The current course outline for Ag Biology, Veterinary Science, Ag Leadership, Ag Business, Floral Design and Food Science are offered this school year at Atwater High School is attached. Other course outlines that are currently offered are available upon request.

Attached you will find:
- Ag Biology Course Outline
- Veterinary Science Course Outline
- Ag Leadership Course Outline
- Ag Business Course Outline
- Floral Design Course Outline
- Food Science Course Outline
I. COURSE TITLE AND LEVEL
   AG BIOLOGY
   Department
   Agriculture
   Course Length
   Two Semesters
   Credit
   Life Science (UC/CSU)
   Prerequisites
   None
   Grade Level
   9-12

II. BRIEF DESCRIPTION

   To meet the challenges of the future, the scientific community has recognized the
   importance of uniting efforts in understanding and caring for life and its systems.
   This course will explain how scientists have found it necessary to share their research
   across disciplines and try to comprehend life’s complexities based on biological
   studies, including how it is affected by human activities. It brings together the
   agriculture interactions that occur in the living world, and provides the learner with a
   solid understanding of the processes that take place within all areas of life on Earth.
   In addition, learners will gain experience in leadership development, SAE projects,
   and career exploration in the area of agriculture.

III. MAJOR GOALS AND OBJECTIVES

   ▪ Students will understand that the fundamental life processes of plants and animals
     depend on a variety of chemical reactions that occur in specialized areas of the
     organism’s cells.
   ▪ Students will understand that mutation and sexual reproduction lead to genetic
     variation in a population.
   ▪ Students will understand that a multicellular organism develops from a single
     zygote, and its phenotype depends on its genotype, which is established at
     fertilization.
   ▪ Students will understand that genes are a set of instructions encoded in the DNA
     sequence of each organism that specify the sequence of amino acids in proteins
     characteristic of that organism.
   ▪ Students will understand that the genetic composition of cells can be altered by
     incorporation of exogenous DNA into the cells.
   ▪ Students will understand that stability in an ecosystem is a balance between
     competing effects.
   ▪ Students will understand that the frequency of an allele in a gene pool of a
     population depends on many factors and may be stable or unstable over time.
   ▪ Students will understand that evolution is the result of genetic changes that occur
     in constantly changing environments.
   ▪ Students will understand that as a result of the coordinated structures and
     functions of organ systems, the internal environment of the human body remains
     relatively stable (homeostatic) despite changes in the outside environment.
   ▪ Students will understand that organisms have a variety of mechanisms to combat
     disease.
- Students will understand that scientific progress is made by asking meaningful questions and conducting careful investigations.

IV. CAREER PERFORMANCE STANDARDS

- Students will understand how personal skill development affects employability.
- Students will understand key concepts in group dynamics, conflict resolution, and negotiation.
- Students will exhibit critical thinking skills, logical reasoning, and problem solving.
- Students will understand the principles of effective communication.
- Students will understand career paths and strategies for obtaining employment within their chosen field.
- Student will understand and adapt to changing technology by identifying, learning, and applying new skills to improve job performance.

V. COURSE OUTLINE

SEMESTER 1
1. Classroom Orientation
   a. Class rules
   b. Grading policy
2. FFA Leadership Development
   a. History of the FFA
   b. Local chapter, sectional, regional, state, and national organizations
   c. FFA emblem and creed
   d. FFA jacket, dress code, code of ethics, motto, and salute
   e. FFA chapter officer duties
   f. Basic principles of parliamentary procedure
3. Supervised Agriculture Experience Project
   a. Introduction to SAE projects
   b. Getting a project started
   c. Long-range SAE plans
   d. Introduction to the FFA record book
4. Investigation & Experimentation
   a. Laboratory safety
   b. Laboratory tools and equipment
5. The Science of Biology
   a. What is Science?
      i. What Science is and is not
      ii. Evidence Based on Observation
      iii. Interpreting the Evidence
      iv. Explaining the Evidence
      v. A Scientific View of the World
      vi. Science and Human Values
   b. How Scientists Work
1. Designing an Experiment
   ii. Publishing and Repeating Investigations
   iii. When Experiments are Not Possible
   iv. How a Theory Develops

c. Studying Life
   i. Characteristics of Living Things
   ii. Branches of Biology
   iii. Biology in Everyday Life

d. Tools and Procedures
   i. A Common Measurement System
   ii. Analyzing Biological Data
   iii. Microscopes
   iv. Laboratory Techniques
   v. Working Safely in Biology

6. Chemistry of Life
   a. The Nature of Matter
      i. Atoms
      ii. Elements and Isotopes
      iii. Chemical Compounds
      iv. Chemical Bonds
   b. Properties of Water
      i. The Water Molecule
      ii. Solutions and Suspensions
      iii. Acids, Bases, and pH
   c. Carbon Compounds
      i. The Chemistry of Carbon
      ii. Macromolecules
      iii. Carbohydrates
      iv. Lipids
      v. Nucleic Acids
      vi. Proteins
   d. Chemical Reactions and Enzymes
      i. Chemical Reactions
      ii. Energy in Reactions
      iii. Enzymes
      iv. Enzyme Action

7. Cell Structure and Function
   a. Life is Cellular
      i. The Cell Theory
      ii. Basic Cell Structures
      iii. Prokaryotes and Eukaryotes
   b. Cell Structures
      i. Cell Wall
      ii. Nucleus
      iii. Cytoskeleton
      iv. Organelles in the Cytoplasm
v. Organelle DNA
vi. The Cell as a Factory
vii. Comparing Cells
c. Movement Through the Membrane
   i. Cell Membrane
   ii. Diffusion
   iii. Osmosis
   iv. Facilitated Diffusion
   v. Active Transport
d. The Diversity of Cellular Life
   i. Unicellular Organisms
   ii. Multicellular Organisms
   iii. Levels of Organization
8. Photosynthesis
   a. Energy and Life
      i. Autotrophs and Heterotrophs
      ii. Chemical Energy and ATP
      iii. ATP and Glucose
   b. Photosynthesis: An Overview
      i. Investigating Photosynthesis
      ii. The Photosynthesis Equation
      iii. Light and Pigments
   c. The Reactions of Photosynthesis
      i. Inside a Chloroplast
      ii. NADPH
      iii. Light-Dependent Reactions
      iv. The Calvin Cycle
      v. Factors Affecting Photosynthesis
9. Cellular Respiration
   a. Chemical Pathways
      i. Chemical Energy and Food
      ii. Overview of Cellular Respiration
      iii. Glycolysis
      iv. Fermentation
   b. The Krebs Cycle and Electron Transport
      i. The Krebs Cycle
      ii. Electron Transport
      iii. The Totals
      iv. Energy and Exercise
      v. Comparing Photosynthesis and Cellular Respiration
10. Cell Growth and Division
    a. Cell Growth
       i. Limits to Cell Growth
    b. Cell Division
       i. Chromosomes
       ii. The Cell Cycle
iii. Events of the Cell Cycle  
iv. Mitosis  
v. Cytokinesis  

11. Introduction to Genetics  
a. The Work of Gregor Mendel  
i. Gregor Mendel’s Peas  
ii. Genes and Dominance  
iii. Segregation  
b. Probability and Punnett Squares  
i. Genetics and Probability  
ii. Punnett Squares  
iii. Probability and Segregation  
iv. Probabilities Predict Averages  
c. Exploring Mendelian Genetics  
i. Independent Assortment  
ii. A Summary of Mendel’s Principles  
iii. Beyond Dominant and Recessive Alleles  
iv. Applying Mendel’s Principles  
d. Meiosis  
i. Chromosome Number  
ii. Phases of Meiosis  
iii. Gamete Formation  
iv. Comparing Mitosis and Meiosis  
e. Linkage and Gene Maps  
i. Gene Linkage  
ii. Gene Maps  

SEMESTER 2  
12. DNA and RNA  
a. DNA  
i. Griffith and Transformation  
ii. Avery and DNA  
iii. The Hershey-Chase Experiment  
iv. The Structure of DNA  
b. Chromosomes and DNA Replication  
i. DNA and Chromosomes  
ii. DNA Replication  
c. RNA and Protein Synthesis  
i. The Structure of RNA  
ii. Types of RNA  
iii. Transcription  
iv. RNA Editing  
v. The Genetic Code  
vi. Translation  
vii. The Roles of RNA and DNA  
viii. Genes and Proteins
d. Mutations
   i. Gene Mutations
   ii. Chromosomal Mutations

e. Gene Regulation
   i. Gene Regulation: An Example
   ii. Eukaryotic Gene Regulation
   iii. Regulation and Development

13. Genetic Engineering
   a. Changing the Living World
      i. Selective Breeding
      ii. Increasing Variation
   b. Manipulating DNA
      i. The Tools of Molecular Biology
      ii. Using the DNA Sequence
   c. Cell Transformation
      i. Transforming Bacteria
      ii. Transforming Plant Cells
      iii. Transforming Animal Cells
   d. Applications of Genetic Engineering
      i. Transgenic Organisms
      ii. Cloning

14. The Human Genome
   a. Human Heredity
      i. Human Chromosomes
      ii. Human Traits
      iii. Human Genes
      iv. From Gene to Molecule
   b. Human Chromosomes
      i. Human Genes and Chromosomes
      ii. Sex-Linked Genes
      iii. X-Chromosome Inactivation
      iv. Chromosomal Disorders
   c. Human Molecular Genetics
      i. Human DNA Analysis
      ii. The Human Genome Project
      iii. Gene Therapy
      iv. Ethical Issues in Human Genetics

15. Darwin’s Theory of Evolution
   a. The Puzzle of Life’s Diversity
      i. Voyage of the Beagle
      ii. Darwin’s Observations
      iii. The Journey Home
   b. Ideas That Shaped Darwin’s Thinking
      i. An Ancient, Changing Earth
      ii. Lamark’s Theory of Evolution
      iii. Population Growth
c.  Darwin Presents His Case
   i.  Publication of *On the Origin of Species*
   ii.  Natural Variation and Artificial Selection
   iii.  Evolution by Natural Selection
   iv.  Evidence of Evolution
   v.  Summary of Darwin’s Theory

16. Evolution of Populations
   a.  Genes and Variation
      i.  Darwin’s Ideas Revisited
      ii.  Gene Pools
      iii.  Sources of Genetic Variation
      iv.  Single-Gene and Polygenic Traits
   b.  Evolution as Genetic Change
      i.  Natural Selection on Single-Gene Traits
      ii.  Natural Selection on Polygenic Traits
      iii.  Genetic Drift
      iv.  Evolution Versus Genetic Equilibrium
   c.  The Process of Speciation
      i.  Isolating Mechanisms
      ii.  Testing Natural Selection in Nature
      iii.  Speciation of Darwin’s Pinches

17. The History of Life
   a.  The Fossil Record
      i.  Fossils and Ancient Life
      ii.  How Fossils Form
      iii.  Interpreting Fossil Evidence
      iv.  Geologic Time Scale
   b.  Patterns of Evolution
      i.  Mass Extinctions
      ii.  Adaptive Radiation
      iii.  Convergent Evolution

18. Classification
   a.  Why Classify?
   b.  Assigning Scientific Names
   c.  Linnaeus’s System of Classification

19. The Nervous System
   a.  Human Body Systems
      i.  Organization of the Body
      ii.  Maintaining Homeostasis
   b.  The Nervous System
      i.  Neurons
      ii.  The Nerve Impulse
      iii.  The Synapse

20. The Muscular System
   a.  Types of Muscle
   b.  Muscle Contraction
c. Control of Muscle Contraction
d. How Muscles and Bones Interact

21. Bacteria and Viruses
   a. Bacteria in Nature
      i. Decomposers
      ii. Nitrogen Fixers
      iii. Bacteria and Disease
      iv. Human Uses of Bacteria
      v. Controlling Bacteria
   b. Viruses
      i. What is a Virus?
      ii. Viral Infection
      iii. Viruses and Disease
      iv. Are Viruses Alive?

22. The Immune System and Disease
   a. Infectious Disease
      i. The Germ Theory of Disease
      ii. Koch’s Postulates
      iii. Agents of Disease
      iv. How Diseases are Spread
      v. Fighting Infectious Diseases
   b. The Immune System
      i. Nonspecific Defenses
      ii. Specific Defenses
      iii. Active Immunity
      iv. Passive Immunity
   c. Immune System Disorders
      i. Allergies
      ii. Autoimmune Disease
      iii. AIDS

23. Biosphere Energy and Cycles
   a. Energy Flow
      i. Producers
      ii. Consumers
      iii. Feeding Relationships
      iv. Ecological Pyramids
   b. Cycles of Matter
      i. Recycling in the Biosphere
      ii. The Water Cycle
      iii. Nutrient Cycles
      iv. Nutrient Limitation

24. Ecosystems and Populations
   a. What Shapes an Ecosystem?
      i. Biotic and Abiotic Factors
      ii. The Niche
iii. Community Interactions
iv. Ecological Succession

b. How Populations Grow
   i. Characteristics of Populations
   ii. Population Growth
   iii. Exponential Growth
   iv. Logistic Growth

c. Limits to Growth
   i. Limiting Factors
   ii. Density-Dependent Factors
   iii. Density-Independent Factors

d. Human Population Growth
   i. Historical Overview
   ii. Patterns of Population Growth
   iii. Future Population Growth

25. Biodiversity
   a. Biodiversity
      i. The Value of Biodiversity
      ii. Threats to Biodiversity
      iii. Habitat Alteration and Fragmentation
      iv. Demand for Wildlife Products
      v. Pollution
      vi. Introduced Species
      vii. Conserving Biodiversity
   b. Charting a Course for the Future
      i. Ozone Depletion
      ii. Global Warming
      iii. The Value of a Healthy Biosphere

VI. INSTRUCTIONAL MATERIALS

_Biology_, by Prentice Hall

_The Official FFA Manual_, by the National FFA Organization

VII. KEY ASSIGNMENTS

- Laboratory experiments highlight key state standards
- Hands-on activities such as map reading, data analysis, timeline construction, model-making
- Research projects
- Multimedia presentations
- Posters and other types of display presentations related to various topics

VIII. INSTRUCTIONAL METHODS AND/OR STRATEGIES

- Teacher led discussion
- Hands-on activities
- Lab experiments
- Group projects

IX. ASSESSMENT METHODS

- Lab practical examinations
- Tests and quizzes
- Group and individual projects/reports
- Lab experiments and activities
### Course Description

**A. COVER PAGE**

<table>
<thead>
<tr>
<th>Date of Submission (Please include Month, Day and Year)</th>
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</thead>
<tbody>
<tr>
<td>1. Course Title</td>
</tr>
<tr>
<td>Veterinary Science</td>
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<tr>
<td>2. Transcript Title(s) / Abbreviation(s)</td>
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<tr>
<td>3. Transcript Course Code(s) / Number(s)</td>
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<td>4. School</td>
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<tr>
<td>Merced County Regional Occupational Program-ROP</td>
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<td>5. District</td>
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<td>Merced County ROP</td>
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<td>6. City</td>
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<td>Merced</td>
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<td>7. School / District Web Site</td>
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<td><a href="http://www.mcoe.org">www.mcoe.org</a></td>
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<tr>
<td>8. School Course List Contact</td>
</tr>
<tr>
<td>Name: Lori Gomes</td>
</tr>
<tr>
<td>Title/Position: Program Specialist</td>
</tr>
<tr>
<td>Phone: (209) 381-6682</td>
</tr>
<tr>
<td>E-mail: <a href="mailto:lgomes@mcoe.org">lgomes@mcoe.org</a></td>
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<td>13. Is this an Internet-based course?</td>
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<tr>
<td>☐ Yes ☑ No</td>
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<tr>
<td>15. Is this course modeled after a UC-approved course from another school outside your district?</td>
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<tr>
<td>☐ Yes ☑ No</td>
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<tr>
<td>16. Pre-Requisites</td>
</tr>
<tr>
<td>18. Is this course a resubmission?</td>
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<td>☐ Yes ☑ No</td>
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### Brief Course Description

**VETERINARY SCIENCE** is designed to provide students with an opportunity to study the science of veterinary medicine, including animal anatomy and physiology, animal health, nutrition, and cause/prevention of disease. Students will also learn various veterinary laboratory skills, aseptic and surgical procedures, basic radiology, and scientific research and writing skills.
20. Course Goals and/or Major Student Outcomes

