FUNDAMENTALS OF AGRICULTURAL SCIENCE AND BUSINESS 1
One semester course*/1 credit
A core 40 elective
An Academic Honors and Technical Honors Elective
Freshman, Sophomore, Junior, and Senior Levels
5056A
CIP CODE: 01.0101
Fundamentals of Agricultural Science and Business is a yearlong course that is highly recommended as a prerequisite and foundation for all other agricultural classes except Landscape Management and Natural Resources Management. The nature of this course is to provide students with an introduction to careers and the fundamentals of agricultural science and business. Areas to be covered include: agricultural literacy, its importance and career opportunities, plant and soil science, environmental science, horticulture and landscape management, agricultural biotechnology, agricultural science and business tools and equipment, basic principles of and employability in the agricultural/horticultural industry, basic agribusiness principles and skills, developing leadership skills in agriculture, and supervised experience in agriculture/horticulture purposes and procedures.
*This is the first semester of a two semester class that should be followed by Fundamentals of Agricultural Science and Business 2

FUNDAMENTALS OF AGRICULTURAL SCIENCE AND BUSINESS 2
One semester course/1 credit
A core 40 elective
An Academic Honors and Technical Honors Elective
Freshman, Sophomore, Junior, and Senior Levels
5056B

Course Outline

UNIT A: AGRICULTURAL LITERACY 6 weeks
1. Identifying Careers in Agriculture/Horticulture-.5 weeks
   Lesson 1—Determining the Nature of the Agriculture/Horticulture Industry
   Lesson 2—Selecting an Agriculture/Horticulture Occupation
   Lesson 3—Determining Needs and Competencies
   Lesson 4—Determining Working Conditions and Earning Potential
   Lesson 5—Determining Individual Agriculture/Horticulture Interests
2. Recognizing the Role of Agriculture in Society-1 week
   Lesson 1—Determining the History of Agriculture
   Lesson 2—Understanding the Importance of Agriculture to Society
   Lesson 3—Determining Trends in Agriculture
3. Identifying the Relationship Between Agriculture and the Environment-1 week
Lesson 1—Determining the Kinds and Importance of Natural Resources
Lesson 2—Understanding Ecosystems
Lesson 3—Determining Sources of Environmental Pollution
Lesson 4—Selecting Methods of Waste Disposal
Lesson 5—Determining How to Prevent Agricultural Pollution

4. Using Agricultural Organizations, Agencies, and Sources of Information-.5 weeks
Lesson 1—Using Private Organizations in Agriculture/Horticulture
Lesson 2—Using the Internet and World Wide Web

5. Describing the World Food and Fiber System-1 week
Lesson 1—Understanding World Agricultural Production
Lesson 2—Determining the Use of Technology in World Food and Fiber Production
Lesson 3—Determining the Role of Consumers in World Agriculture

6. Determining the Role of Research and Development in Agriculture/Horticulture-1 week
Lesson 1—Understanding Agriscience and Technology
Lesson 2—Conducting Agricultural Research
Lesson 3—Determining the Role of International Development in Agriculture

7. Recognizing the Impact of Technology on Agriculture-1 week
Lesson 1—Determining the Nature of Biotechnology
Lesson 2—Understanding the Basis for Biotechnology Research
Lesson 3—Recognizing the Agricultural Applications of Biotechnology
Lesson 4—Determining Future Impacts of and Concerns Brought About by Agricultural Biotechnology Research
Lesson 5—Identifying Career Opportunities in Agricultural Biotechnology
Lesson 6—Determining the Role of Science and Technology in Agricultural Production
Lesson 7—Determining the Role of Electronics in Agricultural Technology
Lesson 8—Determining the Role of Precision Technologies

UNIT B: EMPLOYABILITY IN AGRICULTURAL/HORTICULTURAL INDUSTRY 5 weeks

1. Developing Personal Skills-.5 weeks
Lesson 1—Self-Understanding and Assessment
Lesson 2—Developing Human Relations Skills in the Workplace

