July 2007

Florida Department of Education
CURRICULUM FRAMEWORK

Program Title:	Agribusiness Management
Occupational Area:	Agriscience and Natural Resources
	PSV
Program Numbers	0101010100 AAS
	1101010100 AS
Grade Level	College Credits
Standard Length	AAS Degree/AS Degree/60-63 Credit Hours

Program SOC Code – 11-9011.00 – Farm, Ranch, and Other Agricultural Managers

I. **MAJOR CONCEPTS/CONTENT:** The purpose of this course is to prepare students for employment as Farm, Ranch and Other Agricultural Managers (119011).

The content includes, but is not limited to, instruction that prepares individuals to apply the economic and business principles involved in the organization, operation and management of farms and agricultural business. Subject matter includes finance, laws, labor, machinery, facilities, and marketing, as well as leadership, communication, employability and human relations skills.

II. **LABORATORY ACTIVITIES:** Land laboratory activities are an integral part of this program, including the safe use of agricultural equipment, facilities, irrigation equipment, chemical applicators and power sprayers.

III. **SPECIAL NOTE:** The AAS/AS degree in Agribusiness Management is a degree into which various agricultural certificates or ATDs can articulate. Up to 30 credits from a Florida state approved college credit certificate can be articulated into the 60 credit AAS/AS giving the student a “specialty” in various agricultural areas such as: irrigation, forestry, horticulture.

National Postsecondary Agricultural Student Organization is the appropriate career student organization for providing leadership training and for reinforcing specific vocational skills. Career Student Organizations, when provided, shall be an integral part of the vocational instructional program, and the activities of such organizations are defined as part of the curriculum in accordance with Rule 6A-6.064, FAC.

It is also appropriate for students to be members of professional organizations associated with their selected agricultural specialty (example: Florida Nursery, Growers and Landscape Association, Florida Forestry Association, Florida Irrigation Society, Florida Turf grass Association, Etc.)

Planned and supervised occupational activities may be provided through directed laboratory experience, practicum or cooperative experience. whenever the cooperative method of instruction is offered, the following is required for each student: a training plan, signed by the student, teacher and employer which includes instructional objectives and a list of on-the-job and in-school learning experiences; a work station which reflects equipment, skills and tasks which are relevant to the occupation which the student has chosen as a career goal. The student must receive compensation for work performed.

The typical length of this program for the average achieving student is an associate degree. The standard credit hour length for this program is 60-63 credit hours.

IV. INTENDED OUTCOMES: After successfully completing this program, the student will be able to:

01.0 Obtain & dispose of an Agricultural Enterprise
02.0 Prepare & administer an agricultural oriented plan (Manage the Crop/Livestock plan)
03.0 Supervise & manage the operation, maintenance & repair of equipment
04.0 Manage Facilities and Structures
05.0 Select Sources & Methods of Financing Operation
06.0 Interpret & Apply State and Federal Rules and Regulations
07.0 Perform Accounting Activities
08.0 Perform Communication Activities
09.0 Develop Human Relations Skills
10.0 Demonstrate Employability Skills
11.0 Develop Leadership Skills
12.0 Identify, Classify, & Demonstrate Management Activities
13.0 Demonstrate a Basic Understanding of Legal & Ethical Issues in a Business Environment
14.0 Demonstrate Basic Computer Skills

In addition, students will complete the objectives in one of the following specializations:

- Forest Operations SOC Code: 454011 – Forest & Conservation Workers
- Irrigation Technology SOC Code: 373011 – Landscaping and Groundskeeping Workers
- Horticulture Technician

FOREST OPERATIONS

15.0 Prepare and administer forest management plans.
16.0 Plan and administer forest inventories.
17.0 Assist registered land surveyor in location of property corners and boundary lines, road construction and drainage projects.
18.0 Prepare and administer forest fire and smoke management plans and assist in forest fire suppression and control.

19.0 Identify major southeastern forest tree species.
20.0 Identify and control major southeastern forest insects and diseases.
21.0 Evaluate forest ecosystems.
22.0 Evaluate forest soils with respect to chemical and fertilizer applications and hydrology.
23.0 Collect, maintain and/or analyze data and records.
24.0 Prepare, analyze and enforce contracts and other legal documents
25.0 Administer the purchase, sale and/or marketing of forest products.

IRRIGATION TECHNOLOGY

15.0 Demonstrate an understanding of the use of communications in an irrigation business environment.
16.0 Demonstrate an understanding of the types of pipe installation common to irrigation systems.
17.0 Demonstrate an understanding of irrigation system components.
18.0 Demonstrate an understanding of basic design principles used in irrigation systems.
19.0 Demonstrate an understanding of basic irrigation system maintenance and operation.
20.0 Demonstrate an understanding of distribution systems used in the irrigation industry.
21.0 Demonstrate an understanding of control systems used in irrigation installation and Repair.
22.0 Demonstrate an understanding of water supply.
23.0 Demonstrate an understanding of sprinkler performance.
24.0 Demonstrate an understanding of site analysis in residential and commercial irrigation systems.
25.0 Demonstrate an understanding of and practice in design principles used in residential and commercial irrigation systems.
26.0 Demonstrate an understanding of job preparation necessary in residential and commercial irrigation systems.
27.0 Demonstrate an understanding of installation techniques used in residential and commercial irrigation systems.
28.0 Demonstrate an understanding of how to obtain site information necessary in the residential irrigation system design process.
29.0 Demonstrate an understanding of selection and safe use of equipment for residential irrigation system installation.
30.0 Demonstrate an understanding of how to select pipe sizes and valves appropriate for specific residential irrigation system installations.
31.0 Demonstrate an understanding of microcomputer applications used to design residential irrigation systems.
32.0 Demonstrate an understanding of the role of “the green industry.”
33.0 Demonstrate an understanding of the basic principles of plant growth.
34.0 Demonstrate an understanding of the role of plant nutrients and fertilizers.

