

AG MANAGEMENT

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AGA-114

- 1. Identify the major anatomical parts of the grass and broadleaf plant**
 - 1.1 Identify the major structures in the plant cell
 - 1.2 Identify the major structures in the cereal seed
 - 1.3 Explain the function of the structures in the cereal seed
 - 1.4 Summarize the steps in cereal seed germination and establishment
 - 1.5 Identify the major structures in the legume seed
 - 1.6 Summarize the steps in legume seed germination and establishment
 - 1.7 Identify and explain the similarities and differences between monocot and dicot leaves
 - 1.8 Identify and explain the similarities and differences between monocot and dicot stems
 - 1.9 Explain the types of roots and discuss root anatomy
- 2. Discuss crop plant classification and origin**
 - 2.1 Outline the botanical system of plant classification
 - 2.2 Assign the proper scientific names to the major crops
 - 2.3 Explain centers of origin and centers of diversity
 - 2.4 List the center of origin of the major crop species
 - 2.5 Identify plants by agronomic use and life cycle
 - 2.6 Identify the major grasses and legumes
- 3. Discuss crop plant physiology**
 - 3.1 Identify the components of yield
 - 3.2 Explain how to measure rate of the growth and the factors that affect it
 - 3.3 Identify the factors determining regrowth in corn and soybeans
 - 3.4 Explain the process of photosynthesis and respiration
 - 3.5 Discuss the factors involved in photosynthetic efficiency
 - 3.6 Discuss uptake and transport of nutrients
 - 3.7 Discuss crop response to production environments
- 4. Discuss the effects of climate and weather on plants and animals**
 - 4.1 Discuss the effects of precipitation and humidity on crop growth
 - 4.2 Discuss the effects of temperature on soils and crop growth
 - 4.3 Explain the concept of heat units and Growing Degree Days
 - 4.4 Discuss weather patterns and climatic change
- 5. List the soil forming factors and discuss the physical and chemical properties of the soil**
 - 5.1 List the soil forming factors and discuss how each affects soil formation
 - 5.2 Discuss the physical properties of soil
 - 5.3 Evaluate soil texture by feel
 - 5.4 Explain soil structure and the factors that affect it
 - 5.5 Discuss the effect of organic matter and the factors that affect it
 - 5.6 Discuss the function of the major nutrients in the plant
 - 5.7 Discuss soil alkalinity and acidity
 - 5.8 Explain the biological activity in the soil
- 6. Discuss the agronomic and environmental aspects of soil water**
 - 6.1 Discuss the influence of structure and texture on soil water
 - 6.2 Explain the forms and actions of soil water
 - 6.3 Discuss soil moisture and crop management
 - 6.4 Evaluate methods of irrigation and their effects upon the soil

- 6.5 Explain the purpose of drainage and the methods
- 7. **Evaluate the different tillage and seeding practices from a production and environmental standpoint**
 - 7.1 Explain the purposes of tillage
 - 7.2 Define the vocabulary of tillage
 - 7.3 Explain the different types of tillage
- 8. **Discuss the objectives and procedures used in plant breeding**
 - 8.1 Explain genetic duplication and inheritance
 - 8.2 Discuss the objectives of plant breeding
 - 8.3 Discuss the breeding methods used in self pollinated species
 - 8.4 Discuss the breeding methods used in cross pollinated species
- 9. **Evaluate harvesting and storage methods and their effect upon seed quality and value**
 - 9.1 Discuss the factors affecting seed quality
 - 9.2 Explain the tests used to determine quality and germination
 - 9.3 Calculate the percentage of Pure Live Seed
 - 9.4 Discuss the methods used to increase seed supplies
 - 9.5 Discuss grain standards and grain grading
 - 9.6 Discuss the effects of harvesting and handling methods on grain quality

AGA-154

- 1. **Explain the importance of soil to mankind**
 - a. Summarize the role of soil in recycling resources needed for plant growth
 - b. Describe the four ways plants use soil
 - c. Explain how soil is a three-phase system
 - d. List and explain some agricultural and engineering uses of soil
 - e. Define the terms related to general uses of soil
- 2. **Understand soil origin and development**
 - a. Define a soil body
 - b. List examples of the five soil formation factors
 - c. Describe how soils develop
 - d. Identify the master horizons of the soil profile
 - e. Define the terms relating to soil origin and development
- 3. **Describe and discuss the physical properties of the soil**
 - a. Describe the concept of soil texture and its importance
 - b. Identify the texture of a sample of soil
 - c. Describe soil permeability and related properties
 - d. Understand soil compaction and its relation to crop yields
 - e. Define terms related to physical properties of soil
- 4. **Understand soil water and its relationship to other properties**
 - a. Identify the role of water in plant growth
 - b. Define the forces that act on soil water
 - c. Classify types of soil water
 - d. Understand how water moves in the soil
 - e. Explain how plant roots remove water from the soil
 - f. Describe how to measure soil water content
 - g. Define terms related to soil water
- 5. **Understand the nature of life in the soil**

- a. Define the carbon cycle and explain its importance
 - b. Describe the different types of soil organisms
 - c. List ways that soil organisms are important
 - d. Define terms related to soil organisms
- 6. Understand the importance of organic matter in the soil**
- a. Explain what organic matter is and how it forms
 - b. Describe what organic matter does in the soil
 - c. List several ways to maintain soil organic matter
 - d. Understand the problem of nitrogen tie-up
 - e. Define organic soil, listing uses and problems
 - f. Define terms related to organic matter