21. Course Objectives

22. Course Outline

<table>
<thead>
<tr>
<th>Unit of Instruction</th>
<th>Key Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. Introduction to Veterinary Science</strong></td>
<td></td>
</tr>
<tr>
<td>A. What is Veterinary Science?</td>
<td></td>
</tr>
<tr>
<td>1. Overview of the industry</td>
<td>▶ ROP Career Research Paper</td>
</tr>
<tr>
<td></td>
<td>Description of job, educational requirement, job opportunities, into salaries-</td>
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<tr>
<td></td>
<td>etc., schools that offer the program</td>
</tr>
<tr>
<td>B. Role of the Veterinary Technician</td>
<td>▶ (Related to VI&amp;A) Identify special training programs in CA. and put into</td>
</tr>
<tr>
<td>1. Job description and duties of a Veterinary Technician</td>
<td>research paper about the vet tech w/above report</td>
</tr>
<tr>
<td>2. Available specialized training and educational</td>
<td></td>
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<tr>
<td>opportunities</td>
<td></td>
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<tr>
<td>C. Office Procedures and Skills Needed by a Veterinary</td>
<td></td>
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<tr>
<td>Tech</td>
<td>▶ Keep and FFA Record book to</td>
</tr>
<tr>
<td>1. Demonstrate proper office procedures in a veterinary</td>
<td>demonstrate double entry bookkeeping</td>
</tr>
<tr>
<td>office environment.</td>
<td>▶ Demonstrate how to take inventory of equip/tools in the Vet Science Lab.</td>
</tr>
<tr>
<td>a. Records management process</td>
<td>▶ Illustrate where and how to record client information by completing a mock</td>
</tr>
<tr>
<td>b. Financial record keeping</td>
<td>file</td>
</tr>
<tr>
<td>c. Maintaining inventory</td>
<td>▶ Describe waiting room etiquette in a power point presentation</td>
</tr>
<tr>
<td>d. Recording client information</td>
<td>▶ Illustrate proper/effective customer service skills</td>
</tr>
<tr>
<td>both orally and in written form</td>
<td>▶ Demonstrate use of computer system</td>
</tr>
<tr>
<td>e. Explaining waiting room etiquette</td>
<td>(throughout the year)</td>
</tr>
<tr>
<td>f. Effective customer service skills</td>
<td>• Internet</td>
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<tr>
<td>g. Basic computer skills</td>
<td>• Work</td>
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<td></td>
<td>• Excel</td>
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<td></td>
<td>• Specialize office software</td>
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<tr>
<td></td>
<td>• Power Point</td>
</tr>
</tbody>
</table>

### II. Veterinary Science Terminology
#### A. Terminology Used in Veterinary Science
1. Demonstrate understanding of terminology.
   a. Identify and recognize the parts of a medical term
      i. Define and explain commonly used prefixes, suffixes, abbreviations, root words, and combining forms
2. Recognize the importance of spelling medical terms correctly.
   a. Practice medical dictionary use

### III. Cleaning and Sanitation Standards
#### A. Cleaning and Sanitation Standards
1. Demonstrate cleaning and sanitation standards in the Veterinary Science industry.
2. Define terms used in cleaning and sanitation.
   a. Understand cleaning and sanitation guidelines
   b. Understand the types of sanitation
3. Demonstrate cleaning and sanitation methods.
   a. Describe cleaning and sanitation products
   b. Demonstrate use of cleaning and sanitation equipment
4. Describe common grooming practices to promote the health in animals.

### Key Assignments
- Create notecards for guided study
- Create a poster using computer using the terms and their meaning on Positional terms of animals.
- Demonstrate the positional terms using a "model" with 100% accuracy
- Demonstrate cleaning and sanitation methods and safe handling of products by producing a power point or poster or a video.
<table>
<thead>
<tr>
<th>Unit of Instruction</th>
<th>Key Assignments</th>
</tr>
</thead>
</table>
| **IV. Genetics**                                        | ▶ Identify acceptable breed characteristics for the top 5 breeds of small animals  
▶ Identify common genetic disorder of small animals and why they occur.  
▶ Group discussion on Pro's/Con's of Genetic engineering  
▶ Produce a 1-2 page paper on "the genetic engineering" debate by choosing a side and support there reasoning by using real samples |
| **A. The Role of Genetics in Veterinary Science**       |                                                                                                                                                 |
| 1. Identify the role of genetics                       |                                                                                                                                                 |
|  a. Identify and describe common breed information on dogs, cats, birds, reptiles, laboratory animals, and domesticated farm animals  
  b. List common genetic diseases and disorders  
  c. Explain the role of genetic engineering of animals  
  i. Debate the arguments in favor of and against genetic engineering of animals for food, conservation, and domestic pets |                                                                                                                                                 |
| **V. Anatomy and Physiology of Small Animals**          |                                                                                                                                                 |
| **A. Anatomy and Physiology**                           |                                                                                                                                                 |
| 1. Demonstrate knowledge of anatomy and physiology of small animals.  
  a. Define basic gross anatomy and physiology |                                                                                                                                                 |
| **B. Cell Structure and Function**                      | ▶ Worksheets  
▶ LAB report on each system w/ drawings and functions  
▶ LAB –dissection of a cat  
▶ Lab 11 Gram stain and Bacterial Morphology –move to X |
| 1. Demonstrate knowledge of the basic structure and function of cells.  
  a. Explain the molecular make-up of cells  
  b. Identify the basic structures of the cell and their corresponding functions  
  c. Discuss mitosis and its clinical significance in diseases, such as cancer  
  d. Identify and describe meiosis in mammalian reproduction | ▶ Create a 3-Dimension cell and present orally and written the cell parts and functions.  
▶ Cell Lab from "Intro to Vet Science Lab Manual "(LABI)  
▶ Create a Poster/Power Point on how a cell divides using mitosis and how cell make "sex" cells using meiosis. Must include each step and describe what is taking place in each stage. |
<table>
<thead>
<tr>
<th>Unit of Instruction</th>
<th>Key Assignments</th>
</tr>
</thead>
</table>
| V. Anatomy and Physiology of Small Animals-cont.                                     | ▶ Lab 2 “Animal Tissue” from Intro to Vet Science Lab Manual  
▶ Worksheets  
▶ Cat Dissection Lab  
▶ Dissect a chicken leg and analyze the skin and parts  
▶ Lab write-ups on each dissection                                                                 |
| C. Integumentary System                                                            | ▶ Create a model of two major sections of skeleton, name and compare with other species. Model can be 2-dimentional or 3-dimentional. (Poster or model from clay or any type of material they choose)  
▶ LAB 3 Contraction of Glycerinated muscle with ATP from Intro to Vet Science Lab Manuel  
▶ Procedure a lab report describing and addressing the items to the left  
▶ Cat dissection lab expose the bones of the leg and name and describe how it moves and grows and repairs itself if broken (describe the process) |
| a. Identify and describe the integumentary system                                   | ▶ Create a Poster of normal heart function and common abnormalities and describe the equipment used to diagnose and test heart functions.  
▶ Dissection of pig/cow heart. Id, name each part in whole. Then cross section of heart. Draw and label in a lab write up report  
  - Cat dissection                                                                 |
<p>| i. Discuss the properties, locations, functions, and varieties of epithelial tissues, connective tissues, muscle, and nerve tissues |                                                                                                                                                                                                                 |
| D. Skeletal System                                                                  |                                                                                                                                                                                                                 |
| 1. Identify and describe the skeletal system.                                       |                                                                                                                                                                                                                 |
| a. Identify and describe the structure of the bone; name the joint types and their accompanying role in movement |                                                                                                                                                                                                                 |
| i. Describe the functions of the musculoskeletal system                             |                                                                                                                                                                                                                 |
| ii. List the two major sections of the skeleton, name the corresponding bones, and compare species differentiation |                                                                                                                                                                                                                 |
| iii. Explain how bone grows and remodels; relate bone and muscle groups to movement |                                                                                                                                                                                                                 |
| E. Circulatory System                                                               |                                                                                                                                                                                                                 |
| 1. Identify and describe the circulatory systems in a various small animals.        |                                                                                                                                                                                                                 |
| a. Identify circulatory systems and describe the parts within the system            |                                                                                                                                                                                                                 |
| i. List blood components and describe the functions of blood                        |                                                                                                                                                                                                                 |
| ii. Identify the basic structures of the mammalian heart; illustrate the flow of blood through the heart and body including the parts of the blood vessels and their structural significance |                                                                                                                                                                                                                 |
| iii. Use knowledge of heart function and control to explain the clinical significance of the electrocardiogram, heart sounds, including heart murmurs, and blood pressure |                                                                                                                                                                                                                 |</p>
<table>
<thead>
<tr>
<th>Unit of Instruction</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>V. Anatomy and Physiology of Small Animals-cont.</strong></td>
<td>• Cat dissection of lungs-lab report</td>
</tr>
<tr>
<td><strong>F. Respiratory System</strong></td>
<td>• Lab 4 urine examination from &quot;Intro to Vet Science Lab Manual&quot;</td>
</tr>
<tr>
<td>1. Identify and describe the respiratory systems in a variety of small animals. Identify the basic components of the respiratory tract; list and discuss the function and control of breathing</td>
<td>• Cat dissection – kidney/bladder w/lab report on the system</td>
</tr>
<tr>
<td><strong>G. Renal System</strong></td>
<td>• LAB 5 Digestion –“Intro to Vet Science Lab Manual”</td>
</tr>
<tr>
<td>1. Identify and name the basic structures in the renal system; name and explain the functions of the renal system.</td>
<td>• Ruminant/Mongastric Stomach Lab</td>
</tr>
<tr>
<td>a. Identify structures within the kidney and the formation of urine and its regulation</td>
<td>• Lab 6 cellulose –“Intro to Vet Science Lab Manual”</td>
</tr>
<tr>
<td><strong>H. Digestive System</strong></td>
<td>• Create a Chart : Comparing and contrasting differences, function and specialization of the different digestive systems of small animals. Must be computer generated with pictures</td>
</tr>
<tr>
<td>1. Identify the basic structures of the digestive system.</td>
<td>• Cat dissection Lab and report</td>
</tr>
<tr>
<td>a. Explain digestion in monogastrics, including digestive tract function, absorption and the role of the liver in digestion and metabolism</td>
<td>• Create a power point on the male/female reproductive system to include all of c. (i, ii, iii, iv) and how hormone affect or play a role in egg/sperm cell production (oogenesis and spermato genesis)</td>
</tr>
<tr>
<td>2. Compare and contrast the specialization of dentition and digestive tracts.</td>
<td>• Create a poster about Reproductive System and include how hormones effect the cycle/system</td>
</tr>
<tr>
<td><strong>I. Endocrine and Reproductive Systems</strong></td>
<td>• Lab 8 Diabetes “Intro to Vet Science Manual”</td>
</tr>
<tr>
<td>1. Identify reproductive systems.</td>
<td>• Lab 9 Immunology Test –“Into to Vet Science Manual”</td>
</tr>
<tr>
<td>a. Male</td>
<td>• Lab 8 Diabetes “Intro to Vet Science Manual”</td>
</tr>
<tr>
<td>b. Female</td>
<td>• Lab 9 Immunology Test –“Into to Vet Science Manual”</td>
</tr>
<tr>
<td>c. Understand the associated hormonal functions</td>
<td>• Lab 8 Diabetes “Intro to Vet Science Manual”</td>
</tr>
<tr>
<td>i. Egg and sperm development</td>
<td>• Lab 9 Immunology Test –“Into to Vet Science Manual”</td>
</tr>
<tr>
<td>ii. Estrous cycle</td>
<td>• Lab 9 Immunology Test –“Into to Vet Science Manual”</td>
</tr>
<tr>
<td>iii. Gestation</td>
<td>• Lab 9 Immunology Test –“Into to Vet Science Manual”</td>
</tr>
<tr>
<td>iv. Parturition</td>
<td>• Lab 9 Immunology Test –“Into to Vet Science Manual”</td>
</tr>
<tr>
<td>2. Describe the endocrine system; name the major endocrine glands, list the hormones secreted by each gland, and describe the functions of these hormones.</td>
<td>• Lab 9 Immunology Test –“Into to Vet Science Manual”</td>
</tr>
<tr>
<td>3. Define the term antigen and explain its significance in immunity; distinguish between passive and active immunity.</td>
<td>• Lab 9 Immunology Test –“Into to Vet Science Manual”</td>
</tr>
<tr>
<td>Unit of Instruction</td>
<td>Key Assignments</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td><strong>V. Anatomy and Physiology of Small Animals-cont.</strong></td>
<td></td>
</tr>
</tbody>
</table>
| **J. Nervous System** | • Create a drawing and label the parts of the brain and give its function.  
• Create a chart of the nervous system  
• Create a flow chart to illustrate how a nerve/nervous system works and describe the “action” taking place @ each stage and do the same activity for the reflex arc. (can be computer generated or original student work)  
  - Cat dissection lab/lab report of the system  
  - Lab 10 Food nutrient Analysis —“Intro to Vet Science Manual” |
| 1. Identify basic structure of nervous system.  
  a. Identify the major structures of the brain  
  b. Describe the anatomy and function of the spinal cord  
    i. Nerve impulses  
    ii. Neuron  
    iii. Synapse  
| 2. Explain the components of a reflex arc:  
  a. Receptor  
  b. Afferent pathway  
  c. Integrating center  
  d. Efferent pathway  
  e. Effector  
| 3. Compare and contrast the function of the sensory somatic system to the autonomic nervous system.  
  a. Differentiate between the two branches of the autonomic system |
| **VI. Small Animal Nutrition** | | 
| **A. Nutritional Requirements** | • Demonstrate proper reading/analysis of a feed label (dry and canned feeds)  
• Identify the nutritional needs of small animals by creating a chart. This would address similarities and differences.  
• Given a scenario, the student is to give a reason and purpose for a specialized  
  - Lab 10 Food nutrient Analysis —“Intro to Vet Science Manual” |
| 1. Demonstrate knowledge of nutrition in small animals  
  a. List the six major components of animal diets, and discuss their structure and significance in nutrition  
  b. Explain the general principles in animal nutrition, including vitamins, minerals, and fluids  
| 2. Discuss the nutritional needs of small animals.  
  a. Similarities  
  b. Differences  
| 3. Demonstrate how to read and understand feed labels.  
  a. Dry feeds  
  b. Canned feeds  
<p>| 4. Explain the importance of special feeding needs. |</p>
<table>
<thead>
<tr>
<th>Unit of Instruction</th>
<th>Key Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>VII. Small Animal Behavior</td>
<td></td>
</tr>
<tr>
<td>A. Common Behaviors of Small Animals</td>
<td></td>
</tr>
<tr>
<td>a. Demonstrate knowledge of common behaviors of small animals.</td>
<td>• I.D. the different behaviors in their natural/normal environment to develop an understanding of the animals for each</td>
</tr>
<tr>
<td>a. Mating</td>
<td></td>
</tr>
<tr>
<td>b. Aggression</td>
<td></td>
</tr>
<tr>
<td>c. Peace and content</td>
<td></td>
</tr>
<tr>
<td>d. Fear and flight</td>
<td></td>
</tr>
<tr>
<td>B. Proper Handling Techniques</td>
<td></td>
</tr>
<tr>
<td>1. Safe and proper handling procedures for small animals.</td>
<td></td>
</tr>
<tr>
<td>C. Restraint Tools and Procedures</td>
<td></td>
</tr>
<tr>
<td>1. Demonstrate proper use of muzzles, collars, leash, hobbles, surgical restraints, physical restraints and holding.</td>
<td>• ID tools, use and handling labs</td>
</tr>
<tr>
<td>2. Demonstrate safe and proper handling procedures for all small animals.</td>
<td>• Describe “proper”/“safe” procedures assignment</td>
</tr>
<tr>
<td></td>
<td>• Demonstrate w/100% accuracy safe handling procedures</td>
</tr>
<tr>
<td>VIII. Medical Treatments and Health</td>
<td></td>
</tr>
<tr>
<td>A. Diagnosis, Cause, and Treatment of Diseases</td>
<td></td>
</tr>
<tr>
<td>1. Understand diagnosis, cause, and treatment of disease in small animals.</td>
<td>• Id the most common disease in small animal care, and know the treatment</td>
</tr>
<tr>
<td>a. Describe Koch’s postulates</td>
<td></td>
</tr>
<tr>
<td>b. List the important distinguishing features and give examples of major disease agents and discuss resulting diseases</td>
<td>• *3-5 page, MLA format report on a small animal disease (pending teacher approval) to address: overview of the disease, cause and origin of the disease, symptoms, treatment, possible complications and preventable measure/management of the animal if permanently affect by the disease.</td>
</tr>
<tr>
<td>c. List the major methods used to diagnose disease and cite examples of disease diagnosis with each testing method</td>
<td>• Lab on types of injections and practice the demonstrating on chicken wings/legs\</td>
</tr>
<tr>
<td>2. Name the basic components of disease prevention.</td>
<td>• Demonstrate injection methods w/100% accuracy</td>
</tr>
<tr>
<td>a. Describe the types of vaccines available and their roles in disease prevention</td>
<td></td>
</tr>
<tr>
<td>b. Demonstrate disease prevention and immunology through use of vaccinations</td>
<td></td>
</tr>
<tr>
<td>i.  Injection methods</td>
<td></td>
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<tr>
<td>• Intramuscular</td>
<td></td>
</tr>
<tr>
<td>• Subcutaneous</td>
<td></td>
</tr>
<tr>
<td>• Intravenous</td>
<td></td>
</tr>
</tbody>
</table>
### VIII. Medical Treatments and Health-cont.
#### B. Identifying Disease Classifications
1. Classify diseases, match them with the domestic species in which they occur, and discuss their clinical significance.
   a. List and describe several diseases common in domestic animals that are contagious to humans
2. Define endoparasites and ectoparasites.
   a. Differentiate between endoparasites and ectoparasites
      i. Viral diseases
      ii. Bacterial diseases
      iii. Fungal diseases
      iv. Protozoan diseases
      v. Zoonotic diseases and their public health aspects
   b. Treatment and management procedures