35.0 Demonstrate an understanding of pest management practices.
36.0 Demonstrate an understanding of the role of irrigation.
37.0 Demonstrate an understanding of the role of soil science.
38.0 Demonstrate an understanding of plants used in urban and suburban landscapes.
39.0 Demonstrate an understanding of the basic safety issues involved in the “green industry.”
40.0 Demonstrate an understanding of the water cycle.
41.0 Demonstrate an understanding of the uses of water resources.
42.0 Demonstrate an understanding of water resource policies in Florida.
43.0 Demonstrate an understanding of surface water supplies.
44.0 Demonstrate an understanding of groundwater supplies.
45.0 Demonstrate an understanding of drip system components.
46.0 Demonstrate an understanding of the characteristics of water emission devices.
47.0 Demonstrate an understanding of basic design principles for low volume irrigation systems.
48.0 Demonstrate an understanding of procedures involved in installation of low volume irrigation systems.
49.0 Demonstrate an understanding of irrigation system computer software currently used in industry.
50.0 Demonstrate an understanding of materials selection and costing needed for sales presentations.
51.0 Develop an understanding of the breadth of the irrigation industry.
52.0 Demonstrate an understanding of irrigation water requirements.
53.0 Demonstrate an understanding of economic analysis as applied to irrigation investment decisions.
54.0 Demonstrate an understanding of methods of Develop overall operating and maintenance procedures.
55.0 Demonstrate an understanding of analysis of irrigation systems.
56.0 Demonstrate an understanding of how to obtain site information necessary in the commercial irrigation system design process.
57.0 Demonstrate an understanding of selection and safe use of equipment for a commercial irrigation system installation.
58.0 Demonstrate an understanding of how to select pipe sizes and valves appropriate for specific commercial irrigation system installations.
59.0 Demonstrate an understanding of writing irrigation specifications.
60.0 Demonstrate an understanding of advanced hydraulic and head lay out concepts.

HORTICULTURE TECHNICIAN

15.0 Demonstrate an understanding of plant physiology and growth
16.0 Classify plants
17.0 Select, operate, and maintain tools and equipment
18.0 Fertilize plants
19.0 Manage a pest-control program
20.0 Prune and shape plants
21.0 Maintain landscape plants

22.0 Demonstrate employability skills
23.0 Determine drainage system needs and design a drainage system
24.0 Prune and shape plants
25.0 Maintain and analyze records
26.0 Prepare growing media and seedbeds
27.0 Propagate plants
28.0 Grow plants
29.0 Harvest, process, and ship plants
30.0 Market plants
31.0 Design, install, and maintain nursery irrigation systems

FLORIDA DEPARTMENT OF EDUCATION
Student Performance Standards

Program Title: Agribusiness Management
CIP Number: 0101010100

01.0 OBTAIN & DISPOSE OF AN AGRICULTURAL ENTERPRISE - The student will be able to:

01.01 Establish & Record Agribusiness Goals
01.02 Develop plan for type & size of agricultural enterprise.
01.03 Obtain title to real estate
01.04 Complete farm rental/lease Agreement
01.05 Purchase building insurance
01.06 Purchase liability insurance
01.07 Transfer agribusiness ownership

02.0 PREPARE & ADMINISTER AN AGRICULTURAL ORIENTED PLAN - The student will be able to:

02.01 Prepare land development plan.
02.02 Prepare agricultural plan in one of the following: crop or product program, irrigation, fertilization, pesticide, plant.
02.03 Enroll in Agricultural Stabilization Conservation Service Program if applicable
02.04 Enroll in & review Soil Conservation Service Practices if applicable.
02.05 Contract for custom services.
02.06 Develop plan for purchase & operation of irrigation system.
02.07 Develop fertilization plan.
02.08 Develop pesticide plan.
02.09 Develop plan to meet seed/plant needs.
02.10 Develop marketing plan.
02.11 Market livestock/livestock products.
02.12 Purchase insurance.

03.0 SUPERVISE & MANAGE the OPERATION, MAINTENANCE & REPAIR of EQUIPMENT - The student will be able to:

03.01 Develop budgets for changing the machinery & equipment program.
03.02 Prepare inventory of farm machinery & equipment; harvest, fuel, & lubricants.
03.03 Obtain machinery & equipment by purchase, rent, lease or trade.
03.04 Develop plan for machinery & equipment maintenance program.

04.0 MANAGE FACILITIES and STRUCTURES - The student will be able to:

04.01 Plan for the expansion of existing facilities or construction of new facilities.
04.02 Develop plan for repairing, remodeling, improving facilities.
04.03 Acquire buildings by purchase, rental or lease.