AGA-158

- 1. Understand soil fertility**
- a. Name and classify the essential elements
 - b. List four sources of nutrients in the soil
 - c. Describe soil colloids
 - d. Define cation exchange capacity
 - e. Describe how plants absorb nutrients
 - f. Define terms related to soil fertility
- 2. Understand soil pH and salinity**
- a. Describe soil pH and its development
 - b. Describe how pH affects plant growth
 - c. Tell how to lime or acidify soil
 - d. Describe saline or sodic soils
 - e. Describe methods used to treat saline or sodic soils
 - f. Define terms related to pH and salinity
- 3. Understand plant nutrition**
- a. Understand nitrogen nutrition and the nitrogen cycle
 - b. Understand phosphorus nutrition
 - c. Understand potassium nutrition
 - d. Understand the roles of secondary and trace elements
 - e. Define terms related to plant nutrition
- 4. Understand soil sampling and testing**
- a. Explain why soils are tested
 - b. Sample soils correctly
 - c. Use dead reckoning and GPS to plot grids
 - d. Describe soil testing methods
 - e. Interpret soil test reports
 - f. Explain the use of plant tissue tests
 - g. Define terms related to soil sampling and testing
- 5. Understand fertilizers and their application**
- a. Distinguish the forms of fertilizers
 - b. Describe fertilizer sources for each nutrient
 - c. Perform important fertilizer calculations
 - d. Describe the proper use of fertilizers
 - e. List the effects of fertilizers on the soil

- f. Define terms related to fertilizers
- 6. Understand organic amendments and their use**
 - a. Explain the benefits of organic amendments
 - b. Describe how to use animal manure
 - c. Describe the use of biosolids
 - d. Explain large scale composting
 - e. List environmental side-effects of fertilizers and composting
 - f. Define terms related to organic amendments

AGA-376

- 1. Define Integrated Pest Management and apply the principles to field situations**
 - a. Define Integrated Pest Management
 - b. Delineate the principles involved
 - c. Discuss the change in thinking from pest control to pest management
- 2. Properly utilize the keys in the Weed Seedling Identification Guide**
 - a. Utilize the Seedling ID Guide and other materials to identify common seedling and immature broadleaf weeds under field conditions
 - b. Utilize the Seedling ID Guide and other materials to identify common seedling and immature grassy weeds under field conditions
- 3. Understand how weeds interfere with crop plants**
 - a. Discuss competition and direct and indirect yield losses
 - b. Explain the factors involved in crop yield loss
 - c. Explain competition from the standpoint of the weed
 - d. Collect and evaluate data on competition in corn, soybeans and wheat
 - e. Evaluate the effects of canopy, population density, and herbicide activity under field conditions
- 4. Understand how weeds function as part of a dynamic ecosystem**
 - a. Explain the relationships between weeds and desired plants
 - b. Discuss how weeds change in response to changes in the environment
 - c. Explain the variability within a population of weeds and its effect upon the management of that weed
 - d. Evaluate field conditions that reflect differing ecosystems
 - e. Apply the information presented in class to construct a Management Plan for specific weeds
- 5. Categorize the common weed species by type of reproductive process and recommend potential management strategies for each**
 - a. Explain the variables involved in reproduction from seed
 - b. Explain the various methods of reproduction from vegetative parts
 - c. Explain the management options for each type of reproduction
 - d. Collect specimens of each type of reproductive system and evaluate possible management solutions
 - e. Utilize the information gained above for furtherance of the Management Plan
- 6. Identify insect pests, categorize their life cycle and recommend possible management strategies**
 - a. Identify common insect pests
 - b. Place insect traps in the field and evaluate capture data to project treatment requirements

- c. Calculate Growing Degree Days with field data and utilize the information to formulate a Scouting Plan for selected insect pests
 - d. Discuss the life cycles of insects
 - e. Utilize the information gained in the unit to construct a Management Plan for selected insects
- 7. Successfully complete the Iowa Commercial Pesticide Applicator Core Exam**

AGB-210

- 1. Discuss Law and the U.S. Legal System**
 - 1.1 Define law
 - 1.2 Discuss types of laws
 - 1.3 Compare and contrast different classifications of law
 - 1.4 Describe the structure of the U.S. court system
- 2. Determine Use of Legal Contracts**
 - 2.1 Define contract
 - 2.2 Outline characteristics of a contract
 - 2.3 Discuss elements of a valid contract
 - 2.4 Compare written v. oral contracts
 - 2.5 Define Statute of Frauds
 - 2.6 Discuss exceptions to written requirement
 - 2.7 Explain remedies for breach of contract
 - 2.8 Identify Statute of Limitations
 - 2.9 Describe UCC contract regulations
- 3. Explain Legal Aspects of Real Property**
 - 3.1 Distinguish between real and personal property
 - 3.2 Discuss Right of Eminent Domain
 - 3.3 Describe ownership rights of property estates
 - 3.4 Discuss co-ownership rights
 - 3.5 Define trusts
 - 3.6 Explain property transfer agreements
 - 3.7 Identify types of deeds
- 4. Identify Applications of Tort Law in Agriculture**
 - 4.1 Define tort
 - 4.2 Compare causes of torts
 - 4.3 Define negligence
 - 4.4 Discuss types of negligence
 - 4.5 Explain employment related liability
 - 4.6 Discuss fence laws
 - 4.7 Describe liability for trespassing livestock