#### C. Diagnosis, Cause, and Treatment of Injuries in Small Animals
1. List the important distinguishing features of common injuries.
   a. Describe small animal injuries and treatment
      i. Fractures
      ii. Ingestion of foreign materials
      iii. Internal organ damage
2. Understand radiation theory
   a. Understand and explain radiation safety

#### D. Normal Values for Small Animals in Veterinary Science
1. List normal values for small animals.
   a. Identify the value for:
      i. Temperature, pulse, and respiration
      ii. Gestation
      iii. Weight
      iv. Litter size

### Key Assignments
- Research Paper 4-6 pages, MLA format listing and describing several common disease (4min.-6 max) in domestic animals. 2 must be contagious to humans. Must address the diseases (give a description), cause/origin, How is it transmitted or spread, Symptoms, Treatment, Maintenance and Prevention, and How is it classified.
- Rubric Assessment on Research papers
- Create a chart on the endoparasites and ectoparasites that are common to small animals. Must include treatment and management procedures.
- ID common fractures and possible causes and treatments
- ID common ingestion objects and treatment
- ID common organ damage from ingested objects
- Describe the x-ray process and explain proper safety procedures, by writing a paper- computer generated
- ID value for normal temperature, pulse, and respiration in small animals
- Create a chart with normal values
- Demonstrate how to take normal values
  a. Identify the value for:
     i. Temperature, pulse, and respiration
     ii. Gestation
     iii. Weight
     iv. Litter size
### VIII. Medical Treatments and Health-cont.
#### E. Common Surgical Procedures in the Animal Health Service Industry

1. Explain the clinical significance of the basic principles of successful surgery.
   - a. Explain the healing of lacerations
   - b. Explain aseptic techniques
   - c. Identify surgical instruments
   - d. Identify tools used in surgical packs
   - e. Explain proper surgical room conduct

2. Describe common surgical procedures.
   - a. Foxtail removal
   - b. Ovariohysterectomy (spay)
   - c. Castration (neuter)
   - d. Abscess surgical procedure
   - e. Common dental surgical procedures
     - i. Extractions
     - ii. Cleaning
     - iii. Special needs
     - iv. Abscesses
   - f. Anal sac surgical procedures

#### F. Emergency Procedures in Small Animals

1. Demonstrate emergency procedures in animal small.
   - a. Identify and explain use of equipment and identification in emergency situations
   - b. Recognize symptoms of shock and trauma
     - a. Demonstrate cardiopulmonary resuscitation for small animals

### IX. Laboratory Skills and Safety
#### A. Laboratory Skills and Practices

1. Demonstrate and understand laboratory skills used in Veterinary Science.
   - a. Calculate conversions to the metric system using medical math
   - b. Identify laboratory equipment
   - c. Describe proper use and care of laboratory equipment
   - d. Describe proper handling of laboratory specimens
   - e. Identify common laboratory procedures

### Key Assignments

- Identify the different types of lacerations and suture process.
- Demonstrate how to prepare and pack a surgical pack (lab)
- Demonstrate tool ID (lab)
- Report 3-5 pages on treatment and surgical procedures by listing the stages from start to finish of the following procedures: (must by typed/computer generated)

**Surgical Procedures**
- Foxtail removal
- Ovariohysterectomy (spay)
- Castration (neuter)
- Abscess surgical procedure

**Dental Procedures**
- Extractions
- Cleaning
- Special needs
- Abscesses

- List and explain common emergency procedures and equipment used in small animal vet practices
- List symptoms of shock/trauma and how to treat
- Demonstrate CPR techniques
- List/Describe CPR techniques for Small Animals

- Demonstrate proper use of Metric System in medical math problems.
- List and describe proper use and handling of common lab equipment and animal specimens.
- ID and explain common laboratory procedures and its purpose for small animals. (Urine, fecal, blood)
- Lab 11 & 12 from Lab Manual in Vet Science
<table>
<thead>
<tr>
<th>Unit of Instruction</th>
<th>Key Assignments</th>
</tr>
</thead>
</table>
| IX. Laboratory Skills and Safety-cont.  
B. Laboratory Safety  
1. Demonstrate and understand the need for laboratory safety.  
a. Laboratory etiquette and safe procedures  
b. Proper techniques/handling of lab specimens  
c. Recording and documenting lab specimens for safety of worker and animal | ▶ Illustrate and describe proper techniques and handling of lab specimens by creating a PowerPoint or poster.  
▶ Illustrate how to correctly record/document lab specimens safety and accurately. |
| X. Pharmacology  
A. Pharmacology Needs of Small Animals  
1. Understand small animal pharmacology.  
a. Define terms relating to general pharmacology  
b. Explain the five schedules of controlled substances and their common uses  
c. Become familiar with pharmacologic agents, their uses, adverse side effects, and dosage forms  
d. List common drugs used for small animal health care  
2. Identify the parts of drug labels and inserts.  
a. List routes and describe route of drug administration and routes of drug excretion  
3. Define the biotransformation process.  
a. List common chemical reactions involved in this process | ▶ Create note cards/flash cards with Pharmacology terms  
▶ Create a chart of the 5 schedules of controlled substances, listing their uses.  
▶ List the top 20 most common drugs used in animal health care.  
▶ Demonstrate how to read a drug label and the inserts. |
23. Texts & Supplemental Instructional Materials

24. Key Assignments
See Course Outline

25. Instructional Methods and/or Strategies
- Direct instruction and discussion
- Lecture
- Reading assigned materials
- Internet research
- Self-directed/independent, cooperative and collaborative learning
- Independent and group laboratory experiments
- Written, oral, and PowerPoint presentations
- Curriculum based field trips
- Industry experts
- Supplemental books
- Current news articles

26. Assessment Methods and/or Tools
Assessment of student performance will include, but is not limited to:
- Individual or group project based learning assignments
- Lab projects and reports
- Teacher observation
- Examinations and quizzes
- Student demonstration
- Research projects
- Homework
- Presentations/Exhibitions

Student final grade is based on the following:
Homework assignments – 25%
Quizzes and Tests – 25%
Projects and Labs – 40%
Participation – 10%

C. HONORS COURSES ONLY

27. Indicate how this honors course is different from the standard course.
N/A
D. OPTIONAL BACKGROUND INFORMATION

28. Context for Course

29. History of Course Development
I. Course Title and Level

Title: Ag Leadership & Technologies
Department: Agriculture
Course Length: Two Semesters
Credit: Elective
Prerequisites: None
Grade Level: 9-12

II. Brief Description

Ag Leadership and Technologies is designed to specifically train students as team leaders for the work place. This is an activity-based course designed to help students develop responsibility, initiative, creativity, school pride, and leadership. Students will learn how to manage capital, labor, and resources to accomplish specific tasks. Computers and technologies will be used to augment their leadership challenges. Emphasis will be placed on accomplishing assigned tasks by using advanced communication skills, interactions with the community, and working with diverse groups.

The development of leadership, employability and self-evaluation skills are emphasized throughout the course. This advanced program follows the Model Curriculum Standards and Frameworks for Agriculture Specialization in the Agriculture Business Management Advanced Cluster. Ag Leadership & Technologies provides a beginning foundation for technologies preparation within the agriculture field. In addition, this course provides a foundation for success in a post-secondary Ag Leadership course or Ag Ambassador Program.

III. Major Goals and Objectives

- Students will develop an understanding of the leadership skills necessary to be a successful member of the agribusiness profession.
- Students will be trained to apply computer technology in typical agribusiness situations.
- Students will be familiarized with the role of information and research in making business decisions.
- Students will develop an understanding of the importance of profit and loss in agriculture.
- Students will develop skills in using computers for agricultural and business applications.
- Students will develop an awareness of the important role computers serve in the field of agriculture.
• Students will develop an understanding of how to use and design efficiency systems to streamline activities.
• Students will develop problem solving, prioritizing, and time management skills.
• Students will develop an ability to be “self-starting” at a work place.
• Students will develop the ability to react and perform under pressure of competition and deadlines.
• Students will have the knowledge of job-seeking and employability skills so students will have the potential for employment within the agriculture career field.
• Students will be familiarized with career opportunities and future trends in the agriculture industry.
• Students will have opportunities for leadership development.
• Students will be introduced to the principles and application of parliamentary procedure in today’s society.
• Students will strengthen their academic skills through classroom instruction, assignments, and ‘hands-on’ practical training experiences within agriculture technologies and the agribusiness cluster.
• Students will develop advanced communication skills: written, oral, and presentation.
• Students will practice health and safety procedures within a work place environment.

IV. Career Performance Standards

• Students will understand how personal skill development affects employability.
• Students will understand key concepts in group dynamics, conflict resolution, and negotiation.
• Students will exhibit critical thinking, logical reasoning, and problem solving skills.
• Students will understand the principles of effective communication.
• Students will understand career paths and strategies for obtaining employment within their chosen field.
• Students will understand and adapt to changing technology by identifying, learning, and applying new skills to improve job performance.

V. Course Outline

A. Basic Skills

1. Classroom Orientation
2. Employability Skills
   a. Job Search Techniques
      i. All aspects of the Industry
      ii. Employability Portfolio
         • Resume
         • Letter of Application
iii. Letter of Recommendation
iv. Writing Sample
v. Work Sample
vi. Portfolio Presentations

b. Interviewing
   i. Proper dress
   ii. Preparation, Thank-you, Follow-up
   iii. Practice Interview

c. Employer/Employee Relationships

B. Personal Qualities

1. Attitude
2. Self-Confidence
3. Ethical Behavior
4. Perseverance
5. Responsibility
6. Self-Discipline
7. Appearance
8. Personal Hygiene
9. Time Management
10. Life-Long Learning

C. Interpersonal Skills

1. Group Dynamics/Teamwork
2. Conflict Resolution
3. Negotiation
4. Cooperative and Cohesive Work Groups
5. Leadership
6. Workplace Behavior

D. Thinking Skills

1. Critical Analysis
2. Creative Design
3. Logical Reasoning
4. Problem Solving

E. Information Processing

1. Acquires and Accesses Data
2. Evaluates Data
3. Organization and Arrangement of Data
4. Maintains Relevant Records and Files
5. Interprets Appropriate and Necessary Data
6. Communication and Explanation of Relevant Data
7. Processes Data to Determine Conclusion

F. Resource Analysis

1. Identification Procedures
2. Organization Structure
3. Planning Techniques
4. Allocation Strategies

G. Career Development

1. Opportunities in Ag Business Management & Agriculture
2. Self-Appraisal
3. Work Values
4. Self-Assessment

H. Leadership

1. FFA Organization
   a. Contest/Participation
   b. Record Books
2. Critical Thinking Skills/Problem Solving
3. Organization of Committees and Meetings
   a. Types of Meetings
   b. Fundamentals of Committees
      i. Purpose of committees
      ii. Kinds of Committees

I. Introduction to Leadership and Technologies

1. Introduction to Efficiency Systems (File Folders)
2. Importance of Leadership in Ag Business & Production
3. Defining Leadership

J. Computer Instruction

1. IBM compatible
2. Windows
3. Word Processing
4. Electronic Spreadsheet
5. Electronic Communication: Internet, email, webpage
6. Presentation Programs (i.e. PowerPoint)

K. Communications
1. Written Communications
   a. Local, State, and National Organization
   b. Office Practices
2. Oral Communications
   a. Public Speaking
      i. Prepared
         1. Developing Topic
         2. Research
         3. Presentation
      ii. Discussion Meet/Round Table
   b. Parliamentary Procedure
      i. Presentation Skills
      ii. Individual
      iii. Team
   c. Phone Skills
3. Non-Verbal Communications
4. Interface with Local Business People
5. Graphic Medium
   a. Visual Aides
   6. Brainstorming Skills

L. Goal Setting in Ag Business
   1. Establishing Goals
   2. Planning
   3. Developing a Budget
   4. Time Line Development/Tracking
   5. Implementation
   6. Conclusion
   7. Evaluation

M. Working in Teams
   1. Developing Common Focus
   2. Soliciting Everyone’s Input
   3. Reducing Stereotypes
   4. Evaluating Alternatives
   5. Division as Responsibilities
   6. Class Presentation
   7. Group Activities

N. Entrepreneurial and Special Projects
   1. Developing and Implementing a Business Proposal
   2. Maintain Inventory
   3. Labor Management
4. Purchasing Supplies  
5. Public Relations  
6. Advertising  
7. Monitoring Budget

VI. Instructional Materials

2. FFA Student Handbook

VII. Competencies

The student will:

- Follow outlined classroom procedures.
- Follow attendance requirements.
- Calculate and maintain grade based on classroom grading policies/procedures.
- Complete paperwork necessary for class enrollment.
- Complete a writing sample, an employability portfolio, and assignments pertaining to their vocation coursework.
- Demonstrate personal skills, which include the ability to be friendly, courteous, sensitive to others' feelings, cooperative and tactful when working with co-workers and supervisors.
- Work efficiently to complete tasks within given time limits.
- Demonstrate the ability to set priorities with work assignments.
- Demonstrate effective conflict resolution and negotiation skills when presented with a difficult situation or topic and show the ability to work through these situations to be a productive team player.
- Monitor, review, and propose solutions to improve social, organizational and technological systems.
- Select and apply tools, equipment and procedures, including computers and technologies relevant to their occupational path.
- Keep, organize, and maintain a personal informational folder and/or binder.
- Complete work samples.
- Demonstrates effective communication with classmates and teachers through various communication modes.
- Identify, organize, plan, and allocate resources in regards to time, money, materials, facilities and manpower.
- Set goals and plan to accomplish these goals.
- Complete a self-assessment related to work values and qualities and complete a plan to improve areas of weakness.
- Participate in FFA activities.
- Demonstrate effective record-keeping skills as evidenced by maintaining an up-to-date FFA record book.
- Explain various types of meetings that are used in business.
- Explain various kinds of committees and their purpose in agriculture business structures.
- Utilize and maintain an effective filing system related to personal and classroom assignments and projects.
- Complete a project that demonstrates proficiency in word processing.
- Demonstrate public speaking skills by presenting one or more of the following: prepared speech, prepared group discussion, extemporaneous speech.
- Demonstrate parliamentary procedure skills.
- Demonstrate effective visual aid usage for communication projects.
- Select a project related to agriculture and establish a plan of action for completion which would include: 1) setting goals and objectives, 2) designing a plan of action for implementation, 3) developing a budget, 4) implementing a timeline for action to meet goals, 5) assign logical steps for completion, 6) complete an evaluation of the completed project.
- Outline successful practices for effective teamwork and apply to classroom projects.
- Manage a group of people to accomplish a task or project.
# Course Description

