Scope and Sequence/Year at a Glance (YAG): Advanced Plant and Soil Science (TEKS: Advanced Plant and Soil Science)

Semester 1

Unit 1: Importance of Plants (1 week)

- Why we need plants
- The role of plants in everyday life

Unit 2: Plant Cell (2 weeks)

- Overview of plant cell
- Plant organelle functions
- Specialized plant tissues
- Create a plant cell model

Unit 3: Plant Anatomy, Functions, and Specialized Tissues (6 Weeks)

- Roots (Functions, Importance, Types, Tissues)
    - Fibrous vs tap root lab
    - Importance of roots lab
- Stems (Functions, Importance, Types, Tissues)
    - Celery xylem lab
- Leaves (Functions, Importance, Types, Arrangements, Tissues)
    - Leaf arrangements and venation lab
- Flowers (Functions, Importance, Types, Tissues, Reproduction, Anatomy)
    - Flower dissection lab

- Fruits (Functions, Importance, Types, Tissues, Anatomy)
- Seeds (Functions, Importance, Types, Tissues, Anatomy)
    - Seed dissection lab

Unit 4: Plant Classification (7 weeks)

- Monocot vs Dicot
    - Monocot vs dicot seed dissection lab
- Perennial vs Biennial vs Annual
- Native vs Non Native
- Seeded Vascular Plants
    - Gymnosperms
    - Angiosperms
- Sporophyte Vascular Plants
    - Ferns
    - Lycopods
    - Horsetails
- Non Vascular Plants
    - Bryophytes
- Taxonomy by plant part
- Dichotomous key

Unit 5: Vegetable Production (2 weeks)

- Plant physiology and nutrition (ongoing throughout course)
- Growing winter vegetables (ongoing throughout course)
- Tree Farming Methods & Careers (Christmas project)

Semester 2

Unit 6: Soil Formation and Processes (1 week)

- Components
- Minerals
- Importance

Unit 7: Pest, Disease, and Deficiency Control (3 weeks)

- Identification of common pests, signs of pests
- Identification of common diseases, signs of diseases
- Early signs of deficiency
- Fertilizer types lab
- Integrated farming
- Organic vs non organic
- Pesticide safety
- Herbicide safety

Unit 8: Plant Propagation (3 weeks)

- Seed propagation (ongoing throughout course)
- Asexual propagation
- Micro propagation
- Division
- Layering
- Budding

- Grafting
- Succulent propagation lab

Unit 9: Fruit Production (2 weeks)

- Plant physiology and nutrition (ongoing throughout course)
- Quality Grades
- Storing and preserving lab (making jam)

Unit 10: Flower and Foliage Production (3 weeks)

- Potted plant production
- Flower production
- Pruning
- Trimming

Unit 11: Industry and Careers (3 weeks)

- Career Research Project
- Industry Standards

Unit 12: Landscape Design (3 weeks)

- Potted plants
- Landscape plants
- Integrated farming
- Aesthetics

Ongoing / Throughout Course

- **FFA Involvement**: Supervised Agricultural Experience (SAE) projects, greenhouse upkeep, recordkeeping.
- **Employability Skills**: Work ethic, teamwork, communication, greenhouse maintenance, plant production.
- **Assessment**: Tests, projects, greenhouse management, garden management.