AGB-235

- 1. Discuss market fundamentals**
 - 1.1 Distinguish between the cash and futures markets
 - 1.2 Outline the history of the futures market
 - 1.3 Define futures contract

- 1.4 Explain the functions of a futures exchange
- 1.5 Identify the participants of a futures exchange
- 1.6 Understand margins
- 1.7 Summarize broker characteristics
- 2. Understand hedging basics**
 - 2.1 Review cash price and market price
 - 2.2 Define hedging
 - 2.3 Explain basis
 - 2.4 Demonstrate the hedging process
 - 2.5 Understand the difference between a short hedge and a long hedge.
- 3. Utilize fundamental analysis**
 - 3.1 Define fundamental analysis
 - 3.2 Explain how supply and demand affect prices
 - 3.3 Understand fundamental events and their effect on commodities
- 4. Use technical analysis**
 - 4.1 Define technical analysis
 - 4.2 Analyze a bar chart
 - 4.3 Identify trend lines and market indicators
 - 4.4 Understand point and figure charts
- 5. Understand option trading**
 - 5.1 Define option
 - 5.2 Distinguish between a put and a call
 - 5.3 Explain the option trading process
 - 5.4 Define strike price and intrinsic value
- 6. Evaluate alternative marketing approaches and strategies**
 - 6.1 Evaluate specialty grain contracts
 - 6.2 Evaluate multiple beef cattle strategic alliances
 - 6.3 Understand the function of cooperative marketing efforts
 - 6.4 Discuss various direct marketing approaches

AGB-330

- 1. Understand general characteristics of farm management**
 - 1.1 Define farm management
 - 1.2 Identify decisions made by farm managers
 - 1.3 Outline the decision-making process
 - 1.4 Understand characteristics of decisions
 - 1.5 Identify characteristics of farm managers
 - 1.6 Explain differences between characteristics of farm businesses and other businesses
- 2. Create and use a budget**
 - 2.1 Define budget
 - 2.2 Explain the function of budgets
 - 2.3 Identify and describe different types of budgets
 - 2.4 Analyze an enterprise budget
 - 2.5 Create a partial budget
 - 2.6 Outline the development of the whole farm plan
 - 2.7 Use a cash flow budget

- 3. Describe farm business organization structures**
 - 3.1 Understand the farm business life cycle
 - 3.2 Describe each type of organization structure
 - 3.3 Build a written partnership agreement
 - 3.4 Outline corporation regulations
 - 3.5 Analyze farm business transfer
- 4. Summarize income tax management strategies**
 - 4.1 Compare methods of farm tax accounting
 - 4.2 Outline tax management strategies
 - 4.3 Understand capital gains
- 5. Summarize land control use**
 - 5.1 List advantages and disadvantages of land ownership
 - 5.2 List advantages and disadvantages of land leasing
 - 5.3 Outline land value determination
 - 5.4 Define appraisal
 - 5.5 Understand two methods of appraisal
 - 5.6 Understand types of leases
 - 5.7 Calculate cash rents
- 6. Outline human resource management**
 - 6.1 Summarize the characteristics of agricultural labor
 - 6.2 Assess farm labor requirements
 - 6.3 Understand labor efficiency
 - 6.4 Understand strategies to obtain and manage employees
 - 6.5 Understand labor requirements
- 7. Explain estate planning strategies**
 - 7.1 Create an objective of estate transfer
 - 7.2 List advantages and disadvantages of co-ownership
 - 7.3 Define probate
 - 7.4 Distinguish between federal and state estate tax systems
 - 7.5 Determine nontaxable gifts
 - 7.6 Identify estate planning tools to reduce taxes
 - 7.7 Identify legal requirements of a will

AGB-470

- 1.1 List and discuss the purpose and use of records
 - 1.2 List and discuss various farm business activities
 - 1.3 Define basic accounting terms
 - 1.4 Compare various types of accounting systems
 - 1.5 Explain the process of cash accounting
 - 1.6 Explain the process of accrual accounting
 - 1.7 Understand the types of output from an accounting system
 - 1.8 Demonstrate the ability to use a computerized farm financial record keeping system
-
- 2. Determine depreciation and asset valuation**
 - 2.1 Understand depreciation and related terms

- 2.2 Show the importance of depreciation in a complete set of records
- 2.3 Compute depreciation for use in farm records
- 2.4 Outline the different methods that can be used to value farm assets

3. Complete and analyze a balance sheet

- 3.1 Understand the purpose of a balance sheet
- 3.2 Illustrate the format and structure of a balance sheet
- 3.3 Understand the double column nature of a balance sheet
- 3.4 Define owner's equity
- 3.5 Complete a balance sheet with a given set of records
- 3.6 Use financial ratios to analyze liquidity and solvency
- 3.7 Understand the statement of owner equity and explain its construction

4. Describe and analyze the income statement

- 4.1 Understand the purpose and use of an income statement
- 4.2 Illustrate the structure and format of an income statement
- 4.3 Define the sources and types of revenue and expenses included on an income statement
- 4.4 Define net farm income
- 4.5 Compute net farm income
- 4.6 Complete an income statement with a given set of records
- 4.7 Analyze farm profitability