## A. COVER PAGE

<table>
<thead>
<tr>
<th>1. Course Title: Agriculture Business and Communication</th>
<th>9. Subject Area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>☐ History/Social Science</td>
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<td>☐ English</td>
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<td>☐ Mathematics</td>
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<td>☐ Laboratory Science</td>
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<td>☐ Language other than English</td>
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<td>☐ Visual &amp; Performing Arts</td>
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<td>☑ Elective</td>
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<tr>
<th>2. Transcript Title / Abbreviation (District Office Use Only)</th>
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<table>
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<th>4. School</th>
<th>10. Grade Level(s)</th>
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<tbody>
<tr>
<td>Atwater High School</td>
<td>11/12</td>
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<thead>
<tr>
<th>5. District</th>
<th>11. Seeking “Honors” Distinction?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Merced Union High School District</td>
<td>☐ Yes ☐ No</td>
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</table>

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<tr>
<th>6. City</th>
<th>12. Unit Value (District Office Use Only)</th>
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<tbody>
<tr>
<td>Atwater</td>
<td>☐ 0.5 (half year or semester equivalent)</td>
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<td>☐ 1.0 (one year equivalent)</td>
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<td>☐ 2.0 (two year equivalent)</td>
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<td>☐ Other: ______________________________</td>
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<thead>
<tr>
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<th>13. Date of School Board Approval (District Office Use Only)</th>
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</thead>
<tbody>
<tr>
<td><a href="http://www.muhsd.k12.ca.us/Domain/232">http://www.muhsd.k12.ca.us/Domain/232</a></td>
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</tr>
</tbody>
</table>

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<thead>
<tr>
<th>8. School Contact</th>
<th>14. Was this course previously approved by UC?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name: Natalie Kirschner</td>
<td>☑ Yes ☐ No</td>
</tr>
<tr>
<td>Title/Position: Agriculture Teacher</td>
<td></td>
</tr>
<tr>
<td>Phone: (209)357-6025 Ext:</td>
<td></td>
</tr>
<tr>
<td>Fax: (209)357-6067</td>
<td></td>
</tr>
<tr>
<td>E-mail: <a href="mailto:nkirschner@muhsd.k12.ca.us">nkirschner@muhsd.k12.ca.us</a></td>
<td></td>
</tr>
<tr>
<td>Principal’s Signature</td>
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</tbody>
</table>

If yes, check all that apply:

- ☐ Course reinstated after removal within 3 years. Year removed from list?
  - Same course title? ☐ Yes ☐ No
  - If no, previous course title?

- ☐ Identical course approved at another school in same district. Which school?
  - Same course title? ☐ Yes ☐ No
  - If no, course title at other school?

- ☐ Alternative course title for course with identical content at this school
  - Title of previously-approved identical course:
    - ☐ Advanced Placement (AP) or International Baccalaureate (IB) course
    - ☐ Approved UC College Prep (UCCP) Initiative course
    - ☐ Approved P.A.S.S. course
    - ☐ Approved ROP/C course. Name of ROP/C?
    - ☐ Other. Explain:

| 15. Is this a re-submission of a course that was previously NOT approved by UC? | ☐ Yes ☑ No |
B. COURSE CONTENT

Please refer to instructions

20. Context for Course (How does it fit into, replace, or augment existing curriculum? How does it fit into the department or program in which it will be included?)

The opportunity to open an Ag Business and Communication course allows students to maintain a four-year agriculture pathway. As this course is designed for 11th or 12th grade students, it allows students to either maintain their FFA and agriculture SAE (projects) eligibility at the school and state level. The proposed Ag Business and Communication course would help students understand specific facts and principles of development, management, marketing, and financial decisions, as well as the oral, written, visual and media communications of an Agriculture Business. Students will gain the understanding of how agriculture is used in their daily lives through “hands-on” approach of learning and in accessing reliable information relating to Agribusiness of the past, present, and future; applying knowledge and processes to business concepts and principles. Through this process, we are able to provide students with the opportunity for personal growth, academic success, and career exploration and meet the desired four-year agriculture career/academic pathway. As this course has been approved for CSU/UC credit at other high schools, the opportunity for (1) students to meet the needs of the state required “G”, (2) allow students to remain in agriculture, (3) take part in the FFA/leadership activities, and (4) remain involved in an area of academic interest, serves as an opportunity to benefit students, the agriculture program, the school, district, and community.

21. Course Goals and/or Major Student Outcomes

The objectives of the course are to understand and practice Agribusiness management, marketing, financial decisions, as well as the oral, written, visual and media communications understand different careers, develop basic leadership skill, portfolio, and develop knowledge in record books.
22. Course Objectives

Upon completion of this course, students will:

- Students will demonstrate the ability to analyze situations and solve problems by applying business principles and to think critically by effectively completing challenging group and individual projects and assignments.
- Students will develop writing, reasoning and mathematic skills through measuring, recording data, excel graphs, and writing business proposals.
- Students will demonstrate knowledge and understanding of basic business development, management, marketing, and financial decisions, as well as the oral, written, visual and media communications.
- Students will investigate business issues by asking meaningful questions, researching literature, conducting careful investigations, analyzing data, and formulating explanations by using logic and evidence.
- Students will apply the business management, including generating an Agribusiness proposal, including the management, marketing, and financial decisions, as well as the oral, written, visual and media communication needs.
- Students will measure and evaluate the research design, validity, reliability and variables used for sensory evaluation.
- Students will demonstrate clear and coherent written and oral communication within a wide range of mediums and styles.
- Students will demonstrate the ability to read and comprehend a wide range of non-fiction grade appropriate materials.
- Students will demonstrate the ability to solve problems and think critically by effectively completing challenging group and individual projects and assignments.
- Students will demonstrate an understanding of the complexities of agricultural issues through reading periodicals and multiple writing assignments.
- Students will demonstrate polished formal and extemporaneous presentations that combine the traditional rhetorical strategies of narration, exposition, persuasion, and description.
- Students will combine the rhetorical strategies of narration, exposition, persuasion, and description to produce written products.

23. Course Outline

I. Agribusiness Management History and Career Opportunities – 15 hours
   A. Agricultural Business Management and Career Opportunities
      1. Analyze the agricultural business industry
      2. Assess major changes in the industry
      3. Identify careers and opportunities in agricultural business
   B. Assess the roles functions of management
      1. Making Decisions
      2. Functions of management

II. Agriculture Business Marketing – 10 hours
   A. Agricultural Business Marketing
      1. Analyze the importance of marketing
      2. Assess marketing process
      3. Analyze the growth and role of marketing
III. Developing a Business Plan – 20 hours
   A. Agricultural Business Plan
      1. Create an Agriculture Business
         a. Business Objectives
         b. Business Profile
         c. Financial Management
         d. Employer/Employee Expectations
      2. Develop the Business Marketing Plan
      3. Analyze the business risks and potential

IV. Analyzing Agriculture and Food Markets- 15 hours
   A. Food Marketing Management
   B. Analyzing Market Performance in the Food Industry
   C. Food Marketing Efficiency
   D. Marketing trends and issues
      1. Organization and Competitive Issues
      2. Coordination and Control Issues
      3. Farmer Marketing Problems
      4. Consumer Issues

V. Marketing and Selling the Product – 30 hours
   A. Communication Skills
      1. Verbal Communication.
      2. Written Communication.
      3. Interactive Communication - to be able to listen and question in order to gather information.
   B. Product Knowledge
      1. Features and benefits of a product.
      2. Identifying potential customer objections.
   C. Sales Process
      1. Identifying prospective customers through marketing data.
      2. Developing an approach that introduces your product to your prospective customer.
      3. Develop a sales call that determines and addresses customer’s needs and objections.
      4. Attempt trial closes to confirm customer interest.
      5. Understand the basic business structure necessary to sell and deliver a product.
      6. Attempt to close the sale by asking the customer to make a buying decision.
   D. Maintaining Customers
      1. Establish and build customer confidence in you and your product.
      2. Address customer complaints including:
         a. Defective merchandise.
         b. Maintain customer contact and place additional orders for sales.
         c. Review product performance
VI. **History of the Agricultural Communications Industry – 15 hours**
   A. Agricultural Communications Industry and Career Opportunities
      1. Analyze the agricultural communications industry
      2. Assess major changes in the industry
      3. Identify careers and opportunities in agricultural communications
   B. Future of Agricultural Communications
      1. Assess the future of agricultural communications
         a. Industry trends
         b. Writing trends
         c. Visual trends

VII. **Gathering the Facts - 15 hours**
    A. Research Techniques Used in Communication
       1. Identify and explain research techniques utilized in Agricultural Communication
          a. Broad topics
          b. Narrowing focus
    B. Interviewing Techniques
       1. Identify and demonstrate effective interviewing techniques
          a. Plan the interview
          b. Conduct background research
          c. Create predetermined questions
          d. Organize notes
          e. Evaluate when to ad-lib during the interview
          f. Conduct interview
    C. Checking the Facts
       1. Demonstrate proper techniques in checking facts
          a. Checking sources for credibility
          b. Acquiring second opinions

VIII. **Writing for Agriculture – 30 hours**
    A. The Writing Process
       1. Demonstrate effective communication skills
       2. Use the FORK Method
          a. Focus
          b. Order
          c. Repetition of keyword
          d. Kiss off technique
       3. Demonstrate proper spelling and grammar
          a. Proper grammar usage
          b. Editing
       4. Understand basic APA writing style
          a. Names and titles
          b. Numbers
          c. Abbreviations
          d. Proper citing of sources
       5. Properly write quotes
    B. Journalism Basics
       1. Employ the basics of journalism
          a. Writing for an audience
b. ABC’s of journalism
2. Anatomy of a news article
3. Identify the necessary components of an effective news article
   a. Who, what, when, where, why, and how

C. Press Releases
   1. Create effective press releases for a variety of media
      a. Format
      b. Timeliness
      c. Proximity
      d. Importance
      e. Policy
      f. News components

D. Feature Stories
   1. Compose a feature story
   2. Recognize the elements of a feature story
      a. Getting started
      b. Credibility
      c. Editing your work

E. Public Speaking
   1. Role of the spokesperson
   2. Answering impromptu questions
   3. Assembling an illustrated talk

IX. Speaking for the Public- 30 hours
A. Prepared Public Speaking
   1. Plan and prepare a speech
      a. Selecting a topic
      b. Gathering information
      c. Recording your ideas
      d. Creating an outline
      e. Writing the speech
      f. Listening and evaluating
   2. Delivering a speech to an audience
      a. Answering questions
      b. Speaking to groups and organizations
      c. Points to remember

B. Extemporaneous Speeches
   1. Extemporaneous speech research and preparation
   2. Compare the advantages and disadvantages of extemporaneous speeches
   3. Delivering an effective speech
   4. Develop and deliver an extemporaneous speech
      a. Prepping for delivery
      b. Outlining
      c. Practicing
      d. Note cards
      e. Effective delivery techniques
      f. Answering questions

C. Public Speaking
1. Role of the spokesperson
2. Answering impromptu questions
3. Assembling an illustrated talk

Total: 180 Hours

24. Texts & Supplemental Instructional Materials

Title: Agribusiness Decisions and Dollars
Edition: 2nd
Publication Date: 2009
Publisher: Delmar Learning
Author(s): Elliot, Jack
Usage: Primary Text, for business
Total cost for class set: $5,478 (quote attached)

Supplemental Instructional Materials:

Title: Agriculture Communications in Action
Edition: 1st
Publication Date: 2012
Publisher: Delmar Learning
Author(s): Telg, Irani
Total cost for class set: $3,960 (to be paid by Perkins, quote attached)

- Relevant Agribusiness publications such as Ag Alert and USDA news
- Relevant Websites and printed media such as San Francisco Chronicle, San Jose Mercury, Modesto Bee, etc.
- Videos relating to the communications field

25. Key Assignments

- Weekly academic business and product assignments
- Weekly activities and reports
- Agriculture business proposal
- Supervised Agricultural Experience project and record book
- Student presentation on an Agribusiness
- Portfolio of marketing and communication exercises

26. Instructional Methods and/or Strategies

- Direct instruction and discussion
- Lecture
- Reading assigned materials
- Internet research
• Self-directed/independent, cooperative and collaborative learning
• Independent and group laboratory experiments
• Written, oral, and PowerPoint presentations
• Curriculum based field trips
• Industry experts
• Supplemental books
• Current news articles

27. Assessment Methods and/or Tools

Assessment of student performance will include, but is not limited to:
• Individual or group project based learning assignments
• Projects and reports
• Teacher observation
• Examinations and quizzes
• Student demonstration
• Research projects
• Homework
• Presentations/Exhibitions

28. Financial Implications (Be as specific as possible; include textbooks, supplemental materials, supplies, and equipment necessary to initiate the course as proposed)

Any additional supplies needed for this course would be purchased using Ag Incentive Grant Funds.

C. HONORS COURSES ONLY
Please refer to instructions

29. Indicate how this honors course is different from the standard course.
N/A

D. OPTIONAL BACKGROUND INFORMATION
Please refer to instructions

30. History of Course Development (optional)
Art & History of Floral Design I & II
Course Outline

Every Student a Success

Lee Andersen, Ph.D.
Merced County Superintendent of Schools

Approved by the Merced County Board of Education – June 14, 2004
ROP Art & History of Floral Design I & II

PHILOSOPHY
MCROP delivers innovative educational programs to high school and adult students in preparation for 21st century careers, higher education, and life-long learning.

PROGRAM GOALS
The goal of the program is to develop students’ academic, technical, and interpersonal skills so they will be prepared to:
- Secure employment
- Upgrade skills
- Enter advanced career-technical training
- Pursue college related courses

COURSE TITLE: The Art & History of Floral Design I & II

ORIGINAL STATE APPROVAL DATE: 1995

STATE CERTIFICATION DATE: July 13, 2006

STATE ID NUMBER: 603-04 and 74476

ADVISORY COMMITTEE APPROVAL/REVIEW DATE: May 17, 2004

COURSE REVISION DATE: March 2004

CBEDS TITLE: Horticulture and the Environment

CBEDS NUMBER: 4050

CDE COURSE NUMBER: 1361

I. COURSE DESCRIPTION

ART & HISTORY OF FLORAL DESIGN I & II is designed to introduce students to Floral Design and to provide hands-on training in various entry-level Floriculture positions in their community. Students will be provided the opportunity to explore various aspects of Floral Design. They will complete a final project that will provide an in-depth look at how Floriculture runs and all of the aspects within the scope of career development.

Course instruction
This course is designed to allow students to apply an artistic approach to floral art. The course emphasizes the necessary knowledge and skills to provide the student with a perceptual base leading to understanding artistic perception, creative expression, historical and cultural context(s); aesthetic valuing and connections, relations, applications of the visual arts. Students will derive meaning from artworks through analysis, interpretation, and judgment. Students will connect and apply what is learned in floral art to other art forms, subjects, and post secondary education experiences.

Key instructional methods include direct supervision via lectures and PowerPoint presentations, discussion, cooperative learning, project-based learning, and career development portfolio.

The structure of the course includes students attend class daily for a one period class session for 180 hours of class instruction.

Leadership skills are developed through FFA, or other student organizations.
Merced County Regional Occupational Program

Art & History of Floral Design I & II

Hours: 180 hours/year for one year at one period/day.
A second year at 180 hours/year at one period/day is also available.