2. Developing Communication Skills-.5 weeks
Lesson 1—Introduction to Communication
Lesson 2—Understanding Effective Communication Techniques
Lesson 3—Identifying Effective Speaking Techniques
Lesson 4—Developing Listening Techniques
Lesson 5—Organizing and Presenting a Persuasive Message
Lesson 6—Using Communication Skills in Appropriate Situations
3. Using Mathematics Skills-.5 weeks
   Lesson 1—Using English and Metric Measurements
   Lesson 2—Determining Area and Volume
   Lesson 3—Calculating Interest Rates

4. Demonstrating Problem-Solving Skills-1 week
   Lesson 1—Understanding Problem Solving
   Lesson 2—Understanding the Problem-Solving Method of Learning (Teaching)

5. Developing Transition Skills-.5 weeks
   Lesson 1—Developing Transition Skills in Agricultural/Horticultural Occupations

6. Exploring Ethical Issues-.5 weeks
   Lesson 1—Describing Ethics in Agribusiness

7. Gaining Employment-1 week
   Lesson 1—Developing Goals
   Lesson 2—Obtaining Education for a Job
   Lesson 3—Identifying Occupational Competencies
   Lesson 4—Finding a Job
   Lesson 5—Applying for a Job
   Lesson 6—Writing a Résumé and Letter of Application
   Lesson 7—Succeeding in a Job Interview
   Lesson 8—Understanding Conflicts and Their Resolution

8. Developing Safety Skills-.5 weeks
   Lesson 1—Understanding Where Accidents Occur and Agencies Associated with Workplace Safety
   Lesson 2—Understanding Why Accidents Occur and How to Prevent Them

UNIT C: BASIC PRINCIPLES OF AGRICULTURAL/HORTICULTURAL SCIENCE 15 weeks

1. Using Basic Soil Science Principles-3 weeks
   Lesson 1—Determining the Nature of Soil
   Lesson 2—Understanding Soil Texture and Structure
   Lesson 3—Explaining a Soil Profile
   Lesson 4—Understanding Moisture Holding Capacity
   Lesson 5—Understanding Soil Degradation
   Lesson 6—Understanding Soil Erosion and Management Practices

2. Identifying and Using Agriscience Tools and Equipment-2 weeks
   Lesson 1—Practicing Safety in the Lab
   Lesson 2—Identifying Agriscience Lab Tools
   Lesson 3—Using the Microscope

3. Understanding Cells, Genetics, and Reproduction-1 week
   Lesson 1—Exploring Cells
   Lesson 2—Exploring Genetics
   Lesson 3—Examining Mitosis and Meiosis
   Lesson 4—Using Crossbreeding and Hybrids
4. Identifying Basic Principles of Plant Science-2 weeks
Lesson 1—Classifying and Naming Plants
Lesson 2—Examining Plant Structures and Functions
Lesson 3—Examining Flowers and Fruits
Lesson 4—Identifying Plant Types and Uses
Lesson 5—Determining the Importance of Photosynthesis and Respiration
Lesson 6—Managing Plant Pests
Lesson 7—Using Soils and Growing Media
Lesson 8—Determining Plant Nutrients and Fertility
Lesson 9—Propagating Plants Sexually
Lesson 10—Propagating Plants Asexually

5. Identifying Basic Principles in Animal Science-1 week
Lesson 1—Identifying Differences Between Plants and Animals
Lesson 2—Determining the Anatomy and Physiology of Animals
Lesson 3—Understanding Animal Reproduction
Lesson 4—Understanding Blood
Lesson 5—Understanding Animal Life Span
Lesson 6—Exploring the Animal Industry

6. Understanding and Using Pesticides-.5 weeks
Lesson 1—Determining the Kinds of Pesticides
Lesson 2—Using Pesticides Safely
Lesson 3—Interpreting Pesticide Labels
Lesson 4—Applying Pesticides
Lesson 5—Managing Environmental Impact of Pesticides