5. Understand Enterprise Budgeting

- 5.1 Construct a crop enterprise budget
- 5.2 Interpret and analyze a crop budget

6. Understand Partial Budgeting

- 6.1 Explain the use of a partial budget
- 6.2 Illustrate the partial budget format
- 6.3 Demonstrate partial budget examples

7. Understand Whole Farm Planning

- 7.1 Discuss a whole farm plan
- 7.2 Illustrate the planning procedure

8. Understand Cash Flow Budgeting

- 8.1 Explain cash flow budget
- 8.2 Construct a cash flow budget
- 8.3 Demonstrate uses of cash flow budget
- 8.4 Monitor cash flows through actual cash flows

AGB-816

1. Application of skills learned in the classroom

- 1.1 List classroom skills that were applied during the internship

2. Learn new skills through on-the-job training

- 2.1 List new skills learned through on-the-job training

AGB-826

1. Application of skills learned in the classroom

- 1.1 List classroom skills that were applied during the internship

2. Learn new skills through on-the-job training

- 2.1 List new skills learned through on-the-job training

AGB-930

1. Demonstrate the ability to scout a field for weeds, evaluate possible courses of action, and recommend a management strategy.
2. Calculate fertilizer recommendations from soil samples, calculate application rates, and determine costs/acre of material.
3. Plan the layout of corn and soybean variety plots, determine the information to be gathered, and participate in assessing plants for insect and disease presence.
4. Prepare the soil and the equipment for planting of corn, soybeans, wheat and alfalfa. Evaluate seedling emergence and demonstrate knowledge of the proper growth and development.
5. Prepare the equipment for harvest of wheat and straw, evaluate harvest losses and make the proper adjustments.

AGM-100

1. Inspect a commercial vehicle for proper operation and safety.

- 1.1 explain the reasons for vehicle inspection
- 1.2 conduct a pre-trip inspection
 - a. identify the relevant parts of the vehicle
 - b. explain the function and proper operation of those parts
- 1.3 complete a post-trip inspection and complete the requisite forms

2. Answer questions regarding basic control of the vehicle.

- 2.1 demonstrate knowledge of proper accelerating, steering, and backing

3. Explain proper use of automatic and manual transmissions.

- 3.1 answer questions concerning shifting up and down with standard transmissions, two speed axles and retarders

4. Demonstrate understanding of proper vision to the front, sides and rear.

5. Explain the proper methods communication with other drivers.

- 5.1 demonstrate knowledge of the proper signals for a moving vehicle
- 5.2 demonstrate proper placement of warning devices for a stopped vehicle

6. Discuss the importance of speed control.

- 6.1 explain the three components of Stopping Distance
- 6.2 discuss the importance of matching speed to road conditions

7. Demonstrate understanding of the function of "space".

- 7.1 discuss requirements for space below, above, on sides, in front and behind the vehicle

8. Explain the adjustments necessary for driving at night, in fog, under winter conditions, and hot conditions.

9. **Discuss the proper operation of the vehicle at railroad crossings and on mountain roads.**
10. **Discuss the importance of identifying hazards.**
11. **Discuss the proper responses to emergency situations.**
12. **Demonstrate understanding of proper skid control.**
13. **Explain driver activity in the event of an accident.**
14. **Discuss the effect of medications and drugs on driver reactions.**
15. **Demonstrate basic hazardous materials knowledge.**

AGM-151

1. Utilize the operator's manual to find information concerning operation, lubrication, and adjustment sections.
2. Properly perform the initial calibration settings for the combine for wheat, corn, and soybeans.
3. Determine type and amount of losses of grain from the combine and make adjustments to minimize those losses.
4. Utilize the GPS unit to create GIS referenced yield data

AGM-157

1. **Utilize operator's manual to locate information concerning operation, lubrication and adjustment.**
2. **Demonstrate ability to properly adjust and operate the following equipment.**
 - a. row-crop cultivator
 - b. square baler
 - c. disk/harrow
 - d. field cultivator
3. **Demonstrate and apply safe handling procedures in the use of herbicides.**
4. **Calibrate the field sprayer for proper operation.**
5. **Adjust the grain drill to plant soybeans and small seeds.**

AGM-200

1. **Demonstrate use of oxy-acetylene equipment**
 - 1.1 Identify parts of equipment
 - 1.2 Perform safe operating procedures
 - 1.3 Demonstrate operating settings
 - 1.4 Cut 3/8" steel
2. **Demonstrate use of arc welder**
 - 2.1 Identify parts of equipment
 - 2.2 Perform safe operating procedures
 - 2.3 Demonstrate operating settings
 - 2.4 Identify electrodes and uses
 - 2.5 Perform flat-butt, lap and fillet weld
 - 2.6 Perform horizontal welds in 2.5
 - 2.7 Perform vertical welds in 2.5

- 2.8 Perform overhead welds in 2.5
- 3. **Demonstrate mig welding**
 - 3.1 Identify parts of equipment
 - 3.2 Perform safe operating procedures
 - 3.3 Perform butt, lap and fillet weld
 - 3.4 Perform horizontal butt, lap and fillet