Prerequisites:

Helpful Courses/Experience: Ag Science 1 (LB,G),
Explorations in Agriculture (BC, MGV, A)
Ag. Biology (A, G, BC, MGV, L)
Computer Experience

Articulation: none

Academic Credit: Fine Arts graduation credit (A, BC, L, MGV)
Elective Credit (LB, G)

II. ROP CERTIFICATE AND/OR INDUSTRY LICENSING
To earn an ROP certificate for this course, the student must accomplish the following:
• Achieve a course grade of C or higher
• Satisfactory completion of student performance objectives
• Demonstrate positive work ethics, attitudes, and attendance

The following industry certification is available for this course:
• N/A

III. MERCED COUNTY CAREER PATHWAYS AND REPRESENTATIVE JOB TITLES
Designated Career Pathway: Agriculture/Fine Arts

JOB TITLES:
Retail Floral Shop
• Floral designer assistant
• Floral designer
• Salesperson
• Delivery
• Interior landscape and maintenance
• Cut flower processor
• Office staff

Greenhouse/OH
• Crop production and maintenance
• Grower/Crop manager
• Marketing sales manager
• Greenhouse worker
• Salesperson
• Landscaper/assistant
• Interior designer/assistant

IV. STUDENT PERFORMANCE OBJECTIVES
Upon successful completion of the course, as aligned with MCROP ESLR’s, the student will have:

Common to all Programs:
• Demonstrated awareness of employment opportunities in careers related to the industry.
• Developed employment literacy to include job readiness skills and technical reading and writing applications demonstrated by completion of an Employability Portfolio.
• Demonstrated safe work habits and attitudes.
• Exhibited leadership skills related to teamwork, communications, human relations, and community responsibility.
IV.  STUDENT PERFORMANCE OBJECTIVES - continued

Common to this ROP Course/Industry:

- Use senses to perceive work of art, objects in nature, events and the environment.
- Identify visual structures and functions of art using language of visual arts.
- Develop knowledge of an artistic skill in a variety of visual arts and medias.
- Create an original artwork based on personal experiences.
- Select a western line design using one of the major color schemes: monochromatic, complementary, or triadic colors.
- Explore the role of floral design in human history and culture.
- Investigate the universal themes and concepts in historical and contemporary periods.
- Develop a timeline outlining the floral changes and trends of a culture.
- Examine the different artistic works that feature flowers and/or floral displays.
- Derive meaning from artworks through analyzing, interpretations, and judgment by sketching flower arrangements done by one of the great artists of three different historical time periods.

V.  ASSESSMENT OF STUDENT PERFORMANCE

Assessment of student performance will include but is not limited to:

- Employability Skills Evaluation
- Employability Portfolio and presentation
- Safety awareness in the classroom and/or community classroom setting
- Individual or group Project-Based Learning assignments
- Timely and complete required assignments
- Tests and quizzes
- Classroom participation, punctuality, and attendance
- Presentations/Exhibitions
- Leadership activities
- Supervised floral experience project

VI.  TEACHING METHODS, STRATEGIES AND TECHNIQUES

- Direct instruction and discussion
- Teacher developed materials
- Operation of equipment
- Group and/or independent Project-Based Learning assignment(s)
- Cooperative learning
- Portfolio development
- Audiovisual
- Computer applications, software, simulations
- Reading and writing assignments
- Investigations and research
- Business and/or community partnerships
- Student exhibitions and presentations
- Work-based learning opportunities
- Service Learning
- Business, school, and/or community surveys
- Guest speakers
- Business interviews
- Field trips
- Labs
- Design and artistic applications
VII. INSTRUCTIONAL MATERIALS AND EQUIPMENT

This includes, but is not limited to, computer resources, textbooks, video/audiovisual, websites, trade publications, laboratory materials, and specialized equipment.

A. Computer Software
1. Microsoft Office

B. Required Reading and/or Text
1. Job Finders Handbook, Merced County ROP
2. Who am I book, Merced County ROP
3. The Art of Floral Design, Norah T. Hunter, Del Mar, USA, 2000

C. Student Reading Selection
1. See #B above

D. Instructor Reference Materials (*common to all program areas)
1. * Merced County ROP ESLR’s
2. * Merced County ROP Curriculum Handbook
3. * Merced County Business to Education Resource Guide
4. * California Department of Education Business Education Career Path and Model Curriculum Standards
5. * English-Language Arts Content Standards for California Public Schools
6. * Mathematics Content Standards for California Public Schools
7. * Labor Market Information/Websites
8. Bouquets Floral Arrangements of the Masters; Barrons; 1995
9. The Book of Flowers; Le Livre des Fleurs; 1997
10. Essential Impressionist; Parrgon Publishing Book; 2000
11. The Natural Way to Draw; Kinon Nikolaides
12. California Department of Education Content Standards for Visual and Performing Arts
13. Floriculture… Designing & Merchandising; Griner, Charles; Delmar Publishing
14. The Retail Florist Business; Hofmann/Pfahl/Behe; Interstate Publishers
15. Landscaping Principles & Practices; Ingles, Jack E.; Delmar Publishing
16. Introductory Horticulture; Reiley & Shry; Delmar Publishing
17. Sunset Western Garden Book
18. Teaching Floral Design… A Hands-On Approach; Bigo, Charles and Stringham, Mary Ann; CMA Publications
20. Floral Design CD-ROM (stand alone version); Rankin, Donna; Delmar Publishing
21. Florist Review Magazine
22. The Wreath Book; Rulley, Rob; Sterling Publishing Co.
23. Flowers With a Flourish; Lyckett, Simon; Laura Glen Publishing
24. Elements of Design Video; Crystal Productions (ISBN 1-56290-158-3 and 1-56290-159-1)
25. Techniques in Flower Judging; VEP Productions #178
26. Fundamentals of Corsage Making; VEP Productions #186
27. Horticopia Series CD-ROM; www.horticopia.com
### VIII. COURSE OUTLINE

**General Workplace Skills:**
Known as Merced County ROP ESLR's, General Workplace Skills are common to all MCROP program areas. They are taught in the specific context of each course. ESLR's are aligned with the National SCANS Competencies, California Department of Education State Career Preparation Standards, and All Aspects of the Industry components. Technical Reading, Writing and Math standards are integrated for the industry specific course when appropriate, and are aligned with the English-Language Arts Content Standards and the Mathematics Content Standards for California Public Schools. All skills are assessed for student certification.

<table>
<thead>
<tr>
<th>UNIT OF INSTRUCTION</th>
<th>ESTIMATED HOURS</th>
<th>STANDARD OR FRAMEWORK</th>
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</thead>
<tbody>
<tr>
<td>I. MCROP ESLR 1: Ethically &amp; Socially Skilled Person Who:</td>
<td>Yr. 1</td>
<td>Yr. 2</td>
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<tr>
<td>A. Work cooperatively as a team member and demonstrate respect for ALL co-workers.</td>
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<tr>
<td>1. Demonstrate interpersonal skills which include the ability to be friendly, courteous, sensitive to others' feelings, cooperative and tactful when working with co-workers and supervisors.</td>
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<td>2. Exhibit employment qualities expected in successful employer/employee relationships.</td>
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<td>3. Use effective conflict resolution and negotiation skills when presented with a challenging situation or topic.</td>
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<td>4. Demonstrate respect for healthy gender and cultural work relationships.</td>
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<td>5. Discuss employer and employee responsibilities as they pertain to sexual harassment.</td>
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<td>B. Arrive on time, stay on task, and follow attendance and other classroom policies.</td>
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<td>1. Comply with classroom rules, procedures and attendance policies.</td>
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<td>2. Efficiently complete tasks and assignments within given time limits.</td>
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<td>C. Model honesty, integrity and loyalty.</td>
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<td>1. Display ethical behavior when performing classroom assignments.</td>
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<td>2. Maintain loyalty and confidentiality when dealing with sensitive classroom and/or worksite situations.</td>
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<td>D. Demonstrate initiative</td>
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<tr>
<td>1. Display initiative when performing classroom assignments.</td>
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<td>E. Display leadership skills</td>
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<tr>
<td>1. Practice effective public speaking skills.</td>
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<td>2. Flexible to assume leadership roles in a variety of individual and/or group situations.</td>
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<tr>
<td>F. Demonstrates the skills and resources to attain employment.</td>
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<tr>
<td>1. Apply effective job search techniques.</td>
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<tr>
<td>2. Complete all components of the MCROP Employability Portfolio*.</td>
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<td>3. Demonstrate effective job interview techniques.</td>
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<td>4. Present the MCROP Employability Portfolio*.</td>
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<td>G. Demonstrate appropriate grooming and hygiene</td>
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<td>1. Investigate appropriate hygiene practices in relationship to the industry specific course.</td>
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<tr>
<td>2. Display proper attire in class and at MCROP Employability Portfolio/Job Interviews.</td>
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* Meets Standards Identified on the California High School Exit Exam
## II. MOCROP ESLR 2: Productive and Safe Workers Who:

<table>
<thead>
<tr>
<th>UNIT OF INSTRUCTION</th>
<th>ESTIMATED HOURS</th>
<th>STANDARD OR FRAMEWORK</th>
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<tbody>
<tr>
<td></td>
<td>Yr. 1</td>
<td>Yr. 2</td>
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<tr>
<td><strong>A. Demonstrate the knowledge, skills and ability to competently complete the job.</strong></td>
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<tr>
<td>1. Complete a work sample that demonstrates knowledge of entry-level skills.</td>
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<td>2. Identify characteristics of a productive worker.</td>
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<td><strong>B. Demonstrate the ability to accept change.</strong></td>
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<td>1. Develop an awareness of emerging employment trends and benefits of preparing for change.*</td>
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<td>2. Describe the importance of flexibility and its role in the workplace. *</td>
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<td><strong>C. Read, write, speak and listen competently.</strong></td>
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<tr>
<td>1. Read, listen, comprehend, and discuss course specific materials.</td>
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<td>2. Produce legible work that demonstrates accurate spelling, correct punctuation and capitalization.*</td>
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<td>3. Demonstrate effective communication using the English language with peers, teachers, and co-workers through various communication modes.*</td>
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<td><strong>D. Identify, analyze, calculate, compute and apply information.</strong></td>
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<tr>
<td>1. Apply estimation, measurement, and calculation skills appropriate to the industry specific course.</td>
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<td>2. Compute the range, mean, median and mode related to a set of data appropriate to the industry specific course.*</td>
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<td>3. Convert fractions to decimals and percents and apply estimations, computations and application found in the industry specific course.*</td>
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<td>4. Calculate the percentages of increases and decreases of a quantity as related to the industry specific course.*</td>
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<td>5. Use estimation to verify the reasonableness of calculated results from applications within the industry specific course.*</td>
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<td>6. Use a variety of methods (words, numbers, symbols, charts, graphs, diagrams or models) to explain mathematical reasoning as applicable within the industry specific course.*</td>
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<td><strong>E. Manage time, make decisions, and evaluate outcomes.</strong></td>
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<td>1. Demonstrate the ability to set priorities and manage time effectively.</td>
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<tr>
<td>2. Solve real-world situations using decision-making or problem solving method.</td>
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<td>3. Reflect and respond in writing to the Employability Skills Evaluation.</td>
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<td><strong>F. Utilize problem solving skills.</strong></td>
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<tr>
<td>1. Interpret, process, and apply effective problem solving and critical thinking skills to a variety of real-world situations relevant to the industry specific course.*</td>
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<td><strong>G. Understand and follow safety rules and regulations.</strong></td>
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<tr>
<td>1. Discuss practices necessary to maintain a safe working environment, including ergonomics and OSHA regulations.</td>
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<td>2. Demonstrate safe working habits.</td>
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<tr>
<td>3. Pass the ROP course Safety Test with 100% accuracy.</td>
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</tbody>
</table>

| SCANS: FS-1.c-e, FS-2.a-c, FS-2.f, FS-3.a, WC-1.a, WC-2.e, WC-4.a                  |
| SCPS: 1, 3-6                                                                        |
| AI: 1-9                                                                            |
| NCDG: SK-1.a-c, SK-2 a-d, SK-3 c-d, EOE-1 a, c-f, EOE-2 e, EOE-3 b, EOE-4 a, EOE-5 c, EOE-6 b, d, EOE-9 a-c, f,g |
| English/L.A.: Grades 9-10 Reading Comprehension G9/10-2.1*                         |
| Writing Strategies I.2, I.5                                                        |
| Writing Applications G9/10-2.6*                                                     |
| Written & Oral English Language Conventions G9/10-1.1-1.4*                        |
| Speaking Applications 2.5                                                          |
| English/L.A.: Grades 11-12 Reading Comprehension 2.3                               |
| Writing Strategies I.3                                                               |
| Math Statistics, Data Analysis and Probability G6-1.1*                            |
| Number Sense G7-1.3*, G7-1.6*                                                      |
| Algebra Functions G7-1.5*                                                           |
| Mathematical Reasoning G7-2.1*, G7-2.4*                                            |

* Meets Standards Identified on the California High School Exit Exam
### UNIT OF INSTRUCTION

#### III. MCROP ESLR 3: Lifelong Learners Who:

<table>
<thead>
<tr>
<th>ESTIMATED HOURS</th>
<th>STANDARD OR FRAMEWORK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yr. 1</td>
<td>Yr. 2</td>
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<td>5</td>
<td>2</td>
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</table>

- **A. Monitor personal, educational, and career goals.**
  1. Maintain a record of progress toward completion of requirements for the industry specific course Certificate of Completion.
  2. Develop an individual personal, educational, and career goal plan.
  3. Compare personal educational goals to the educational requirements of the industry specific career.
  4. Identify education and skills required for specific jobs within the industry.

- **B. Adapt to personal learning styles and assess performance objectively.**
  1. Identify personal learning styles (i.e. Gardner’s M.I.).
  2. Apply personal learning styles to obtain success in the classroom and/or worksite.

- **C. Are motivated toward continued personal growth.**
  1. Review the importance of lifelong learning, upgrading job skills, and assessing personal plans for attainment.
  2. List resources than can contribute to professional development.

### IV. MCROP ESLR 4: Users of Technology/Resources Who:

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<thead>
<tr>
<th>ESTIMATED HOURS</th>
<th>STANDARD OR FRAMEWORK</th>
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<tbody>
<tr>
<td>Yr. 1</td>
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<td>5</td>
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</tbody>
</table>

- **A. Effectively select, apply, maintain, and troubleshoot Technology and resources relevant to their field.**
  1. Identify appropriate methods, resources, and tools to resolve and troubleshoot technology problems to implement effective solutions.

- **B. Adapt to ever-changing technologies and resources by identifying, learning, and applying new skills to improve job performance.**
  1. Identify emerging technology and trends appropriate to the industry specific course.
  2. Apply new skills learned in the classroom and/or at the worksite to maintain and improve job performance.

- **C. Demonstrate the ability to identify, plan, and allocate resources.**
  1. Identify, organize, plan, and allocate resources in relationship to time, money, materials, facilities, and human resources.

- **D. Demonstrate the ability to integrate technology and resources in the work environment.**
  1. Utilize technology and apply resources relevant to the industry specific course.

- **E. Effectively acquire, gather, interpret, comprehend, and process relevant information.**
  1. Maintain classroom assignments using a personal organization system.
  2. Use electronic media, manuals, and tutorials as resources to access information.*
  3. Complete a research writing sample.*

* Meets Standards Identified on the California High School Exit Exam

- **SCANS:**  
  - FS-2.b  
  - FS-3.b, FS-3.d  
  - WC-3.a  

- **SCPS:**  
  - 1, 3, 5  
  - 1, 4, 6-7

- **NCDG:**  
  - SK-1a, c-e  
  - EOE-1a-f  
  - EOE-3a-c, f-h  
  - EOE-4a, f-g  
  - EOE-5c  
  - EOE-6a, d-e  
  - EOE-9a-d, f-h

- **English/L.A.: Grades 9-10**
  - Written & Oral English Language Conventions 1.1-1.4

- **English/L.A.: Grades 11-12**
  - Reading Comprehension 2.3
  - Written & Oral English Language Conventions 1.1-1.2

- **SCANS:**  
  - FS-1a-b  
  - WC-1a-d  
  - WC-3b  
  - WC-5a, WC-5c

- **SCPS:**  
  - 1, 3, 5, 7
  - 1-8

- **NCDG:**  
  - EOE-3a-b

- **English/L.A.: Grades 9-10**
  - Reading Comprehension 2.4
  - Writing Strategies 1.1-1.9
  - G9/10-1.5, 1.8*

- **Writing Applications 2.3**

- **Written & Oral English Language Conventions 1.0**

- **English/L.A.: Grades 11-12**
  - Writing Applications 2.3
  - Written & Oral English Language Conventions 1.0
## UNIT OF INSTRUCTION

### V. MCROP ESLR 5: Effective Users of Systems Who:

<table>
<thead>
<tr>
<th>A. Understand the social structure and the general function of the workplace.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Explain the elements of <em>All Aspects of the Industry</em>.</td>
</tr>
<tr>
<td>2. Research the social, organizational and technological systems of a business.*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B. Proficiently use equipment, tools, and terminology.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Utilize a computer and current program applications when completing the Employability Portfolio.</td>
</tr>
<tr>
<td>2. Practice workplace vocabulary when presenting the Employability Portfolio.</td>
</tr>
<tr>
<td>3. Demonstrate appropriate care and use of equipment and tools found in the classroom and/or at the worksite.</td>
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</tbody>
</table>

### ESTIMATED HOURS

<table>
<thead>
<tr>
<th>Yr. 1</th>
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### STANDARD OR FRAMEWORK

<table>
<thead>
<tr>
<th>SCANS:</th>
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<tbody>
<tr>
<td>FS-1.d-e</td>
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<tr>
<td>WC-1.c</td>
</tr>
<tr>
<td>WC-3.a</td>
</tr>
<tr>
<td>WC-3.d</td>
</tr>
<tr>
<td>WC-4.a</td>
</tr>
<tr>
<td>WC-5.c</td>
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<tr>
<th>SCPS:</th>
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<tr>
<td>1, 3, 5-7</td>
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<tr>
<th>AI:</th>
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<tbody>
<tr>
<td>1-9</td>
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<table>
<thead>
<tr>
<th>English/L.A.: Grades 9-10 Writing Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1-1.2, 1.8</td>
</tr>
<tr>
<td>G9/10.1.5, 1.8*</td>
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<table>
<thead>
<tr>
<th>Written &amp; Oral English Language Conventions</th>
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<tbody>
<tr>
<td>1.0</td>
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<table>
<thead>
<tr>
<th>Speaking Applications</th>
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<tbody>
<tr>
<td>2.3.a, c-e</td>
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</table>

<table>
<thead>
<tr>
<th>English/L.A.: Grades 11-12 Writing Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5.a-d</td>
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</tbody>
</table>

* Meets Standards Identified on the California High School Exit Exam
### Content Area Skills:

Content Area Skills contain Occupational Specific Standards aligned with California Department of Education Career Technical Standards and State Frameworks as available. In addition, Industry Specific Standards are aligned with local, state, and national industry standards as available. Technical Reading, Writing and Math standards are integrated for the industry specific course when appropriate, and are aligned with the English-Language Arts Content Standards and the Mathematics Content Standards for California Public Schools. All skills are assessed for student certification.

