equipment and uses
t,sc,oc,cm	Identify oxyacetylene welding equipment and uses
t,s,oc,cm	Select and set amperage
t,s,oc,cm	Set up and adjust the oxyacetylene unit
oc,rd,cm	Understand safety practices for arc welding
oc,rd,cm	Understand safety practices for oxyacetylene welding
t,cm,oc,sc	Strike and arc and run a flat bead
t,cm,oc,sc	Light the torch and adjust flame
t,cm,oc,sc	Shut off the torch and bleed lines
t,cm,oc,sc	Run a bead without rod using oxyacetylene
t,cm,oc,sc	Run an outside comer bead without rod using oxyacetylene
t,cm,oc,sc	Make a built up pad (arc)
t,cm,oc,sc	Make a butt weld with rod (oxyacetylene)

Sample Assessments:

Complete a built up pad using the arc welding process
Complete an outside corner bead without rod using the oxyacetylene welding process

Standard: AG I 9.7 - The student will understand his/her role in an organization.

Rubric:

4	3	2	1
I always participate in my POA committee and encourage others to do so.	I usually participate in my POA committee without encouragement.	I participate in my POA committee without encouragement.	I seldom participate in my POA committee.
I understand the operation of the POA committees.	I understand the operation of the POA committees.	I understand the operation of the POA committees.	I understand the operation of the POA committees.
I participate in all chapter meetings and required functions.	I participate in all chapter meetings and required functions	I participate in all chapter meetings and required functions.	I do not participate in chapter meetings and required functions.
I participate in all community service activities	I participate in all community service activities.	I participate in at least one community service activity.	I do not participate in at least one community service activity.
I participate in all sales/promotionactivities.	I participate in all fundraising activities.	I participate in at least one fundraising activity.	I do not participate in at least one fundraising activity.

Sample Enablers:

cm,rd	Understand the history and development of the FFA
cm,rd	Understand the operation of the FFA organization
cm,rd	Understand the degrees and types of membership
cm,rd	Understand the emblem
cm,rd,oc	Understand the Code of Ethics
oc	Participate in district leadership workshop
oc,m,sp,rd,cm	Participate in a sales/promotionsactivity
oc	Participate in a community service activity
sp,wr,oc	Prepare and present a committee report
sp,cm	Understand the use of the gavel
sp,rd	Memorize the member's part in the meeting
cm,rd,oc	Understand the creed, colors, motto and official dress

Sample Assessments:

Successfully attain the Greenhand FFA Degree
Complete an application for the Greenhand FFA Degree

Standard: AG I 9.8 - The student will demonstrate power tool safety practices.

Rubric:

4	3	2	1
I always follow approved safety practices when using the ag mechanics facility and encourage others to do the same.	I always follow approved safety practices when using the ag mechanics facility and usually encourage others to do the same.	I always follow approved safety practices when using the ag mechanics facility.	I seldom follow approved safety practices when using the ag mechanics facility unless I am reminded.
I always successfully complete safety tests on power equipment with 100% accuracy.	I usually complete safety tests on power equipment with 100% accuracy on the first attempt.	I successfully complete safety tests on power equipment with 100% accuracy after further instruction following the first attempt.	I do not successfully complete safety tests on power equipment with 100% accuracy after further instruction following the first attempt.

Sample Enablers:

oc,rd,cm	Demonstrate proper operation techniques with power tools
cm,oc	Understand safety rules
rd,wr,cm	Complete safety tests
cm,rd,oc	Understand safety procedures for all power tools
oc,rd	Follow a cleanup schedule

Sample Assessments:

Complete the general shop safety test with 100% accuracy
Complete the fire safety test with 100% accuracy
Complete the electrical safety test with 100% accuracy
Daily laboratory and shop grades derived through constant observation
Successful completion of a fire evacuation exercise

Standard: AG I 9.9 - The student will identify the major breeds of livestock.

Rubric:

4	3	2	1
I always identify each breed without error.	I identify each breed without error following several attempts to do so.	I identify each breed without error following further study after several attempts.	I cannot identify each breed following further study and several attempts to do so.
I correctly spell the name of each breed.	I usually spell the names of the breeds correctly.	I spell the names of the breeds correctly after additional practice.	I do not spell the names of the breeds correctly.
I identify the advantages of each breed.	I identify the advantages of each breed.		

Sample Enablers:

oc,sc	Identifying breeds of beef cattle
oc,sc	Identifying breeds of dairy cattle
oc,sc	Identifying breeds of swine
oc,sc	Identifying breeds of sheep
rd,wr,cm,sc,oc	Defining livestock terms

Sample Assessments:

Visual identification of breeds and crossbreeds common to the local community

Standard: AG I 9.10 - The student will identify the major crop and weed plants of the local community.

Rubric:

4	3	2	1
I am always able to identify major crop and weed plants.	I am able to identify major crop and weed plants after several attempts to do so.	I am able to identify major crop and weed plants after several attempts.	I am unable to identify major crop and weed plants after several attempts and further study.
I always use correct spelling when identifying major crop and weed plants.	I use correct spelling when identifying major crop and weed plants after further study.	I use correct spelling when identifying major crop and weed plants after further study.	I do not use correct spelling when identifying major crop and weed plants.

Sample Enablers:

cm,m,rd	Understand the scope of crop production in Colorado and the local community
sc,t	Identify plant structures
sc.oc	Identify plant life cycles
sc.oc	Identify major grain crop plants
sc,oc	Identify major forage crop plants
sc,oc	Identify prohibited noxious weeds which are of local importance
sc,oc	Identify restricted noxious weed which are of local importance
sc,oc	Identify common weeds which are of local importance

Sample Assessments:

Identify crop plants and seeds which are common to the local community
Identify prohibited, restricted and common weeds which are common to the local community

Standard: AG I 9.11 - The student will demonstrate safe operation of tractors.