AGP-340

- 1. **Explain Positioning Systems**
 - a. Explain GPS (Global Positioning Systems)
 - b. Demonstrate proficiency in the use of this equipment
 - c. Explain DGPS and proper usage
- 2. **Demonstrate proficiency in Yield Monitoring and Mapping**
 - a. Explain the components of yield monitoring systems
 - b. Calibrate a yield monitor system
 - c. Explain yield maps and their uses
- 3. **Demonstrate proficiency in Soil Sampling and Analysis**
 - a. Explain the methods used in soil sampling for precision agriculture
 - b. Properly sample an area of a field
 - c. Explain the issues involved in the different methods used for sampling
- 4. **Explain the equipment and the uses of Remote Sensing**
 - a. Explain the basics of remote sensing
 - b. Describe the different types of sensing systems and the data generated
 - c. Discuss the issues involved in remote sensing
- 5. **Evaluate the uses and issues involved in GIS (Geographic Information System)**
 - a. Explain the generation and use of maps
 - b. Differentiate between the data formats
 - c. Discuss the uses of GIS in precision farming
- 6. **Explain the uses and comparative advantages of Variable Rate Technologies**
 - a. Compare map and sensor based variable rate application
 - b. Explain the components of conventional and variable rate applicators
 - c. Discuss the application of variable rate technologies
- 7. **Understand the issues in Precision Agriculture**
 - a. Discuss the environmental issues from producer and non-producer perspectives
 - b. Discuss the economic considerations involved in the use of Precision Agriculture Technology

AGP-450

- 1. Import, convert, display and manage data from a variety of GPS/GIS systems.
- 2. Prepare field application missions for variable rate applications of lime, fertilizer, pesticides and seed.
- 3. Prepare field maps, which can include boundaries, in field referenced objects, multiple layers of information together with a variety of infield information such as soil types, yield, compaction layers, nutrient variability, pest locations and drainage.
- 4. Make correct decisions regarding the use of vector or raster data formatting.

5. Prepare and manage grid or point sampling operations.
6. Manage, arrange and organize GIS files for large numbers of entries.
7. Apply a variety of statistical management tools in order to analyze field data for problem solving.
8. Utilize farm budget information as needed for spatial economic field analysis.
9. To apply spatial management concepts to all listed objectives.

AGS-113

1. Summarize the history and development of Animal Agriculture, to include the domestication of animals and their place in the U.S. and world economy.
2. Outline the life cycles and breeds of the following domestic animals:
 - a. Beef
 - b. Dairy
 - c. Goat
 - d. Sheep
 - e. Swine
 - f. Poultry
 - g. Horses
3. Understand the availability and consumption of animal products
4. Understand the fundamental principles of genetics
5. Understand the principles of selecting and mating farm animals
6. Understand the anatomy and physiology of reproduction in farm animals
7. Understand the application and importance of artificial insemination
8. Understand the physiology of lactation and the affecting factors
9. Understand the physiology of egg laying
10. Understand animal diseases and their relation to human diseases

AGS-225

- 1. Summarize the current swine industry**
 - 1.1 Outline the history of swine
 - 1.2 List the carcass breakdown
 - 1.3 Compute the hog/corn price ratio
 - 1.4 Summarize U.S. production
- 2. Outline swine breeding systems**
 - 2.1 Demonstrate boar selection
 - 2.2 Demonstrate gilt selection
 - 2.3 Contrast crossbreeding systems
 - 2.4 Compare feet and leg soundness
- 3. Summarize swine nutrition.**
 - 3.1 Formulate swine diets.
 - 3.2 Understand swine diet amino acids.
 - 3.3 Outline swine diet vitamins.
 - 3.4 Understand swine mineral nutrition.

- 3.5 Contrast swine feed additives.
- 3.6 Discuss feed processing.
- 4. Understand swine management.**
 - 4.1 Understand care of farrowing & lactating sows.
 - 4.2 Demonstrate processing of baby pigs.
 - 4.3 Demonstrate handling swine.
- 5. Summarize swine housing.**
 - 5.1 Compare farrowing units
 - 5.2 Describe grow/finish housing.
 - 5.3 Understand swine housing environment
 - 5.4 Compute space requirements
 - 5.5 Compare swine manure systems
 - 5.6 Discuss swine odors
- 6. Explain pork quality.**
 - 6.1 Understand porcine stress syndrome.
 - 6.2 Demonstrate carcass evaluation.
 - 6.3 Summarize factors reducing pork value

AGS-228

- 1. Discuss the retail beef industry and it's relationship to the consumer.**
 - 1.1 Discuss the major groups of products and by-products produced from beef cattle
 - 1.2 Identify the wholesale and retail cuts of beef
 - 1.3 Discuss beef consumption and consumer preferences from an historical perspective
 - 1.4 Discuss the major factors affecting beef tenderness
 - 1.5 Discuss the current consumer preferences in terms of how it will affect the cattleman
- 2. Evaluate holistic and integrated resource management as it relates to individual operations**
 - 2.1 Discuss the role of the manager in terms of the resources of the operation
 - 2.2 Set individual goals and be able to utilize problem solving skills
 - 2.3 Discuss management of resources in terms of circles of influence
 - 2.4 Discuss the challenges facing the producer
- 3. Discuss the factors affecting reproduction in the cow and it's effect upon the profitability of the operation**
 - 3.1 Evaluate Body Condition Score (BCS) and discuss the effects of changing BCS on reproductive efficiency
- 4. Discuss the major factors involved in breeding and genetics**
 - 4.1 Evaluate selection programs
- 5. Demonstrate familiarity with beef breeds and their use in breeding systems**
 - 5.1 Discuss the evolution of the United States beef industry in terms of the breeds involved
 - 5.2 Discuss biological types in terms of reproductive efficiency and carcass merit
 - 5.3 Discuss crossbreeding systems and selection of breeding stock
- 6. Discuss ruminant nutrition and it's effect upon the beef enterprise**
 - 6.1 Identify the 6 major nutrients
 - 6.2 Discuss energy digestion and utilization
 - 6.3 Formulate basic rations for different classes of cattle
- 7. Discuss forage resource management and it's effect upon the beef enterprise**