7. Identifying Basic Principles of Electricity-.5 weeks
Lesson 1—Introducing Electricity and Electrical Safety
Lesson 2—Exploring the Science of Electricity
Lesson 3—Measuring and Calculating Electricity
Lesson 4—Identifying Electrical Tools and Equipment
Lesson 5—Comparing Single-Phase and Three-Phase Systems
Lesson 6—Preparing and Using Schematics For Wiring Applications Using Cable
Lesson 7—Wiring Circuits

8. Identifying Basic Agricultural Mechanics Principles- 1 week
Lesson 1—Identifying Basic Areas of Agricultural Mechanization
Lesson 2—Describing Basic Skills Used in Agricultural Mechanization
Lesson 3—Recognizing the Impact of Technological Advances in Agricultural Mechanics
Lesson 4—Describing Basic Physical Science Laws Applied in Agricultural Mechanics
9. Conserving Natural Resources-3 weeks
Lesson 1—Determining the Importance of Natural Resource Conservation
Lesson 2—Conserving Soil
Lesson 3—Conserving Water
Lesson 4—Conserving Wildlife
Lesson 5—Conserving Forests

10. Using Energy Efficiently-.5 weeks
Lesson 1—Understanding Energy as a Resource
Lesson 2—Conserving Energy

11. Understanding Food Science Technology-.5 weeks
Lesson 1—Exploring Food Science and Its Benefits
Lesson 2—Exploring Food Preservation
Lesson 3—Preventing Food Spoilage
Lesson 4—Food Safety and Sanitation
Lesson 5—The Business of Food Science
Lesson 6—Food Science and World Food Supply

UNIT D: BASIC AGRIBUSINESS
PRINCIPLES AND SKILLS

1. Managing Personal Finances-.5 weeks
Lesson 1—Understanding Personal Finances and Goals
Lesson 2—Understanding the Concept of Borrowing Money
Lesson 3—Determining Sources of Credit

2. Understanding Business Management and Structures-.5 weeks
Lesson 1—Understanding Principles of Business Management
Lesson 2—Using Sole Proprietorships
Lesson 3—Using Partnerships
Lesson 4—Using Corporations and Cooperatives

3. Keeping and Using Records in Agricultural Occupations-.5 weeks
Lesson 1—Understanding Record Keeping
Lesson 2—Understanding Net Worth, Cash Flow, Income Statements and Computerized Record Keeping
Lesson 3—Understanding Budgets and Financial Analysis Ratios

4. Applying Basic Economic Principles in Agribusiness-.5 weeks
Lesson 1—Understanding Basic Economics Principles
Lesson 2—Understanding Depreciation, Fixed, and Variable Costs
Lesson 3—Understanding the Value of Time and Money

5. Developing Basic Computer Skills-2 weeks
Lesson 1—Computer Terminology and Equipment
Lesson 2—Introduction to Computers in Agriculture
Lesson 3—Using the Internet
UNIT E: DEVELOPING LEADERSHIP SKILLS IN AGRICULTURE  4 weeks

1. Understanding the History and Organization of FFA-1 week
   Lesson 1—Exploring the History and Organization of FFA

2. Recognizing Opportunities in FFA-1 week
   Lesson 1—Discovering Opportunities in the FFA
   Lesson 2—Determining FFA Degrees, Awards, and CDEs

3. Developing Leadership Skills-1 week
   Lesson 1—Understanding FFA Officer Duties and Responsibilities
   Lesson 2—Planning and Organizing an FFA Meeting

4. Participating in Community and Government Organizations-1 week
   Lesson 1—Understanding Youth Clubs and Organizations
   Lesson 2—Developing an Awareness for Your Community

UNIT F: SUPERVISED EXPERIENCE IN AGRICULTURE/HORTICULTURE  2 weeks

1. Determining Purposes and Procedures of SAE-.5 week
   Lesson 1—Determining the Benefits of an SAE
   Lesson 2—Determining the Kinds of SAE

2. Planning and Developing SAE Programs-.5 week
   Lesson 1—Researching Possible SAE Programs
   Lesson 2—Planning Your SAE Program
   Lesson 3—Implementing SAE Programs

3. Expanding My SAE-1 week
   Lesson 1—Keeping and Using SAE Records
   Lesson 2—Making Long Range Plans for Expanding SAE Programs