04.04 Purchase building supplies.

05.0 SELECT SOURCES & METODS of FINANCING OPERATION - The student will be able to:

05.01 Analyze major sources of agricultural production credit.
05.02 Analyze & select sources of credit for capital items & real estate.
05.03 Prepare a case using accepted forms for obtaining credit from an agricultural lending institution.
05.04 Analyze Contracts, Leases & other Legal Documents
05.05 Analyze & interpret land use maps.
05.06 Interpret a real estate legal description.
05.07 Identify major elements in lease agreements.
05.08 Identify major elements in contracts.
05.09 Secure legal services.

06.0 INTERPRET & APPLY STATE and FEDERAL RULES and REGULATIONS to ENTERPRISE- The student will be able to:

06.01 List agencies responsible for inspecting and regulating operation or product.
06.02 Secure necessary inspections, certifications & registrations.
06.03 Maintain a file of current rules & regulations relative to operation.
06.04 List reasons for the necessity of inspections, certification & regulations.

07.0 PERFORM ACCOUNTING ACTIVITIES - The student will be able to:

07.01 Record and post transactions in a general journal.
07.02 Prepare an income statement and payroll records.
07.03 Prepare a balance sheet.
07.04 Prepare a cash flow statement.
07.05 Journalize and post closing entries.
07.06 Demonstrate knowledge of petty case records.
07.07 Demonstrate knowledge of checking account records & bank reconciliation.
07.08 Interpret financial statements.
07.09 Demonstrate knowledge of the accounting cycle.
07.10 Demonstrate knowledge of budget principles & interpret budgets.
07.11 Demonstrate accounting operations on a computer.
07.12 Calculate & record depreciation, net worth, and income.
07.13 Complete a comparative trend analysis table.
07.14 Complete a profit and loss statement.
07.15 Calculate & record capital gains & losses, monthly/yearly receipts, operating expenses.
07.16 Balance bank statement.
07.17 Develop plan for bestowing the estate.
07.18 Complete IRS income or loss schedule, Capital gains & losses schedule, Investment credit schedule, 1040 schedule.

08.0 PERFORM COMMUNICATION ACTIVITIES - The student will be able to:

08.01 Demonstrate effective telephone usage & courtesy.
08.02 Demonstrate effective listening skills.
08.03 Give, follow, & Interpret oral & written communication.
08.04 Demonstrate knowledge of e-mail etiquette & ethics.
08.05 Compose business correspondence & related documents & demonstrate correct spelling, grammar, punctuation, and work choice.
08.06 Prepare, outline, and deliver an effective short oral presentation.
08.07 Participate in a group discussion as a member and as a leader.
08.08 Obtain appropriate information from graphics & other visual media.
08.09 Research & interpret information retrieved from print & electronic resources.
08.10 Annotate letters, reports, & news articles.
08.11 Proofread & edit documents.
08.12 Research & compose a document containing statistical information.
08.13 Prepare visual material, including electronic media, to support an oral presentation.
08.14 Demonstrate ability to communicate effectively with diverse populations.

09.0 DEVELOP HUMAN RELATION SKILLS - The student will be able to:

09.01 Analyze & develop written solutions to behavior problems affecting job performance.
09.02 Demonstrate ability to work effectively as part of a team.
09.03 Demonstrate conflict resolution skills.
09.04 Demonstrate punctuality, initiative, courtesy, dependability, flexibility, and honesty.
09.05 Develop & demonstrate the unique human relations skills needed for success in the business sector.
09.06 Recognize different personality styles & how to interact effectively with them in the workplace.
09.07 Differentiate between an acceptable & unacceptable code of ethical conduct in business.
09.08 Discuss how values & attitudes influence behavior
09.09 Explain how understanding of self-concept & self-esteem impacts human relations skills.
09.10 Identify or demonstrate appropriate responses to criticism from employer, supervisor, or other persons.

10.0 DEMONSTRATE EMPLOYABLILITY SKILLS - The student will be able to:

10.01 Demonstrate understanding of acceptable hygiene & grooming habits.
10.02 Identify sources of employment opportunities.
10.03 Identify appropriate attire & grooming for a business office.
10.04 Identify documents that may be required when applying for a job.
10.05 Complete a resume & cover letter

10.06 Complete a job application form correctly.
10.07 Prepare a plain-text resume for electronic distribution.
10.08 Demonstrate effective job interview techniques.
10.09 Demonstrate understanding of different types of interviews.
10.10 Prepare a thank you letter for an interview.
10.11 Identify & demonstrate appropriate responses to feedback from supervisors.
10.12 Identify & demonstrate acceptable work habits.
10.13 Demonstrate knowledge of how to make job and career changes appropriately.
10.14 Demonstrate basic knowledge of employment law.
10.15 Demonstrate ability to adapt to change.
10.16 Demonstrate effective time management skills.
10.17 Prepare a letter of resignation.
10.18 Identify methods for securing an employment reference.
10.19 Conduct a Job Search.
10.20 Secure information about a job.
10.21 Demonstrate competence in job interview techniques.

11.0 DEVELOP LEADERSHIP SKILLS - The student will be able to:

11.01 Demonstrate an understanding of how to plan & lead an effective meeting.
11.02 Define effective leadership.
11.03 Identify & explain key leadership behaviors.
11.04 Compare different styles of leadership.
11.05 Relate leadership to other management & communication skills.
11.06 Examine ways effective leaders develop, coach, and motivate.
11.07 Define organization vision & mission
11.08 Identify characteristics of effective goals.
11.09 Describe personal leadership style.
11.10 Explain how effective leaders identify problems & make decisions.
11.11 Compare different styles of managing conflict.
11.12 Identify acceptable work habits.
11.13 Demonstrate knowledge of how to make job changes appropriately.