Rubric:

4	3	2	1
I always demonstrate safe operating practices when starting, operating, and stopping tractors.	I always demonstrate safe operating practices when starting, operating and stopping tractors following further instruction.	I always demonstrate safe operating practices when starting, operating and stopping tractors following further instruction and practice.	I do not demonstrate safe operating practices when starting, operating and stopping tractors even following further instruction and practice.

Sample Enablers:

rd,t,oc	Perform the 10 hour maintenance procedures
rd,t,oc	Identify safety components of tractors
rd,t,oc	Identify tractor symbols
cm,oc	Define PTO safety procedures
cm,oc	Define rollover prevention procedures
rd,cm,oc	Identify requirements for operating tractors on public roadways
cm,oc	Determine procedure for starting and stopping tractors
rd,cm,oc	Read and interpret the operator's manual
cm,oc,t	Operate a tractor while negotiating an approved course

Sample Assessments:

Perform the 10 hour maintenance procedures
Successfully complete a written general tractor safety knowledge test with a score of 90% or higher
Successfully operate a tractor while negotiating an approved course
Successfully complete a safety inspection of a tractor

Ag Tech Prep Resource Guide

Resource	Items Supplied
AAVIM 220 Smithonia Rd Winterville, GA 30683 (800) 228-4689	Software Videos Textbooks
A.C. Burke & Co. 2554 Lincoln Blvd. Marina Del Rey, CA 90291	Videos
Aquatic Eco-systems 1767 Benbow Ct. Apopka, FL 32703 (800) 422-3939	Aquaculture Products
Bergwall 540 Baltimore Pike Chaddsford, PA 19317 (800) 645-3565	Videos Software
Carolina Biological Supply 2700 York Rd. Burlington, NC 27215	Lab Supplies
Creative Educational Video 1020 S.E. Loop 289 Lubbock, TX 79404 (800) 922-9965	Videos
Delmar Publishers P.O. Box 15015 Albany, NY 12212 (800) 354-9706	Textbooks Videos
DeWalt (800) 4DeWalt	Safety Videos
Ford Training Materials P.O. Box 07150 Detroit, MI 48207 (800) 933-IVLS	Repair Manuals
Goodheart-Wilcox 18604 W. Creek Dr. Tinley Park, 60477 (800) 323-0440	Textbooks Software
Hach Company testing equipment P.O. Box 608 Loveland, CO 80539 (800) 227-4224	Soil, water and feed

Interstate Publishers and Printers
510 N. Vermillion
Danville, Il 61834
(800) 843-4774

Textbooks
Notebooks
Recordbooks

Resource

Items Supplied

Instructional Materials Laboratory
University of Missouri-Columbia
Materials
2316 Industrial Drive
Columbia, MO 65202

Textbooks
Career Exploration

Competency Profiles

Jeffers
P.O. Box 948
West Plains, MO 65775
(800) JEFFERS

Animal Health

John Deere Service Publications
John Deere Road
Moline, IL 61265

Service Manuals

Keeton Industries
300 Lincoln Ct.
Ft. Collins, CO 80524
(970) 493-4831

Aquaculture Supplies

Maple Grove Distributing
and Supplies
RR1 Highway 18E
Galveston, IN 46932
(800) 356-0331

Small Gas Engine Tools

Midwest Agribusiness Service
4565 Highway 33 West
Albany, NY 12212
(800) 354-9706

Videos
Software

Midwest Technology Products
2600 Bridgeport Dr.
P.O. Box 3717
Sioux City, IA 51102
(800) 831-5904

Teaching Aids

NASCO Ag Sciences
4825 Stoddard Rd.
Modesto, CA 95356
(209) 545-1600

Teaching Aids
Test Kits
Animal Health

Ohio Curriculum Guide
254 Ag Administration Bldg.
Ohio State University
2120 Fyffe Rd.
Columbus, OH 43210
(614) 292-4848

Curriculum Materials

John Rinehart Taxidermy Supply

Taxidermy supplies

3032 McCormick Drive
Janesville, WI 54547

Utah State University USUAL Logan, UT 84322-4830 (801) 797-2217	Soil Samples

A short list of "cool sites" for ag teachers

1. www. goldseed. com Goldsmith Seed Company's website. Offers infomation on cultural practices for horticultural plants, variety information, and online ordering.

2. www. parkseed.com Park Seed Company's website. Offers variety and cultural information for horticultural plants, online seed ordering and product information for greenhouse materials.

3. www.ballseed.com Ball Seed Company's website. Offers variety and cultural information for horticultural plants, information on careers with Ball Seed, online ordering and information on Ball horticultural publications like the <u>Ball Red Book.</u>

4. www.ffa.org This is the link to the National FFA Organization, the National Association of Agricultural Educators, and the FFA Foundation.

5. www.gennis.com/aglinks.html This site is sponsored by the Gennis Agency and lists dozens of agriculturally related sites broken into several categories.

6. www.cbot.com The Chicago Board of Trade

7. www. cme.com The Chicago Mercantile Exchange

8. www.fb.com The American Farm Bureau Federation

9. www.agriculture.com Successful Farming's Agriculture Online

10. www.FarmJournal.com Farm Journal Magazine Online

11. www.nalusda.gov The National Agricultural Library

12. www.yosemite.cc.ca.us/aged/volume3.html This is the website for the Central Valley Consortium for Agricultural Education and Tech Prep. This site contains the tech prep curriculum for agriculture which was developed by the Central Valley Consortium in California. Of course the curriculum is written to the California method of instruction, but it still contains a lot of valuable information.

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