- 7.1 Evaluate grazing management systems for use in individual operations
- 7.2 Discuss the forage resource and its effect upon the type of enterprise selected
- 8. Demonstrate understanding of the major health problems affecting beef cattle and their prevention and treatment**
 - 8.1 List the components of a sound herd health program
 - 8.2 Demonstrate familiarity with common diseases, internal and external parasites
 - 8.3 Construct and evaluate a herd health calendar
- 9. Demonstrate understanding of the growth and development of the beef animal**
 - 9.1 Discuss the fetal development of the calf
 - 9.2 Discuss fat, bone, and muscle development in the growing animal
 - 9.3 Identify parts of the live animal
 - 9.4 Discuss conformation and frame score
- 10. Discuss the management decisions typical of the cow-calf producer**
 - 10.1 Demonstrate familiarity with the types of management decisions that affect profitability
 - 10.2 List the major decisions affecting “percent calf crop” and discuss their effect upon the enterprise
 - 10.3 Discuss the factors affecting “weaning weight”
 - 10.4 Discuss the factors involved in matching genetics to environment
- 11. Discuss the management decisions typical of the yearling-stocker producer**
 - 11.1 Demonstrate familiarity with the types of management decisions that affect profitability
 - 11.2 Calculate “break-even” prices

AGS-319

- 1. Understand the nutrient needs of animals in terms of function and toxicity**
 - 1.1 Define the nutrient needs of animals
 - 1.2 Explain the differences in the six basic nutrients
 - 1.3 Identify symptoms of nutrient deficiency or toxicity
- 2. Understand the differences and similarities in digestive systems among domestic animals**
 - 2.1 Identify parts and functions of animal digestive systems
 - 2.2 Compare differences and similarities of the digestive systems
 - 2.3 Explain feedstuff digestion and nutrient absorption
- 3. Understand feedstuffs analysis, classification and nomenclature**
 - 3.1 Discuss selected analytical methods used to determine the nutrient composition of feedstuffs
 - 3.2 Explain proper sample collection procedure and nutrient composition reporting
 - 3.3 Describe procedures used in determining apparent digestibility
 - 3.4 Describe energy measurements and their role in ration formulation
 - 3.5 Describe physical and economic evaluation of feedstuffs
 - 3.6 Describe feedstuff nomenclature and explain how the Table of Feed Composition is used
 - 3.7 Classify feed into categories for discussion:
 - a. Concentrate feeds
 - b. Roughage feeds
 - c. Additives
- 4. Understand factors affecting nutrient content and intake**
 - 4.1 Identify feeds by nutrient content (high or low)

- 4.2 Identify desirable and undesirable characteristics of feeds
- 4.3 Discuss how stage of plant maturity influences nutritional value to the animal
- 4.4 Discuss harvesting, storing and processing techniques
- 4.5 Identify factors regulating feed intake by animals
- 5. Understand and discuss mathematical solutions for diet formulation**
 - 5.1 Examine feeding standard tables for livestock
 - 5.2 Describe and discuss mathematical solutions to animal diet formulation (Pearson square, substitution)
 - 5.3 Define the purpose of a premix and how these can be formulated to incorporate into animal diets
- 6. Understand laws and regulations concerning feed manufacture**
 - 6.1 Describe the overall scope of the commercial feed industry
 - 6.2 Highlight feed manufacturing laws, rules and regulations
 - 6.3 Explain label format as to what has to be included on a label and how this format is interpreted
- 7. Understand the use of feed additives and implants**
 - 7.1 Describe the different types of feed additives used in livestock production
 - a. Antibiotics
 - b. Chemotherapeutics
 - c. Anthelmintics
 - d. Probiotics
 - 7.2 Identify which feed additives are used for particular purposes and with which animal
 - 7.3 Identify implant products
- 8. Understand the factors involved in the life cycle feeding program for swine**
 - 8.1 Outline and discuss the life-cycle swine feeding program
 - 8.2 Identify specific nutrient needs or additives used within the life cycle
 - 8.3 Explain feeding systems for the breeding herd and the growing-finishing herd
 - 8.4 Formulate a swine diet

COM-102

- 1. Develop skills in the use of the library.
 - 1.1 Learn to use the card catalog computers.
 - 1.2 Learn computer techniques for academic application.
 - 1.3 Study the resources of the Vertical File.
 - 1.4 Utilize the Career Corner in résumé preparation.
 - 1.5 Review information in career-oriented references.
- 2. Study the basics of Business Correspondence.
 - 2.1 Learn the parts of a business letter.
 - 2.2 Learn to write the basic memo.
 - 2.3 Study classifications of letters.
 - 2.4 Compose a variety of letters.
- 3. Study the elements of the Progress Report.
 - 3.1 Understand the chronology of this writing.
 - 3.2 Apply memo format and special headings.