12.0 IENTIFY, CLASSISFY & DEMONSTATE MANAGEMENT ACTIVITIES - The student will be able to:

12.01 Compare management styles.
12.02 Identify the major functions of management.
12.03 Demonstrate understanding of basic management concepts such as authority, responsibility, delegation, empowerment, & hiring and firing.
12.04 Demonstrate knowledge of the relationship between authority & responsibility to task accomplishment.
12.05 Select the most effective communication systems.
12.06 Identify problems & make appropriate decisions.
12.07 Demonstrate understanding of organizational culture & its impact on communication.
12.08 Identify & discuss current management issues in business & other organizations.

12.09 Describe activities associated with the management functions of planning, organizing, staffing, leading and controlling.
12.10 Manage & Supervise Labor
12.11 Develop labor supply plan.
12.12 Hire and Dismiss employees.
12.13 Establish & record pay scale and benefits.
12.14 Train workers using demonstration performance method.
12.15 Develop employee work schedules
12.16 Prepare payroll records.

13.0 DEMONSTRATE a BASIC UUNDERSTANDING of LEGAL & ETHICAL ISSUES in a BUSINESS ENVIRONMENT- The student will be able to:

13.01 Demonstrate basic understanding of contracts.
13.02 Demonstrate basic understanding of human resource issues.
13.03 Demonstrate basic understanding of negotiable instruments.
13.04 Demonstrate basic understanding of intellectual property rights.
13.05 Demonstrate basic understanding of appropriate use of employer property.
13.06 Demonstrate basic understanding of confidentiality.
13.07 Demonstrate basic understanding of role of ethical decision making in dealing with stakeholders.
13.08 Demonstrate knowledge of social responsibilities.
13.09 Demonstrate knowledge of legal & privacy issues regarding e-mail, voice mail, internet, telephone, and other communication methods.

14.0 DEMONSTRATE BASIC COMPUTER SKILLS- The student will be able to:

14.01 Demonstrate Keyboarding Techniques.
14.02 Demonstrate basic proficiency in spreadsheet, word processing, database, and presentation software & e-mail communication.
14.03 Perform research using the internet and intranet.

FOREST OPERATIONS

15.0 PREPARE AND ADMINISTER FOREST MANAGEMENT PLANS--The student will be able to:

15.01 Prepare and conduct a statistically based forest inventory.
15.02 Calculate, analyze and evaluate forest inventory data.
15.03 Write an approximate management plan for tract based on landowner objectives including timber volumes, harvesting schedules, regeneration schedules, stand maps, stand and stock tables and recommendations for multiple-use and for future management.
15.04 Select and execute appropriate silvicultural system for tract.
15.05 Conduct a prescribed burn including pre-planning, permitting, firing systems, smoke management and suppression techniques.
15.06 Plan and execute timber stand improvement when needed.

15.07 Plan and execute appropriate site preparation, tree planting and harvesting.
15.08 Demonstrate knowledge of ordinances related to harvesting and regeneration activities.

16.0 **PLAN AND ADMINISTER FOREST INVENTORIES**--The student will be able to:

16.01 Prepare and conduct a statistically based forest inventory using area samples, i.e. fixed-radius plot inventory.
16.02 Prepare and conduct a statistically based forest inventory using point sample, i.e. prism inventory.
16.03 Operate dendrometers such as tree calipers and diameter tape.
16.04 Operate hypsometers such as altimeter, clinometers and relaskop.
16.05 Operate hand-held magnetic compass and demonstrate proper pacing procedure in forested situations.
16.06 Locate forest tracts using legal description, maps, aerial photos and atlases.
16.07 Select and use appropriate volume tables.
16.08 Calculate timber volumes by forest products.
16.09 Calculate and prepare valuation of forest tract based on product and current market prices.
16.10 Prepare "lump sum" timber bid.
16.11 Prepare "per unit" timber bid.
16.12 Calculate and prepare stand and stock tables.
16.13 Calculate and prepare growth projections and regeneration stocking.
16.14 Calculate tract averages using maps, aerial photos and/or pacing.

17.0 **ASSIST REGISTERED LAND SURVEYOR IN LOCATION OF PROPERTY CORNERS AND BOUNDARY LINES, ROAD CONSTRUCTION AND DRAINAGE PROJECTS**--The student will be able to:

17.01 Identify forest tracts based on legal description and write proper legal description for given forest tract.
17.02 Locate and mark forest tract corners and boundary lines.
17.03 Determine forest road location and identify on the ground.
17.04 Determine drainage patterns for watershed and locate proper stream crossing points.
17.05 Obtain proper permits for stream crossings, i.e. culverts, bridges.

18.0 **PREPARE AND ADMINISTER FOREST FIRE AND SMOKE MANAGEMENT PLANS AND ASSIST IN FOREST FIRE SUPPRESSION AND CONTROL**--The student will be able to:

18.01 Demonstrate knowledge of various firing techniques.
18.02 Demonstrate knowledge of weather conditions as related to forest fire-prescribed and wildfire - and smoke management.
18.03 Select proper firing techniques based on landowner objectives and weather conditions.
18.04 Demonstrate knowledge of fire suppression tools and equipment, both hand tools and mechanical.