<table>
<thead>
<tr>
<th>UNIT OF INSTRUCTION</th>
<th>ESTIMATED HOURS</th>
<th>STANDARD OR FRAMEWORK</th>
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<tbody>
<tr>
<td></td>
<td>Yr. 1</td>
<td>Yr. 2</td>
</tr>
<tr>
<td><strong>I. Orientation:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Required Paperwork</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>1. Complete and explain the purpose of the following ROP paperwork:</td>
<td></td>
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<tr>
<td>a. Socrates Enrollment</td>
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<tr>
<td>b. Registration Permit</td>
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<tr>
<td>c. Course Outline/Syllabus</td>
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<td></td>
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<tr>
<td>d. State Art Proficiency Standards 9-12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Classroom Procedures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Demonstrate a clear understanding of attendance, grading, and classroom policies.</td>
<td></td>
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<tr>
<td>C. Safety</td>
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</tr>
<tr>
<td>1. OSHA: explain the purpose and function of OSHA in the workplace.</td>
<td></td>
<td>CDE/OH Advanced: FPD: H.1</td>
</tr>
<tr>
<td>2. Labor Laws for Teens: identify and explain the labor laws that govern teens in the workplace.</td>
<td></td>
<td>CDE/OH Advanced: SPH: I.2, 5, K.13 L.1</td>
</tr>
<tr>
<td>3. Accident Prevention: describe accident prevention techniques and provide methods to prevent accidents in the workplace.</td>
<td></td>
<td>English/LA: Grades 9-10 Reading Comprehension 2.1, 2.4 Writing Applications 2.6 A-D</td>
</tr>
<tr>
<td>4. Emergency Procedures: explain and implement procedures to be followed in the event of an emergency or accident in the workplace or classroom.</td>
<td></td>
<td>English/LA: Grades 11-12 Reading Comprehension 2.3</td>
</tr>
<tr>
<td>D. Sexual Harassment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Identify instances of sexual harassment and provide appropriate solutions to deal with such workplace issues.</td>
<td></td>
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<tr>
<td>E. Work Ethics</td>
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<td></td>
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<tr>
<td>1. Identify, describe, and demonstrate positive work ethics in the workplace.</td>
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</tbody>
</table>
### II. Career Development:

#### A. Floral Design Career Opportunities
1. Explore, research, and describe the levels of career opportunities available to individuals in the agriculture floriculture field.

#### B. Self-Assessment
1. Complete a self-assessment related to work values and qualities and complete a plan to improve areas of weakness.
2. Complete MCROP Employability Skills Evaluation

#### C. Occupational Goal-Setting
1. Develop a personal occupational plan that outlines specific career goals, and an action plan to achieve these outcomes.

<table>
<thead>
<tr>
<th>ESTIMATED HOURS</th>
<th>STANDARD OR FRAMEWORK</th>
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<tbody>
<tr>
<td>Yr. 1</td>
<td>Yr. 2</td>
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</tbody>
</table>

- CDE/OH Advanced: FPD: A.1, 2, 5, 1.1
- CDE/OH Advanced: SPH: P.1-4
- English/LA: Grades 9-10
  - Reading Comprehension 2.5 a-d
  - Writing App. 2.5c, 2.6 a-d
- Speaking Applications 2.3 a-d
- Listening & Speaking 1.7
- Grade 11-12: Reading Comprehension 2.3

### III. Employability:

#### A. Employability Portfolio
1. Complete an employability portfolio containing the following:
   a. Table of Contents
   b. Resume
   c. Cover Letter
   d. Master Application Form
   e. Letter of Recommendation
   f. Employability Skills Evaluation
   g. Work Sample and caption.

2. Portfolio Presentation/Interviewing Skills
   1. Participate in an interview situation that includes the presentation of the Employability Portfolio.

<table>
<thead>
<tr>
<th>ESTIMATED HOURS</th>
<th>STANDARD OR FRAMEWORK</th>
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</thead>
<tbody>
<tr>
<td>Yr. 1</td>
<td>Yr. 2</td>
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<tr>
<td>15</td>
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</tbody>
</table>

- CDE/OH Advanced: FPD: L.1
- English/L.A.:
  - Grade 9-10: Writing Applications: 2.3 a-d
  - Grade 9-10: Writers & Oral Language Conventions: 1.2, 1.3
  - Grade 9-10: Listening & Speaking: 1.7
  - Grade 9-10: Speaking Applications: 2.3-a, 2.3-c, 2.3-d, 2.3-e, 2.3-g
  - Grade 11-12: Writing Strategies 1.8
  - Grade 11-12: Writing Applications: 2.5 a-d
  - Grade 11-12: Written & Oral Language Conventions 1.1, 1.2
<table>
<thead>
<tr>
<th>UNIT OF INSTRUCTION</th>
<th>ESTIMATED HOURS</th>
<th>STANDARD OR FRAMEWORK</th>
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</thead>
<tbody>
<tr>
<td>IV. Business/Professional Communication:</td>
<td>10</td>
<td>CDE/OH: Advanced: FPD: M.1-2</td>
</tr>
<tr>
<td>A. Interpersonal Communication</td>
<td></td>
<td>English/LA: Grades 9-10 Writing Applications 2.5 a-d Writing Strategies 1.3-1.6, 1.8 Speaking Applications 2.2 b-c Listening &amp; Speaking 1.7</td>
</tr>
<tr>
<td>1. Effective communication: demonstrate the ability to communicate effectively with co-workers, supervisors, teachers, customers, and classmates.</td>
<td></td>
<td>English/LA: Grades 11-12 Writing Strategies 1.6, 1.8 Written &amp; Oral English Language Conventions 1.1-13</td>
</tr>
<tr>
<td>2. Human Relations: demonstrate effective human relation skills while working with others.</td>
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<tr>
<td>B. Written Communication</td>
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</tr>
<tr>
<td>1. Business Correspondence: identify and create business appropriate memos and letters related to common industry practices.</td>
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</tr>
<tr>
<td>2. Writing Sample/Research Paper: create a writing sample or research paper that demonstrates effective writing and communication skills used in the workplace.</td>
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<tr>
<td>C. Oral Communication</td>
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</tr>
<tr>
<td>1. Present Floral Design Research paper to an audience determined by ROP instructor.</td>
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<tr>
<td>UNIT OF INSTRUCTION</td>
<td>ESTIMATED HOURS</td>
<td>STANDARD OR FRAMEWORK</td>
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<tr>
<td>V. Leadership:</td>
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</tr>
<tr>
<td>A. Service Learning</td>
<td></td>
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</tr>
<tr>
<td>1. Develop and execute a community service project that will be of benefit to a specific group, institution, or cause within the community.</td>
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<td>5</td>
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<tr>
<td>B. Student Organization</td>
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<tr>
<td>1. Actively participate in the FFA organization.</td>
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Grade 9-10: Speaking Applications 2.6-a, 2.6-b, 2.6-c
### VI. Introduction to Art

<table>
<thead>
<tr>
<th>UNIT OF INSTRUCTION</th>
<th>ESTIMATED HOURS</th>
<th>STANDARD OR FRAMEWORK</th>
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</thead>
<tbody>
<tr>
<td>The variety of art</td>
<td>10</td>
<td>CDE/VPA: Aesthetics: 4.1-4.3</td>
</tr>
<tr>
<td>1. Describe and interpret artistic perception.</td>
<td></td>
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<tr>
<td>When is it Art?</td>
<td></td>
<td>English/LA: Grades 9-10</td>
</tr>
<tr>
<td>2. Explain the Philosophy of Arts.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Interpret the Aesthetic Value of Objects.</td>
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<tr>
<td>4. Develop Artistic Inspirations.</td>
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<tr>
<td>5. Interpret and understand Art Appreciation.</td>
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<tr>
<td>6. Explain knowledge of the Art World.</td>
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</tr>
<tr>
<td>A. When is it Art?</td>
<td></td>
<td>Reading/Comprehension 2.5</td>
</tr>
<tr>
<td>B. When is it Art?</td>
<td></td>
<td>Listening &amp; Speaking 1.7</td>
</tr>
<tr>
<td>C. When is it Art?</td>
<td></td>
<td>Speaking Applications 2.2 b,d</td>
</tr>
<tr>
<td>D. When is it Art?</td>
<td></td>
<td>English/LA: Grades 11-12</td>
</tr>
<tr>
<td>E. When is it Art?</td>
<td></td>
<td>Writing Applications 2.6 a-d</td>
</tr>
<tr>
<td>F. When is it Art?</td>
<td></td>
<td>Written &amp; Oral English Language Conventions 1.1, 1.2</td>
</tr>
<tr>
<td>G. When is it Art?</td>
<td></td>
<td>Speaking Applications 2.4 a-c</td>
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<tr>
<td>H. When is it Art?</td>
<td></td>
<td>CDE/VPA: Art Perception: 1.1-1.5</td>
</tr>
<tr>
<td>I. When is it Art?</td>
<td></td>
<td>CDE/VPA: Hist./Cultural: 3.1-3.5</td>
</tr>
<tr>
<td>J. When is it Art?</td>
<td></td>
<td>CDE/VPA: Aesthetics: 4.1-4.3, 4.5</td>
</tr>
<tr>
<td>K. When is it Art?</td>
<td></td>
<td>English/LA: Grades 9-10</td>
</tr>
<tr>
<td>L. When is it Art?</td>
<td></td>
<td>Writing Applications 1.5</td>
</tr>
<tr>
<td>M. When is it Art?</td>
<td></td>
<td>Writing Applications 2.6 a-b</td>
</tr>
<tr>
<td>N. When is it Art?</td>
<td></td>
<td>Written &amp; Oral English Language Conventions 1.1-1.4</td>
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<tr>
<td>O. When is it Art?</td>
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<td>Listening &amp; Speaking 1.7</td>
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<td>P. When is it Art?</td>
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<td>Speaking Applications 2.2 b,d</td>
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<td>Q. When is it Art?</td>
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<td>English/LA: Grades 11-12</td>
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<tr>
<td>R. When is it Art?</td>
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<td>Writing Applications 2.6 a-d</td>
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<td>S. When is it Art?</td>
<td></td>
<td>Writing Strategies 1.6, 1.8</td>
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<tr>
<td>T. When is it Art?</td>
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<td>Reading Comprehension 2.3</td>
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<td>U. When is it Art?</td>
<td></td>
<td>Written &amp; Oral English Language Conventions 1.1, 1.2</td>
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<tr>
<td>V. When is it Art?</td>
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<td>Speaking Applications 2.4 a-c</td>
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### VII. Historical Contributions and Cultural Dimensions

<table>
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<th>UNIT OF INSTRUCTION</th>
<th>ESTIMATED HOURS</th>
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<tbody>
<tr>
<td>Interpretation</td>
<td>15</td>
<td>CDE/VPA: Art Perception: 1-1.5</td>
</tr>
<tr>
<td>A. Interpretation</td>
<td></td>
<td>CDE/VPA: Hist./Cultural: 3.1-3.5</td>
</tr>
<tr>
<td>1. Interpret and describe the meaning of art.</td>
<td></td>
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</tr>
<tr>
<td>2. Research and demonstrate elements of Art History.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>History of Floral Art</td>
<td></td>
<td>CDE/VPA: Aesthetics: 4.1-4.3, 4.5</td>
</tr>
<tr>
<td>B. History of Floral Art</td>
<td></td>
<td>English/LA: Grades 9-10</td>
</tr>
<tr>
<td>1. Describe the Floral Art of Ancient Civilizations.</td>
<td></td>
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</tr>
<tr>
<td>2. Describe the Floral Art of the European Period.</td>
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<tr>
<td>3. Describe the Floral Art of the Impressionistic Era.</td>
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<tr>
<td>4. Explain the Oriental Influence of Floral Art.</td>
<td></td>
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</tr>
<tr>
<td>5. Explain the American Style of Floral Art.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research the Influences of floral artists of the 20th and 21st century</td>
<td>15</td>
<td>English/LA: Grades 9-10</td>
</tr>
<tr>
<td>C. Research the Influences of floral artists of the 20th and 21st century</td>
<td>15</td>
<td>Writing Strategies 1.5</td>
</tr>
<tr>
<td>1. Identify various styles and techniques.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Describe Artistic Inspirations.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Interpret common visual themes used in various cultures.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Explain comparisons of artistic components of various time periods and cultures: Architecture, Colors, Furniture, Fabrics, and Clothing.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Create a two-dimensional project to represent various periods in floral art history.</td>
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<tr>
<td>6. Create a three-dimensional project to represent various periods in floral art history.</td>
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<td>7. Develop a research project for one historical style.</td>
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<tr>
<td>8. Explain the research significance of floral materials: Cultures, Ethnicity, Time Periods, Medias Used.</td>
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<tr>
<td>10. Create a Cultural Design Practicum using a given theme: two dimensional layouts, three-dimensional arrangements, fresh and dry cut flowers, and container arrangements.</td>
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<tr>
<td>11. Explain, evaluate, and design alternatives: weaving and tying techniques.</td>
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</tbody>
</table>
### VIII. Art Elements of Design

**A. Lines**
1. Display actual, implied and expressive use of Line.
2. Demonstrate vertical, horizontal, and diagonal use of Line.

**B. Shapes/Forms**
1. Demonstrate Triangular Floral Art Designs.
2. Demonstrate Circular Floral Art Designs.
4. Demonstrate Horizontal Floral Art Designs.

**C. Colors**
1. Apply the origin of color to Floral Art Designs: hue, primary, secondary, tertiary, warm, cool, value, tint, tone, and shades.
2. Apply color harmony to Floral Art Designs: monochromatic, analogous, complementary, triadic.

**D. Textures**
1. Create visual and tactile components in Floral Art: fine, medium, and course textured media.
2. Explain various container and material components of Floral Art.
3. Display knowledge of flower and foliage use.

**E. Value**
1. Display light and dark change in Floral Art.

**F. Space and Depth**
1. Demonstrate space in two-dimensional and three-dimensional Art.
2. Interpret space in our environment.
3. Apply Angling Media in Floral Art.
4. Create overlapping media for design.
5. Demonstrate size and color of Media in Floral Art.