- 3.3 Produce notes in journal form.
- 3.4 Apply verbal phrasing and attention to verb tense.
- 3.5 Compose a Progress Report of a career class.

- 4. Study the elements of the Problem/Solution Report.
 - 4.1 Develop an outline of format.
 - 4.2 Apply the distinctions of objective, problem, solution.
 - 4.3 Appreciate the element of chronology and process in both the problem and solution elements.
 - 4.4 Compose a Problem/Solution report in the career areas.
- 5. Study the elements of the Process Narrative.
 - 5.1 Develop an outline of some procedure familiar in the career field.
 - 5.2 Work in logical and/or chronological order in drafting the report.
 - 5.3 Learn to combine content into relevant steps/phases.
 - 5.4 Learn the importance of the warning, caution, justification, frame of reference and analogy.
 - 5.5 Compose a Process Narrative Report in assigned memo format.

- 6. Study the basics of verbal presentation/oral reports.
 - 6.1 Develop an outline of a short presentation based upon a project in class.
 - 6.2 Coordinate the voice presentation and gestures for effective communication of the material.
 - 6.3 Prepare relevant aids for the presentation.
 - 6.4 Present the communication either in a group or individually.

- 7. Address the rudiments of cultural concepts.
 - 7.1 Study ethnic rubrics - customs/language/symbolism.
 - 7.2 Develop awareness of global impact on related career areas.
 - 7.3 View topical media offerings documentaries/films of relevance.
 - 7.4 Prepare an evaluation of category relevance to career areas.

- 8. Study the basics of verbal rhetoric and writing throughout the course via a concept called Developmental Skills.
 - 8.1 Study and apply the writing patterns of narration, description, classification, comparison, and process.
 - 8.2 Review the parts of speech.
 - 8.3 Complete exercises on syntax.
 - 8.4 Complete exercises on punctuation and mechanics.
 - 8.5 Complete exercises on paragraph development.

ECN-110

- 1. **Describe the concept of Economics**

- 1.1 Define Economics
- 1.2 Generalize Economic principles
- 1.3 Explain the function of economists

2. **Outline demand principals**
 - 2.1 Describe utility and budget constraints
 - 2.2 Derive the demand curve
 - 2.3 Analyze shifts in demand

3. **Summarize production and supply principles**
 - 3.1 Discuss the production function and law of diminishing returns
 - 3.2 Determine input use
 - 3.3 Identify costs of production
 - 3.4 Determine optimum output levels
 - 3.5 Derive the supply curve
 - 3.6 Analyze shifts in supply

4. **Identify Economic Markets**
 - 4.1 Combine supply and demand fundamentals
 - 4.2 Illustrate equilibrium
 - 4.3 Explain market structures
 - 4.4 Distinguish between perfect and imperfect competition

5. **Illustrate Macroeconomic policies**
 - 5.1 Discuss fiscal policy
 - 5.2 Discuss monetary policy

ELE-130

1. **Summarize the purpose of electrical standards, codes, and safety.**
 - 1.1 Understand the need for electrical equipment standards.
 - 1.2 Understand the need for electrical codes.
 - 1.3 Understand and practice electrical safety.

2. **Recognize the difference in material quality.**
 - 2.1 Identify the characteristics of quality material and equipment.
 - 2.2 Select quality material and equipment.
 - 2.3 Demonstrate the selection process.

3. **Summarize the terms of electrical measurement.**
 - 3.1 Understand the term amperage.
 - 3.2 Understand the term voltage.
 - 3.3 Understand the terms watts and kilowatts.
 - 3.4 Understand the terms watt-hours and kilowatt-hours.
 - 3.5 Demonstrate the use of electrical measuring devices and equipment.

4. **Recognize the different types and sizes of wire conductors.**
 - 4.1 Identify the different types of building wires.
 - 4.2 Identify the different types of individual conductors.
 - 4.3 Identify the different sizes of conductors.
 - 4.4 Understand the relationship of wire size and its ampacity.