18.05 Demonstrate knowledge of pre-suppression forest fire activities.
18.06 Evaluate acreage and damages of wildfire and recommend future forest management activities to renew resource.
18.07 Plan and administer a fire and smoke management plan including proper burning authorizations.
18.08 Complete U.S. Forest Service S-190, Introduction to Fire Behavior, and S-130, Basic Fire Fighter course with passing scores and, when possible, receive Incident Qualification Card ("Red Card").

19.0 **IDENTIFY MAJOR SOUTHEASTERN FOREST TREE SPECIES**--The student will be able to:

19.01 Identify major commercial forest species of the southeast United States by scientific name, common name, habitat and commercial products derived from species.
19.02 Identify major commercial forest species of Florida, with or without foliage, by personal observation using the five senses.
19.03 Use dichotomous key to identify unfamiliar species.

20.0 **IDENTIFY AND CONTROL MAJOR SOUTHEASTERN FOREST INSECTS AND DISEASES**--The student will be able to:

20.01 Identify major forest insects and diseases of the southeastern United States by scientific name, common name and damage inflicted.
20.02 Identify major forest insects and diseases of the southeast United States by scientific name, common name, symptoms, and damage inflicted and recommendations for control.
20.03 Identify major forest insects and diseases of Florida in the forest by personal observation and recommend appropriate controls.
20.04 Demonstrate knowledge of chemical and biological control of forest pests.
20.05 Evaluate damages by forest insects and diseases and make recommendations for future forest management.

21.0 **EVALUATE FOREST ECOSYSTEMS**--The student will be able to:

21.01 Demonstrate knowledge of the major forest ecosystems of the United States.
21.02 Identify the major forest ecosystems of Florida.
21.03 Identify the relationship between human activities and forest flora and fauna.
21.04 Identify endangered species of Florida and associated regulations and/or recommended forest practices.
21.05 Demonstrate knowledge of threatened species of Florida and associated regulations and/or recommended forest practices.
21.06 Demonstrate knowledge of forest ecosystem practices on both private and public lands.

22.0 **EVALUATE FOREST SOILS WITH RESPECT TO CHEMICAL AND FERTILIZER APPLICATIONS AND HYDROLOGY**--The student will be able to:

22.01 Demonstrate knowledge of the major forest soil types in the

Southeastern United States.

22.02 Identify and classify the major forest soil types of Florida.

22.03 Identify types, uses and application rates of approved forest herbicides.

22.04 Prepare and execute a herbicide plan.

22.05 Identify fertilizer formulations applicable to Florida forest soils.

22.06 Identify proper fertilizer formulations rates with proper soil type on Florida forest soils.

22.07 Define major watersheds and hydrology of a given forest area.

22.08 Demonstrate knowledge of Best Management Practices (BMP), especially special management zones (SMZ).

22.09 Identify and locate SMZ on the ground.

22.10 Obtain proper permits relating to stream crossings, ditching, cut and fill and wetland harvesting.

23.0 **COLLECT, MAINTAIN AND/OR ANALYZE DATA AND RECORDS**--The student will be able to:

23.01 Collect field data from forest inventory

23.02 Setup and maintain files of technical forestry information.

23.03 Demonstrate knowledge of federal, state and local regulations related to forestry practices.

24.0 **PREPARE, ANALYZE AND ENFORCE CONTRACTS AND OTHER LEGAL DOCUMENTS**--The student will be able to:

24.01 Demonstrate knowledge of types of contracts and legal documents related to forestry practices.

24.02 Select proper timber sale contract for given situation and prepare and execute same under supervision of forester and/or legal counsel.

24.03 Obtain and maintain proper licensure, certifications and registrations.

25.0 **ADMINISTER THE PURCHASE, SALE AND/OR MARKETING OF FOREST PRODUCTS** - The student will be able to:

25.01 Demonstrate knowledge of various forest products and markets.

25.02 Identify Florida forest products and current market valuations.

25.03 Identify timber harvesting systems used in south-eastern United States.

25.04 Prepare and execute a timber sale, either lump sum or per unit.

25.05 Supervise timber harvesting activities.

25.06 Scale forest products.

IRRIGATION TECHNOLOGY

15.0 **DEMONSTRATE AN UNDERSTANDING OF THE USE OF COMMUNICATIONS IN AN IRRIGATION BUSINESS ENVIRONMENT** - the student will be able to:

- 15.01 Explain the communications patterns used in the irrigation industry, including connected network and chain of command.
- 15.02 Define common irrigation vocabulary terms.
- 15.03 Locate specific engineering information from print and on-line sources.

16.0 **DEMONSTRATE AN UNDERSTANDING OF THE TYPES OF PIPE INSTALLATION COMMON TO IRRIGATION SYSTEMS** - the student will be able to:

- 16.01 List the different types and schedules of available polyvinyl chloride (PVC) pipes.
- 16.02 Describe the different types of available fittings including solvent weld, o-rings, and mechanical joint (MJ) joints.
- 16.03 Describe the basic chemical reactions that occur in the manufacture of PVC pipe.
- 16.04 Explain the process of connecting PVC pipe by using solvent weld chemicals.
- 16.05 Explain the process of connecting o-ring pipe by using push-on fittings.