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<tr>
<th>UNIT OF INSTRUCTION</th>
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<th>STANDARD OR FRAMEWORK</th>
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<td>VIII. Art Elements of Design</td>
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<td>A. Lines</td>
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<td>B. Shapes/Forms</td>
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<td>C. Colors</td>
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<td>D. Textures</td>
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<td>E. Value</td>
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<td>F. Space and Depth</td>
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<td>IX. Principles of Art Design</td>
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<tr>
<td>A. Balance</td>
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<tr>
<td>1. Demonstrate Symmetrical Balance in Floral Art.</td>
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<td>2. Create Asymmetrical Balance in Floral Art.</td>
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<td>3. Create Radial Balance in Floral Art.</td>
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<td>4. Demonstrate Open Balance in Floral Art.</td>
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<td>B. Proportion/Scale</td>
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<tr>
<td>1. Display knowledge of flowers to materials proportion and scale in Floral Art.</td>
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<tr>
<td>2. Display knowledge of flower to flower proportion and scale in Floral Art.</td>
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<tr>
<td>3. Display knowledge of flower to foliage proportion and scale in Floral Art.</td>
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<tr>
<td>4. Demonstrate arrangement to surroundings proportion and scale in Floral Art.</td>
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<td>5. Demonstrate geometrical techniques in Floral Art.</td>
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<td>C. Emphasis</td>
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<tr>
<td>1. Apply Focal Point to Floral Art Designs.</td>
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<td>2. Demonstrate emphasis in Floral Art Designs.</td>
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<tr>
<td>3. Create location, size, and pattern of Media for Floral Art Designs.</td>
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<td>4. Create line direction and directional facing in Floral Art Designs.</td>
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<td>5. Display framing and isolation for Floral Art.</td>
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<td>D. Rhythm</td>
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<td>1. Interpret Repetition in Floral Art.</td>
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<tr>
<td>2. Demonstrate Transition in Floral Design.</td>
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<tr>
<td>3. Create a radiating line in Floral Design.</td>
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<td>4. Apply eye movement to Floral Art Designs.</td>
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<td>E. Harmony and Unity</td>
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<td>1. Display color combinations for Artistic Design.</td>
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<td>2. Demonstrate placement in Floral Art.</td>
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<tr>
<td>3. Apply Proximity to Floral Art Designs.</td>
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<td>4. Interpret Transition in Floral Art Design.</td>
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<td>F. Contrast</td>
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<tr>
<td>1. Create color schemes in Art Design.</td>
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<td>2. Demonstrate Medias Used in Floral Art.</td>
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<td>STANDARD OR FRAMEWORK</td>
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<tr>
<td>X. Creative Expression Through Applying Artistic Processes and Skills to Original Works of Art</td>
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<tr>
<td>A. Two-Dimensional Media</td>
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<tr>
<td>1. Demonstrate knowledge of Basic Drawing and Layout: Simple Perspective Drawing, Sketching Original Art Works, and Project Layout.</td>
<td>CDE/VPA: Creative Exp.: 2.1, 2.3, 2.6</td>
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<tr>
<td>2. Display painting techniques for Floral Art: Color Wheel and Still Life.</td>
<td>CDE/VPA: Hist./Cultural: 3.1, 3.4-3.5</td>
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<tr>
<td>4. Apply Printmaking to Floral Art using pressed flowers.</td>
<td>CDE/OH Advanced: FPD: B.2, E.1,3, H.1-5, I.1, I.1-7, K.1-6</td>
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<td>5. Demonstrate photograph and graphic design through computer art.</td>
<td>CDE/OH: Advanced: LIM: C.1</td>
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<tr>
<td>B. Three-Dimensional Sculptures</td>
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<tr>
<td>1. Create and display flower and foliage media techniques for specific Floral Art: Mass Flower and Foliage, Filler Flower and Foliage, Line Flower and Foliage, Form Flower and Foliage, Fresh Flower and Foliage, Dry Flower and Foliage, and Artificial Flower and Foliage.</td>
<td>CDE/OH: Advanced: SPH: A.1,2, D.1, N.1, 3-8</td>
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<tr>
<td>2. Apply mechanics, materials, and media through an introduction to proper care and proper usage of equipment and media.</td>
<td>English/LA: Grades 9-10 Listening &amp; Speaking 1.7</td>
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<tr>
<td>3. Display specific artist styles and techniques using Oriental, European, and Exhibition Styles: Chinese, Japanese, Vertical, Circular, Triangular, and Wear and Carry Designs.</td>
<td>English/LA: Grades 11-12 Speaking Applications 2.4 a-d Writing Applications 2.6 a-d</td>
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<tr>
<td>XI. Aesthetic Valuing and Making Judgments on Individual Works of Art</td>
<td>10</td>
<td>5</td>
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<tr>
<td>A. Works of Art and Aesthetic Value</td>
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<tr>
<td>1. Describe works of art in appropriate terms.</td>
<td>CDE/VPA: Creative Exp.: 2.2, 2.5-2.6</td>
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<tr>
<td>2. Analyze art works in terms of art elements and design principles.</td>
<td>CDE/VPA: Conn/Re/Apps. 5.3-5.4</td>
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<tr>
<td>3. Identify sensory qualities.</td>
<td>CDE/OH Advanced: LIM: A.1,3</td>
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<tr>
<td>4. Identify the style and period of viewed art.</td>
<td>English/LA: Grades 9-10 Reading Comprehension 2.2-2.6 Writing Strategies 1.1-1.9 Writing Applications 2.5 a-d, 2.6 a-d</td>
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<tr>
<td>5. Evaluate art elements and art principles used in others and own works of art.</td>
<td>Written &amp; Oral English Language Convention 1.1-1.5 Listening &amp; Speaking 1.7 Speaking Applications 2.2 b-d, 2.3 a-g</td>
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<tr>
<td>B. Create Assessments and Methods of Evaluation</td>
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<tr>
<td>1. Develop a portfolio including two-dimensional drawings, three-dimensional sculptures, and art element and principles critiques.</td>
<td>English/LA: Grades 11-12 Reading Comprehension 2.3 Writing Strategies 1.6, 1.8-1.9 Writing Applications 2.5 a-d, 2.6 a-d</td>
<td></td>
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<tr>
<td>2. Develop a cultural and historical research paper.</td>
<td>Written &amp; Oral English Language Convention 1.1-1.3 Speaking Applications 2.4 a-d</td>
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<tr>
<td>3. Present student critiques and rubrics.</td>
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<tr>
<td>4. Interpret teacher critiques and rubrics.</td>
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<tr>
<td>5. Analyze and interpret art criticisms.</td>
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<td>7. Exhibit a Self-Evaluation.</td>
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<tr>
<td>8. Create verbal and written reflections for Floral Designs.</td>
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<tr>
<td>UNIT OF INSTRUCTION</td>
<td>ESTIMATED HOURS</td>
<td>STANDARD OR FRAMEWORK</td>
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<tr>
<td>XII. Connections, Relationships, and Applications Learned in Visual Art</td>
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<td>5</td>
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</tbody>
</table>
| A. Relationships to Other Disciplines  
  1. Compare and Contrast works of art to other discipline areas. | CDE/VPA: Creative Exp: 2.3 |
| B. Relationships to Careers in Art  
  1. Compare and contrast methods demonstrated in art careers. | CDE/VPA: Hist/Cult. Context: 3.4 |
| C. Applications of Artistic Concepts  
  1. Visit a local art gallery/museum or apply other floral art field trip.  
  2. Design an advertisement using art elements, principles, and techniques to display student work at an art exhibition.  
  3. Create a two-dimensional or three-dimensional design incorporating elements and principles as applied to a specific theme and culture. | CDE/OH Advanced: LiM: B.1-5 |
| XIII. Creative Expression Through Advanced Floral Design Arranging for Entertainment Purposes | 35 | Math:  
  Number Sense G7: 1.3, 1.6  
  Mathematical Reasoning G7: 2.1, 2.4 |
| A. Demonstrate Floral Art Style and Technique Through Holiday Design  
  1. Identify and create types of centerpieces for seasonal and holiday use.  
  2. Create accessories for holiday expression: corsages, boutonnieres, balloon arrangements, wreaths, various container media. | CDE/VPA: Creative Exp: 2.3 |
| B. Facilitate Creativity and Interactive Arranging Using Party Design  
  1. Develop creative arrangements for party occasions.  
  2. Organize a party to implement in the community including a Specific Details Report: Theme, Colors, Invitations, Set-up, and Map. | CDE/VPA: Hist/Cult. Context: 3.4 |
| | CDE/VPA: Aesthetics: 4.2-4.3 |
| | CDE/VPA: Conn/Rel/Apps: 5.1 |
| | Math:  
  Number Sense G7: 1.3, 1.6  
  Mathematical Reasoning G7: 2.1, 2.4 |
**UNIT OF INSTRUCTION**

| XIV. Advanced Floral Design Techniques for Intricate Arrangements and Accessories |
|----------------------------------|-----------------------------|-----------------------------|
| **A. Apply Floral Design Elements and Principles Through Sympathy Arrangements** |
| 1. Interpret the importance for sympathy flowers in the Floriculture Industry. |
| 2. Identify and describe typical sympathy arrangements and accessories. |
| **B. Develop Complete Arrangements and Accessories for Wedding Ceremony Design** |
| 1. Utilize formal questionnaire for a bridal consultation. |
| 2. Create bouquets for attendants and other persons. |
| 3. Develop reception decorations for the wedding party environment. |
| 4. Create and design accessories for the wedding party ceremony. |
| 5. Prepare price estimate sheets and formal price sheets for the bridal party. |
| **C. Apply High-Style and Advanced Floral Designs** |
| 1. Develop individualized floral design projects based upon art and design techniques. |
| 2. Create advanced floral design styles for various occasions. |

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<th>ESTIMATED HOURS</th>
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<td>CDE/VPA: Creative Ex.: 2.3</td>
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<td>CDE/VPA: Hist/Cultural: 3.4</td>
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<tr>
<td>Number Sense: G7: 1.3, 1.6</td>
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<td>Mathematical Reasoning: G7: 2.1, 2.4</td>
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<tr>
<th>XV. Retail and Wholesale for the Floriculture Industry</th>
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<tbody>
<tr>
<td><strong>A. Demonstrate Necessary Skills to Manage the Floral Design Retail Shop</strong></td>
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<tr>
<td>1. Evaluate qualifications to be a Florist.</td>
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<tr>
<td>2. Develop knowledge of types of floral shops.</td>
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<tr>
<td>3. Demonstrate pricing methods and use of computers and machines within the Floriculture Industry.</td>
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<tr>
<td>4. Apply customer service skills and consultations for the Floriculture Industry.</td>
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<tr>
<td>5. Demonstrate knowledge of importance of effective sales skills.</td>
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<tr>
<td>6. Facilitate marketing and promotion for the Floral Retail Shop.</td>
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<tr>
<td><strong>B. Management and Facilitation of the Wholesale Floriculture Industry</strong></td>
</tr>
<tr>
<td>1. Apply floral design skills to contribute to the customer sales management.</td>
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<tr>
<td>2. Demonstrate cut flower processing techniques and skills for the floriculture wholesale industry.</td>
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<tr>
<td>3. Utilize wholesale industry applications to manage floral crop production in greenhouses.</td>
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<tr>
<td>4. Exhibit flower production knowledge and techniques for the Floral Designer.</td>
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<td><strong>C. Management and Facilitation of Nursery Production and Sales</strong></td>
</tr>
<tr>
<td>1. Expand plant identification vocabulary, the physiological and morphological factors affecting identification, and the value of that knowledge for workers in the nursery production industry</td>
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<td>2. Explain the uses, structural components, advantages and disadvantages of various horticulture structures used in the industry.</td>
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<td>3. Prepare planting medias and demonstrate approved procedures for the propagation of nursery plants.</td>
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<td>4. Demonstrate a knowledge of nursery production practices.</td>
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<td>5. Identify and care for a variety of houseplants.</td>
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<td>CDE/OH: Advanced: SPH: C.1, E.1-2, 4, F.1-6, G.1-3, 5, 6, 8, H.5, J.3, 4, 6, K.1, 5, 6, 12, 13, L.1-5, 9, M.1-6, N.1-11, N.1-14</td>
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<td>Mathematical Reasoning: G7: 2.1, 2.4</td>
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IX. COURSE HOURS:

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<td>Total Classroom Hours Year Two: 180</td>
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X. STANDARDS REFERENCE CODE:

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<td>SCANS</td>
<td>National Career Preparation Standards</td>
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<td>NCDG</td>
<td>National Career Development Guidelines</td>
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<td>AI</td>
<td>All Aspects of the Industry</td>
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<tr>
<td>SCPS</td>
<td>State Career Preparation Standards</td>
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<tr>
<td>CDE English/L.A.</td>
<td>English/Language Arts Standards</td>
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<td>CDE Visual &amp; Performing Arts</td>
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<td>CDE/OH: Advanced SPH:</td>
<td>Proficient and Advanced</td>
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<td>CDE/OH: Advanced FPD:</td>
<td>California Department of Education Agriculture Model Curriculum Guide:</td>
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<tr>
<td>CDE/OH: Advanced LIM:</td>
<td>Advanced Core and Specializations: Specialization in Ornamental Horticulture</td>
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XI. LABOR MARKET INFORMATION:
LMI for local, state, and national data attached.

XII. DEMONSTRATED EFFECTIVENESS
According to the Merced County ROP Follow-Up Report (VE-80C) of June 2002, 73% of students whose status was known and completed ROP Floral Design in 2001-2002, are either employed or planning to pursue higher education.
# Course Description

## A. COVER PAGE

<table>
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<tr>
<th>1. Course Title: Agriculture Food Science</th>
<th>9. Subject Area</th>
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<tbody>
<tr>
<td>2. Transcript Title / Abbreviation (District Office Use Only)</td>
<td>☐ History/Social Science</td>
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<td>3. Transcript Course Code / Number (District Office Use Only)</td>
<td>☐ English</td>
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<td>Atwater High School</td>
<td>☐ Laboratory Science</td>
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<td>Merced Union High School District</td>
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<tr>
<td>7. School / District Web Site</td>
<td>11. Seeking &quot;Honors&quot; Distinction?</td>
</tr>
<tr>
<td><a href="http://www.muhsd.k12.ca.us/Domain/232">http://www.muhsd.k12.ca.us/Domain/232</a></td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>8. School Contact</td>
<td>12. Unit Value (District Office Use Only)</td>
</tr>
<tr>
<td>Name: Natalie Kirschner</td>
<td>☐ 0.5 (half year or semester equivalent)</td>
</tr>
<tr>
<td>Title/Position: Agriculture Teacher</td>
<td>☐ 1.0 (one year equivalent)</td>
</tr>
<tr>
<td>Phone: (209)357-6025 Ext.:</td>
<td>☐ 2.0 (two year equivalent)</td>
</tr>
<tr>
<td>Fax: (209)357-6067</td>
<td>☐ Other: ____________________________</td>
</tr>
<tr>
<td>E-mail: <a href="mailto:nkirschner@muhsd.k12.ca.us">nkirschner@muhsd.k12.ca.us</a></td>
<td>13. Date of School Board Approval (District Office Use Only)</td>
</tr>
<tr>
<td>Principal's Signature</td>
<td></td>
</tr>
</tbody>
</table>

| 14. Was this course previously approved by UC? | ☐ Yes ☑ No |
| If yes, check all that apply: |  |
| ☐ Course reinstated after removal within 3 years. Year removed from list? ______________ | ☐ Yes ☐ No |
| Same course title? |  |
| If no, previous course title? |  |
| ☐ Identical course approved at another school in same district. Which school? ______________ | ☐ Yes ☐ No |
| Same course title? |  |
| If no, course title at other school? |  |
| ☐ Alternative course title for course with identical content at this school |  |
| Title of previously-approved identical course: |  |
| ☐ Advanced Placement (AP) or International Baccalaureate (IB) course |  |
| ☐ Approved UC College Prep (UCCP) Initiative course |  |
| ☐ Approved P.A.S.S. course |  |
| ☐ Approved ROP/C course. Name of ROP/C? ______________ |  |
| ☐ Other. Explain: |  |

15. Is this a re-submission of a course that was previously NOT approved by UC? ☐ Yes ☑ No
16. Is this course modeled after an UC-approved course from another school? [ ] Yes [x] No

If so, which school(s)?