- 4.5 Understand the relationship of wire size and length of run.
- 4.6 Understand the relationship of wire insulation and its ampacity.
- 5. **Summarize the purpose of fuses and circuit breakers.**
 - 5.1 Understand the need for over current devices.
 - 5.2 Understand the need for short current devices.
 - 5.3 Recognize the types and sizes of fuses.
 - 5.4 Recognize the types and sizes of breakers.
 - 5.5 Identify and select over current devices.
 - 5.6 Identify and select short circuit devices.
- 6. **Demonstrate an understanding of circuit basics.**
 - 6.1 Understand the terms line conductor or hot wire.
 - 6.2 Understand the use of grounded wire in a circuit.
 - 6.3 Understand the use of a ground conductor in a circuit.
 - 6.4 Understand and interpret basic wiring diagrams.
 - 6.5 Understand and install a parallel circuit.
 - 6.6 Understand and install a series circuit.
 - 6.7 Understand and install a switched circuit.
- 7. **Understand the importance of grounding.**
 - 7.1 Understand the term ground.
 - 7.2 Understand the term grounded wire or conductor.
 - 7.3 Understand the term grounding wire or conductor.
 - 7.4 Understand the term ground wire or conductor.
 - 7.5 Understand the term bonding.
 - 7.6 Demonstrate the correct methods of grounding.
 - 7.7 Understand the term GFCI and its use.
- 8. **Demonstrate an understanding and the purpose of an electrical service entrance.**
 - 8.1 Identify the types of service entrances.
 - 8.2 Explain the difference between the types of service entrances.
 - 8.3 Identify the components of a service entrance.
 - 8.4 Select the correct components for different types of service entrances.
 - 8.5 Demonstrate the procedures for installing a service entrance.
 - 8.6 Identify the responsibilities of utility companies for service entrances.
- 9. **Demonstrate knowledge of nonmetallic-sheathed cable wiring system.**
 - 9.1 Select the major components of nonmetallic-sheathed cable wiring system.
 - 9.2 Demonstrate the steps in selecting the correct enclosures for a nonmetallic-sheathed cable system.
 - 9.3 Demonstrate the steps of installation of a nonmetallic-sheathed cable system.
 - 9.4 Select and install different types of receptacles.
 - 9.5 Select and install different types of switches.
 - 9.6 Select and install different types of lighting.
- 10. **Recognize specialty appliance and motor circuits.**
 - 10.1 Understand and identify 240-volt specialty circuits.
 - 10.2 Understand and identify 120/240-volt motor circuits.
 - 10.3 Select methods of wiring special appliance and motor circuits.
 - 10.4 Demonstrate installation of 120/240 volt special appliance and motor circuits.

MAT-702

1. Review of Basic Concepts
 - 1.1. Basic Operations with Whole Numbers and Decimals
 - 1.2. Powers, Roots and Powers of 10
 - 1.3. Order of Operations and Problem Solving
2. Review of Fractions and Percents
 - 2.1. Equivalent Fractions and Decimals
 - 2.2. Adding and Subtracting Fractions and Mixed Numbers
 - 2.3. Multiplying and Dividing Fractions and Mixed Numbers
 - 2.4. The US Customary System of Measurement
 - 2.5. Number and Percent Equivalents
 - 2.6. Percentage Problems
 - 2.7. Increase and Decrease
3. Measurement
 - 3.1. Introduction to the Metric System
 - 3.2. Time, Temperature and Other Measures
 - 3.3. Metric-US Customary Comparisons
 - 3.4. Accuracy, Precision and Error
 - 3.5. Reading Measurement Instruments
4. Signed Numbers and Powers of 10
 - 4.1. Adding Signed Numbers
 - 4.2. Subtracting Signed Numbers
 - 4.3. Multiplying and Dividing Signed Numbers
 - 4.4. Signed Fractions and Decimals
 - 4.5. Powers of 10
 - 4.6. Scientific Notation
5. Linear Equations
 - 5.1. Variable Notation
 - 5.2. Solving Basic Linear Equations
 - 5.3. Applying the Distributive Property in Solving Equations
 - 5.4. Solving Linear Equations with Fractions by Clearing the Denominators
 - 5.5. Formulas
6. Ratio and Proportion
 - 6.1. Ratio and Proportion
 - 6.2. Direct Variation
 - 6.3. Inverse Variation
7. Graphing Linear Equations
 - 7.1. Graphical Representation of Equations
 - 7.2. Graphing Linear Equations in Two Variables Using Alternative Methods
 - 7.3. Slope
 - 7.4. Linear Equation of a Line
8. Systems of Linear Equations
 - 8.1. Solving Systems of Linear Equations Graphically
 - 8.2. Solving Systems of Equations Using the Addition Method
 - 8.3. Solving Systems of Equations Using the Substitution Method
 - 8.4. Solving Systems of Equations
9. Powers and Polynomials

- 9.1. Laws of Exponents
- 9.2. Polynomials
- 9.3. Basic Operations with Polynomials
- 10. Products and Factors
 - 10.1. Distributive Property and Common Factors
 - 10.2. Multiplying and Dividing Polynomials
 - 10.3. Factoring Special Products
 - 10.4. Factoring General Trinomials
- 12. Geometry
 - 12.1. Lines and Angles
 - 12.2. Perimeter and Area
 - 12.3. Circles and Radians
 - 12.4. Volume and Surface Area
 - 12.5. Special Triangle Relationships
- 13. Right Angle Trigonometry
 - 13.1. Trigonometric Functions
 - 13.2. Solving Right Triangles Using the Sine, Cosine and Tangent Functions

PSY-102

- 1. Understand the Organizational Development of the Work Setting.**
 - 1.1 Analyze organizational structure.
 - 1.2 Maximize satisfaction and effectiveness of the employee/employer relationship.
- 2. Understand the Importance of Performance Standards as They Relate to the Work Setting.**
 - 2.1 Explain the economic benefit of performance.
 - 2.2 Understand the performance evaluation systems.
- 3. Accept the Quality of Worklife.**
 - 3.1 Identify factors associated with job satisfaction.
 - 3.2 Reduce stress in the workplace.
 - 3.3 Add more meaning to jobs and job performance.
- 4. Understand and Explain Effective Work Environments.**
 - 4.1 Optimize person-machine effectiveness.
 - 4.2 Maintain workplace safety.