17.0 **DEMONSTRATE AN UNDERSTANDING OF IRRIGATION SYSTEM COMPONENTS** - the student will be able to:

- 17.01 Identify various irrigation system types such as rotors, sprays, and drip.
- 17.02 Explain the process of time clock selection.
- 17.03 Explain the process of valve selection.
- 17.04 Explain the process of sprinkler head selection.
- 17.05 Explain the process of low-voltage wire selection.

18.0 **DEMONSTRATE AN UNDERSTANDING OF BASIC DESIGN PRINCIPLES USED IN IRRIGATION SYSTEMS** - the student will be able to:

- 18.02 Calculate the static or working water pressure at a given point in the system.
- 18.02 Determine the velocity for certain type and size pipe at a given flow.
- 18.03 Select appropriate sprinkler heads for specific applications.
- 18.04 Group irrigation heads to form irrigation zones complying with proper design criteria.
- 18.05 Calculate specific friction loss through piping.
- 18.06 Compute the precipitation rate for various sprinkler types and spacing patterns.

19.0 **DEMONSTRATE AN UNDERSTANDING OF BASIC IRRIGATION SYSTEM MAINTENANCE AND OPERATION** - the student will be able to:

- 19.01 Determine the watering time needed per week per station.
- 19.02 Develop a water schedule based on proper design principles.

19.03 Read and Explain an as-built drawing.
19.04 Explain the process of Remove and Install sprinkler heads.
19.05 Describe introductory the process of automatic control valve Repair.
19.06 Describe the process of automatic controller Repair.
19.07 Diagnose and correcting wiring problems.

20.0 **DEMONSTRATE AN UNDERSTANDING OF DISTRIBUTION SYSTEMS USED IN THE IRRIGATION INDUSTRY** - the student will be able to:

20.01 Diagnose low and high pressure conditions that result from damaged piping, faulty installation, and clogged piping.
20.02 Repair zone lines using solvent weld fittings.
20.03 Repair main lines using mechanical joint MJ couplings.

21.0 **DEMONSTRATE AN UNDERSTANDING OF CONTROL SYSTEMS USED IN IRRIGATION INSTALLATION AND REPAIR** - the student will be able to:
21.01 Develop watering schedules and setting control timers.
21.02 Diagnose control system using test meters and wire tracking equipment.
21.03 Isolate problems into one of three areas for Repair: control timer, field wiring, and control valve.
21.04 Repair or replacing an automatic control timer.
21.05 Repair/splicing field wiring.
21.06 Repair/replacing faulty parts on the irrigation control valve.

22.0 **DEMONSTRATE AN UNDERSTANDING OF WATER SUPPLY** - the student will be able to:

22.01 Diagnose problems of water supply interruption.
22.02 Diagnose problems with water quality.
22.03 Repair or adjusting pump control systems.
22.04 Repair adjusting backflow prevention devices.
22.05 Clean filter media or screens.

23.0 **DEMONSTRATE AN UNDERSTANDING OF SPRINKLER PERFORMANCE** - the student will be able to:

23.01 Diagnose sprinkler distribution problems.
23.02 Measure and analyze precipitation rates.
23.03 Remove, clean, and reinstall heads.
23.04 Repair and adjust heads.
23.05 Adjust sprinkler head spacing if required.

24.0 **DEMONSTRATE AN UNDERSTANDING OF SITE ANALYSIS IN RESIDENTIAL AND COMMERCIAL IRRIGATION SYSTEMS** - the student will be able to:

24.01 Complete an accurate site drawing.
24.02 Determine the watering requirements in view of the site plan.
24.03 Identify unique site conditions that might affect installation.
24.04 Identify the appropriate water source.

25.0 **DEMONSTRATE AN UNDERSTANDING OF AND PRACTICE IN DESIGN PRINCIPLES USED IN RESIDENTIAL AND COMMERCIAL IRRIGATION SYSTEMS** - the student will be able to:

25.01 Lay out heads on a print utilizing graphic symbol.
25.02 Select/sizing control valve.
25.03 Select/sizing zone lines.
25.04 Select/sizing main line.

26.0 **DEMONSTRATE AN UNDERSTANDING OF JOB PREPARATION NECESSARY IN RESIDENTIAL AND COMMERCIAL IRRIGATION SYSTEMS** - the student will be able to:

26.01 List the different types of underground utilities and how to locate them.
26.02 Prepare a list of materials necessary to install the class designed irrigation system.
26.03 Identify the tools and equipment needed to install the class designed irrigation system.

27.0 **DEMONSTRATE AN UNDERSTANDING OF INSTALLATION TECHNIQUES USED IN RESIDENTIAL AND COMMERCIAL IRRIGATION SYSTEMS** - the student will be able to:

27.01 Use a walk behind trencher to excavate trenches.
27.02 Hand digs a trench.
27.03 Backfill and compact a trench.
27.04 Measure, cut, clean, prime, and glue solvent weld PVC pipe.
27.05 Cut and Install o-ring pipe and fittings.
27.06 Install spray heads and/or rotor heads.
27.07 Install control valves.
27.08 Install nozzles, adjusting flow rates, and setting pattern.
27.09 Identify and Install low voltage direct burial wire.
27.10 Produce an “as-built” drawing.