17. Pre-Requisites
Any Agriculture course, with a "C" grade or better or permission of the instructor

18. Co-Requisites
N/A

19. Brief Course Description
AGRICULTURE FOOD SCIENCE applies fundamental scientific principles to the research, development, manufacturing, packaging, storage, and marketing of food products. This applied, laboratory-based course, which focuses on food processing, is designed to educate students about functional components of foods, food safety, nutrition, sensory evaluation, quality assurance, new product development, food chemistry, food processing and engineering.

**B. COURSE CONTENT**

Please refer to instructions

20. Context for Course (How does it fit into, replace, or augment existing curriculum? How does it fit into the department or program in which it will be included?)

The opportunity to open an Ag Food Science course allows students to maintain a four-year agriculture pathway. As this course is designed for 11th or 12th grade students, it allows students to either maintain their FFA and agriculture SAE (projects) eligibility at the school and state level. The proposed Ag Food Science course would help students understand specific facts and principles of food science and the agriculture industry, food safety, nutrition, and the careers in these fields. Through this process, we are able to provide students with the opportunity for personal growth, academic success, and career exploration and meet the desired four-year agriculture career/academic pathway. This course will provide students with an opportunity to take part in FFA/leadership activities, and remain involved in an area of academic interest, which serves as an opportunity to benefit students, the agriculture program, the school, district, and community.

21. Course Goals and/or Major Student Outcomes

The objectives of the course are to understand and practice food science and nutrition, understand and practice food safety, explain different food processing techniques, difference between fruits, vegetables, meats, and dairy products, explain quality factors in foods, transportation, understand different careers, develop basic leadership skill, portfolio, and develop knowledge in record books.

Students will gain the understanding of how agriculture is used in their daily lives through a hands-on approach to learning and will access reliable information relating to food science of the past, present, and future.

Students will apply scientific knowledge and processes to food science concepts and principles; safely using appropriate technology to implement food science and safety practices. Students will develop an understanding of the importance of food to our daily health; the importance of food science and nutrition careers; and having fun learning through the process. This course will
provide students with the opportunity for personal growth, academic success and career exploration.

22. Course Objectives
Upon completion of this course, students will:

- Students will build on the aspects of chemistry and physics, using food to receive a better understanding of chemistry and physics and its relationship to personal and environmental issues.
- Students will demonstrate the ability to analyze situations and solve problems by applying the scientific inquiry process and to think critically by effectively completing challenging group and individual projects and assignments.
- Students will develop laboratory writing, reasoning and mathematic skills through measuring, recording data, excel graphs, and writing laboratory reports.
- Students will demonstrate knowledge and understanding of basic food science concepts regarding meat, milk, fruits, vegetables, grains, legumes, and oilseeds.
- Students will investigate scientific issues by asking meaningful questions, researching literature, conducting careful investigations, analyzing data, and formulating explanations by using logic and evidence.
- Students will apply the scientific method, including generating a hypothesis, experimentation, and analysis of data to solve scientific problems related to the chemical properties of food.
- Students will measure and evaluate the research design, validity, reliability and variables used for sensory evaluation.
- Students will know and analyze the chemical and physical properties of matter.
- Students will explain and distinguish between the four parts of the food industry.
- Students will understand the nutrition and digestion of foods.
- Students will describe and identify the factors of quality in foods.
- Students will explain how energy influences chemical and physical reactions.
- Students will explain and identify various foods in a food composition table and describe their nutritional value.
- Students will distinguish between pathogenic and beneficial microorganisms on food.
- Students will analyze health, safety and environmental issues related to current and emerging food technologies, such as irradiation, genetic engineering, and biotechnology.

23. Course Outline
I. Orientation- 8 hours
   A. Required Paperwork
      1. Complete and explain the purpose of the following class paperwork.
   B. Classroom Procedures
      1. Demonstrate a clear understanding of attendance, and grading.
   C. Safety
      1. OSHA: explain the purpose and function of OSHA in the workplace.
      2. Labor Laws for Teens: identify and explain the labor laws that govern teens in the workplace.
      3. Accident Prevention: describe accident prevention techniques and provide methods to prevent accidents in the workplace.
4. Emergency Procedures: explain and implement procedures to be followed in the event of an emergency or accident in the workplace or classroom.

5. Lab Safety

D. Sexual Harassment
1. Identify instances of sexual harassment and provide appropriate solutions to deal with such workplace issues.

E. Work Ethics
1. Identify, describe, and demonstrate positive work ethics in the workplace

II. Leadership- 8 Hours

F. Service Learning
1. Develop and execute a community service project that will be of benefit to a specific group, institution, or cause within the community.

G. Student Organization
1. Actively participate in the applicable course student organization.

II. Personal Growth and Development Through the Student Organization of FFA
1. Review and practice FFA policies from handbook.
2. List and describe FFA awards available to members
3. Identify FFA contest in which vocational - agriculture students may participate.
4. List the requirements for earning the Chapter FFA Degree, State FFA Degree, and American FFA Degree
5. Complete the FFA student data Sheet

III. Agriculture Research Project-10 hours

I. Written Project and Presentation in Agriculture
1. Complete a research project related to the food science industry that includes the following:
   - written report
   - presentation visuals
   - oral report

IV. Food Science Careers- 10 Hours

A. Career Development
1. List the basic skills and knowledge needed for successful employment and job advancement.
2. Describe the thinking skills needed for the workplace of today.
3. Identify the traits of an entrepreneur.
4. List occupational areas of the food industry.
5. Identify the careers that require a science background.

IV. Safety and Learning the Procedures and Policies of Working in the Laboratory- 15 Hours

A. Tools and Layout
1. Identify the tools used in the kitchen.
2. Describe the layout of the kitchen.

B. Safety Measures
1. Accident Prevention: Describe accident prevention techniques and provide methods to prevent accidents in the kitchen.
2. Emergency Procedures: Explain and implement procedures to be followed in the event of an emergency or accident in the kitchen or classroom.
3. Identify sources of safety information.

C. Weights and Measures
1. Demonstrate conversions of measurements used in the kitchen.
2. Properly measure liquids and solids.
3. Read a scale and thermometer.
4. Demonstrate how to read a recipe to complete a project.

D. Lab Organization
1. Demonstrate how to organize your work stations.

V. Overview of Food Science- 8 Hours
A. Food Industry Organization
1. Name the four parts of the food industry.
2. Divide the food industry by major product lines.
3. Explain international aspects of the Food Industry.

B. Food Industry Trends
1. Compare US food expenditures to other countries.
2. List four consumption trends.
3. Explain trends in meal purchases.
4. Identify allied industries.

VI. Nutrition and Digestion- 12 Hours
A. Nutritional Values
1. Identify nutritional needs using RDA or DRI.
2. Discuss the functions of energy, carbohydrates, fats, and proteins in the body.
3. Provide the calorie content of proteins, carbohydrates, and fats.
4. List the essential amino acids.
5. Name two protein-deficiency diseases.
7. Name an essential fatty acid
8. List the water and fat soluble vitamins and their functions.
9. List six minerals required by the body.

B. Digestion
1. Describe the process of digestion.
2. Identify the organs involved in digestion.
3. Discuss the relationship of diet to health.

VII. Chemistry of Foods- 8 hours
A. Chemical Properties
1. Describe the chemical properties of an element.
2. Name the three elements most important to life.
3. Explain how covalent, hydrogen, and ionic bonds are formed.
4. Define a molecule.
5. Identify symbols for hydroxyl, amino, ammonia, methyl, and carboxyl.
6. Discuss oxidation-reduction reactions.
7. Describe the two divisions of metabolism.

B. Carbohydrates
1. Classify carbohydrates.
2. Compare the sweetness of various sugars.
3. Name the three uses of carbohydrates in foods.

C. Proteins
1. Describe the chemical makeup of proteins.
2. Discuss the use and function of proteins in foods.

D. Fats
1. Classify lipids.
2. Discuss the use of lipids or fats in foods.
3. Identify saturated and unsaturated fats.
4. List the fat and water soluble vitamins.

E. Minerals
1. Name ten minerals important in nutrition.

F. Water Essentials
1. List two functions of water in the body.

G. Miscellaneous Chemicals
1. Identify biotin, choline, and phytochemicals.

VIII. Operations in Food Processing - 10 Hours
A. Material Handling
1. Describe material handling aspects in the food industry.

B. Miscellaneous Operations
1. Name three methods of reducing the size of a food product.
2. Identify two general types of pumps.
3. Name three methods for separating food products.
4. Describe four factors that affect mixing.
5. Describe five factors influencing heat transfer.
6. Identify five unit processes that include heat transfer.
7. Discuss the uses of three common methods of drying.
8. List two examples of formed food.
9. Describe the purposes of concentration.
10. Identify two reasons for packaging food products.
11. Discuss why some unit operations overlap.

IX. Packaging - 12 Hours
A. Packaging Concepts
1. Identify three types of food packaging.
2. Name and describe the use of four basic packaging materials.
3. List ten features or requirements of packaging materials.
4. Describe tests that measure the properties of packaging material.
5. Identify packages with special features.
6. Discuss how packaging addresses environmental concerns.
7. Identify and describe a packaging innovation.

X. Dairy Processing - 20 Hours
A. Dairy Processes
1. Define the term “milk”.
2. Describe quality control during the production of milk and milk products.
3. Explain pasteurization and homogenization.
4. Identify three methods of pasteurization.
5. Describe the “solids” composition of milk.

B. Butter
1. Describe the process of separating butterfat.
2. Describe butterfat uses.

C. Dairy Products
1. Name five concentrated or dried dairy products.
2. Identify three bacteria used to produce dairy products.
3. Name five fermented dairy products.
D. Ice Cream
   1. Describe the five steps in processing ice cream.

E. USDA Grades
   1. Describe three USDA quality grade shields

XI. Meat Poultry and Eggs- 15 Hours
   A. Meat and Poultry
      1. Describe the production of meat from cattle, pigs, and poultry.
      2. Identify meat products from cattle, pigs, and poultry.
      3. Discuss the general composition of meat and meat products.
      4. List five factors affecting meat tenderness.
      5. Describe the cooking process of meat.
      6. Discuss the production of meat substitutes.
      7. Identify quality grading of meat.

   B. Eggs
      1. Describe egg production.
      2. Identify factors affecting egg quality.
      3. Discuss factors related to the grading of eggs.

XII. Cereal Grains, Legumes, and Oilseed- 8 Hours
   A. Grains
      1. Diagram the general structure of a grain.
      2. Name three cereal grains.
      3. Describe the general composition of grains.

   B. Starches
      1. Identify three properties of starch.
      2. List four factors that must be controlled when cooking with starch.

   C. Flour
      1. Discuss the milling of grain to flour.
      2. Identify five types of wheat flour.
      3. Explain the classes of wheat and grades of flour.
      4. Identify the type of flours other than wheat flour.

   D. Corn
      5. List the steps in corn refining.
      6. Name four products derived from corn.

   E. Oilseeds
      1. Describe the general composition of oilseed.
      2. List four oilseeds and indicate the use of their products.

   F. Legumes
      1. Describe the general composition of legumes.
      2. Discuss the general uses of legumes.

   G. Soy Beans
      1. Name four general categories of products from soybean extraction.
      2. Identify five food products of soybean extraction.

   H. Baking Processes
      1. Explain the various processes that occur during baking relevant to grains, legumes, and oils.

XIII. Fruits and Vegetables- 10 Hours
   A. Structure and Physiology
      1. Identify the parts of a plant considered a vegetable or a fruit.
2. Describe the nutrient composition of a fresh fruit or vegetable.
3. Discuss the structure of a plant cell.
4. Describe the plant tissues and their functions.
5. Explain climactic and non-climactic with examples.
6. Name one pigment in fruits or vegetables and describe how it responds to heat or Ph.
7. List four factors affecting the texture of fruits or vegetables.

B. Grading
1. Describe how quality grade determines the use of a fruit or vegetable.

C. Storage
1. List five factors considered during storage.

D. Processing
1. Describe the processing of fruits.
2. Describe the processing of vegetables.

XIV. Food Safety- 10 Hours
A. Sanitation
1. List three categories of food safety.
2. Discuss the role of sanitation and cleaning during food safety processing.
3. Identify the correct order of sanitizing or cleaning a food contact surface.
4. Identify the microorganisms that provide an index of food sanitation.
5. Explain the two types of sanitation.

B. Food-Borne Illness
1. Name four factors contributing to the development of a food-borne disease.
2. Identify four types of microorganisms that can cause food-borne illness.
3. Explain the five factors affecting microbial growth.
4. Name three types of food soils.

C. Regulations
1. Identify the various agencies and their specific purpose involved in food safety regulations.
2. Describe the role of HAACP in food safety.
3. Describe measures being formulated in the area of Food Security and Food Defense.

XV. Regulation and Labeling- 10 Hours
A. Agencies and Regulations
1. Identify the agencies and the laws that regulate foods and labeling.
2. Describe the functions of a quality assurance department.
3. Identify issues related to Ethical Treatment of Animals.

B. Labeling
1. Discuss the history of food labels.
2. List five features of new labels.
3. Name two general categories of food exempt from food labels.

C. Nutritional Identification
1. List six components found on the nutritional panel.
2. Describe the format of the nutritional panel.
3. Discuss the use of the DRVs.
4. Identify when these words can be used: Free, low, high, less, light and more.
5. List two health claim relationships that can be listed on a food package.

XVI. Fats and Oils- 3 Hours
A. Composition and Processes
1. Explain saturated and unsaturated, cis, and trans, in terms and fatty acids.
2. Describe fatty acids.
3. Discuss melting point and the structure of fatty acids.
4. Identify six sources of fats and oils.
5. List eight functions fats and oils serve in food.
6. Compare the extraction of fats or oils from animals to that of plants.
7. Describe the processes in the refining and modifying of oils or fats after extraction.
8. Discuss monoglycerides and diglycerides and their uses.
9. Identify substances that may substitute for fat.
10. Describe two tests conducted on fats and oils.

XVII. Candy and Confectionery- 3 hours

A. Types of Candies
   1. Identify three crystalline and three non-crystalline candies.

B. Components of Candies and Confectionaries
   1. Explain the common components of candies and confectionaries.

C. Candy-making Processes
   1. Describe the relationship between sugar concentration and boiling point.
   2. Identify two ways to invert sugar.
   3. Explain carmelization in candy-making.
   4. Name four sugar-based sweeteners developed by cornstarch.
   5. Describe uses of high fructose corn starch.
   6. List four sugar alcohols and four high intensity sweeteners.
   7. Define Cocoa.
   8. Explain the process of conching.

D. Labeling
   1. Discuss labeling requirements for candy.

Total Hours: 180

24. Texts & Supplemental Instructional Materials

Text: Introduction to Food Science, by Parker, Rick
       published by Delmar Publishing. Albany, NY

Supplemental Instructional Materials:
- Kowtaluk, Helen. Discovering Foods. 1978 Helen Kowtaluk
- Livingston, A.D. Cold-Smoking & Salt-Curing Meat, Fish, and Game 1995 A.D. Livingston
- Meat Processing Magazine
- Meatingplace Magazine
- Meat & Poultry Magazine
25. Key Assignments

- Weekly academic textbook assignments
- Weekly lab activities and reports
- Agriculture Science research paper
- Supervised Agricultural Experience project and record book
- Student seminar presentation on a Food Science topic
- Portfolio of lab exercises

26. Instructional Methods and/or Strategies

- Direct instruction and discussion
- Lecture
- Reading assigned materials
- Internet research
- Self-directed/independent, cooperative and collaborative learning
- Independent and group laboratory experiments
- Written, oral, and PowerPoint presentations
- Curriculum based field trips
- Industry experts
- Supplemental books
- Current news articles

27. Assessment Methods and/or Tools

Assessment of student performance will include, but is not limited to:

- Individual or group project based learning assignments
- Lab projects and reports
- Teacher observation
- Examinations and quizzes
- Student demonstration
- Research projects
- Homework
- Presentations/Exhibitions

28. Financial Implications (Be as specific as possible; include textbooks, supplemental materials, supplies, and equipment necessary to initiate the course as proposed)

Any additional supplies needed for this course would be purchased using Ag Incentive Grant Funds.

C. HONORS COURSES ONLY

Please refer to instructions

29. Indicate how this honors course is different from the standard course.

N/A
D. OPTIONAL BACKGROUND INFORMATION
Please refer to instructions

30. History of Course Development (optional)