28.0 **DEMONSTRATE AN UNDERSTANDING OF HOW TO OBTAIN SITE INFORMATION NECESSARY IN THE RESIDENTIAL IRRIGATION SYSTEM DESIGN PROCESS** - the student will be able to:

28.01 Develop an accurate plot plan or site drawing.
28.02 Determine the type of landscaping and water requirement for a specific site.
28.03 Identify environmental traits such as soil type and weather for a specific site.
28.04 Identify unique site conditions that might affect design or installation.
28.05 Identify possible water sources and Select appropriate source.

29.0 **DEMONSTRATE AN UNDERSTANDING OF SELECTION AND SAFE USE OF EQUIPMENT FOR RESIDENTIAL IRRIGATION SYSTEM INSTALLATION** - the student will be able to:

29.01 Select appropriate sprinkler heads for each area.
29.02 Lay out heads on print utilizing graphic symbols in an irrigation design.
29.03 Group irrigation heads to form irrigation zones.

30.0 **DEMONSTRATE AN UNDERSTANDING OF HOW TO SELECT PIPE SIZES AND VALVES APPROPRIATE FOR SPECIFIC RESIDENTIAL IRRIGATION SYSTEM INSTALLATIONS** - the student will be able to:

30.01 Determine the water volume and pressure available from the water supply.
30.02 Select and sizing a control valve for each zone.
30.03 Select and sizing pipe main line.
30.04 Select and sizing pipe for zone lines.

31.0 **DEMONSTRATE AN UNDERSTANDING OF MICROCOMPUTER APPLICATIONS USED TO DESIGN RESIDENTIAL IRRIGATION SYSTEMS** - the student will be able to:

31.01 Enter the elements of a site plan into the computer.
31.02 Use a scanner to enter a site plan into a microcomputer application.
31.03 Lay out heads using a microcomputer application.
31.04 Use a microcomputer application to group heads together to form irrigation zones.
31.05 Use a microcomputer application to select pipe size.

32.0 **DEMONSTRATE AN UNDERSTANDING OF THE ROLE OF "THE GREEN INDUSTRY"** - the student will be able to:

32.01 Describe the importance of the "green industry" to local, state, and national economies.
32.02 Explain the importance and impact of local, state and federal regulations.
32.03 Describe the relationship of the "green industry" to the environment.

33.0 **DEMONSTRATE AN UNDERSTANDING OF THE PRINCIPLES OF PLANT GROWTH** - the student will be able to:

33.01 Describe the functions of plant parts including roots, stems, leaves, flowers and fruits.
33.02 Describe the processes of plant growth including photosynthesis, respiration, nutrient uptake and respiration.
33.03 Describe the growth characteristics, and use of subtropical and tropical landscape plants.
33.04 Identify various landscape designs, natural systems and the plants associated with them.
33.05 Describe the process of effective establishment of plants in the landscape.
33.06 Describe the influences of the environment on the landscape including pollutants.

34.0 **THE STUDENT WILL DEMONSTRATE AN UNDERSTANDING OF THE ROLE OF PLANT NUTRIENTS AND FERTILIZERS** - the student will be able to:

34.01 Identify the nutrients required for plant growth and the role of each.
34.02 Identify the types and kinds of fertilizers.
34.03 Read and interpreting fertilizer labels.

34.04 Describe the application of various fertilizer formulations.
34.05 Identify symptoms of nutritional deficiencies and toxicities of plants.

35.0 **THE STUDENT WILL DEMONSTRATE AN UNDERSTANDING OF PEST MANAGEMENT PRACTICES** - the student will be able to:

35.01 Describe the principles and benefits of integrated pest management.
35.02 Explain the nature of physical and chemical damage to plants.
35.03 Describe the selection process involved in the use of horticultural chemicals for arthropod pest control and subsequent implications of their usage.
35.04 Explain the role of efficient irrigation in pest control.
35.05 Explain the role of plant health in pest control.

36.0 **DEMONSTRATE AN UNDERSTANDING OF THE ROLE OF IRRIGATION** - the student will be able to:

36.01 List the components of Florida's fresh water systems.
36.02 Explain evaporation transpiration rate.
36.03 Explain hydro zoning/precipitation rate.
36.04 Identify the water needs of plants.
36.05 Explain the role of mulches in the landscape.
36.06 Describe soil moisture retention and movement for various soil types.

37.0 **DEMONSTRATE AN UNDERSTANDING OF THE ROLE OF SOIL SCIENCE** - the student will be able to:

37.01 Identify soil types and textures.
37.02 Explain the role of soil pH and soluble salts on plant growth.
37.03 Explain the physical properties of fill soil.
37.04 Explain the role of soil type as it affects water retention.
37.05 Interpret soil test information.
37.06 Read and understanding soil survey maps.

38.0 **DEMONSTRATE AN UNDERSTANDING OF PLANTS USED IN URBAN AND SUBURBAN LANDSCAPES** - the student will be able to:

38.01 Describe the process of binomial nomenclature.
38.02 Describe the use of bedding plants and other herbaceous perennials.
38.03 Describe the use of ground covers, shrubs, trees, and vines including angiosperms and gymnosperms.
38.04 Describe the use of palms, grasses, and other monocots.

39.0 **DEMONSTRATE AN UNDERSTANDING OF THE BASIC SAFETY ISSUES INVOLVED IN THE "GREEN INDUSTRY"** - the student will be able to:

39.01 List the most common causes of accidents in the "green industry."

39.02 Discuss the importance of following proper safety precautions.
39.03 Describe the symptoms of pesticide poisoning.
39.04 Extract pertinent information from material safety data sheets.

40.0 **DEMONSTRATE AN UNDERSTANDING OF THE WATER CYCLE** - the student will be able to:

40.01 Describe the role of precipitation.
40.02 Explain the effects of evaporation and transpiration.
40.03 Describe the effects of runoff on water supply and quality.
40.04 Explain the process of ground water infiltration.
40.05 Describe how different ecosystems affect the water supply.

41.0 **DEMONSTRATE AN UNDERSTANDING OF THE USES OF WATER RESOURCES** - the student will be able to:

41.01 List the uses and quantity of water used on a global scale.
41.02 List the uses and quantity of water used in the United States.
41.03 List the uses and quantity of water used in Florida.

42.0 **DEMONSTRATE AN UNDERSTANDING OF WATER RESOURCE POLICIES IN FLORIDA** - the student will be able to:

42.01 Explain the role that planning agencies have on water supply and quality.
42.02 Explain the effect the current legislation has on water supply and quality.
42.03 List the pending legislation that may affect the water supply and quality.

43.0 **DEMONSTRATE AN UNDERSTANDING OF SURFACE WATER SUPPLIES** - the student will be able to:

43.01 Explain the role of rivers, lakes and reservoirs.
43.02 Explain the importance of flood damage reduction planning.
43.03 Explain the issues involved in ensuring that surface water supplies are properly managed.

44.0 **DEMONSTRATE AN UNDERSTANDING OF GROUNDWATER SUPPLIES** - the student will be able to:

44.01 Describe groundwater’s role as a water source.
44.02 Describe the effect of pollutants on groundwater.
44.03 Describe the role of the aquifer and the regional aquifer characteristics.
44.04 Describe the effect that water pumped from the ground has on the water table.

45.0 **DEMONSTRATE AN UNDERSTANDING OF DRIP SYSTEM COMPONENTS** - the student will be able to:

45.01 Identify the various types of water emitters.
45.02 Identify and explain the use of drip lateral materials.
45.03 Identify and explain the use of pressure regulators.

45.04 Identify and explain the use of valves including flush valves, control valves and air vents.

46.0 **DEMONSTRATE AN UNDERSTANDING OF THE CHARACTERISTICS OF WATER EMISSION DEVICES** - the student will be able to:

46.01 Identify and explain the operation of orifice emitters.
46.02 Identify and explain the operation of laminar flow emitters.
46.03 Identify and explain the operation of turbulent flow emitters.
46.04 Identify and explain the operation of vortex emitters.
46.05 Identify and explain the operation of pressure compensating emitters.
46.06 Explain emission uniformity and quality.

47.0 **DEMONSTRATE AN UNDERSTANDING OF BASIC DESIGN PRINCIPLES FOR LOW VOLUME IRRIGATION SYSTEMS** - the student will be able to:

47.01 Analyze the irrigation site and gathering appropriate site data.
47.02 Identify point or line source area.
47.03 Determine the appropriate irrigation method for each area.
47.04 Determine the number of water emitters required per plant per area.
47.05 Adapt irrigation requirements to available water supply.

48.0 **DEMONSTRATE AN UNDERSTANDING OF PROCEDURES INVOLVED IN INSTALLATION OF LOW VOLUME IRRIGATION SYSTEMS** - the student will be able to:

48.01 Connect the main water line to a point of connection.
48.02 Run lateral lines.
48.03 Run distribution tubing.
48.04 Install emitters.
48.05 Develop an irrigation schedule.

49.0 **DEMONSTRATE AN UNDERSTANDING OF IRRIGATION SYSTEM COMPUTER SOFTWARE CURRENTLY USED IN INDUSTRY** - the student will be able to:

49.01 Participate seminars presented by industry professionals.
49.02 Identify the basic concepts of computerized control systems.

50.0 **DEMONSTRATE AN UNDERSTANDING OF MATERIALS SELECTION AND COSTING NEEDED FOR SALES PRESENTATIONS** - the student will be able to:

50.01 Research materials costs for an irrigation project.
50.02 Visit wholesale supply houses.

51.0 **THE STUDENT WILL DEVELOP AN UNDERSTANDING OF THE BREADTH OF THE IRRIGATION INDUSTRY** - the student will be able to:

51.01 Take a field trip to an irrigation company.
51.02 Take a field trip to an irrigation supply wholesale business.

51.03 Take a field trip to a greenhouse.
51.04 Take a field trip to a golf course.
51.05 Take a field trip to a park.
51.06 Take a field trip to a commercial irrigation installation.
51.07 Take a field trip to a residential irrigation installation.

52.0 **DEMONSTRATE AN UNDERSTANDING OF IRRIGATION WATER REQUIREMENTS** - the student will be able to:

52.01 Explain common system components and their effective water use.
52.02 Explain basic concepts such as application rates, sprinkler spacing, and distribution uniformity.
52.03 Explain matched precipitation rates.
52.04 List the different types of soils and their infiltration rates.

53.0 **DEMONSTRATE AN UNDERSTANDING OF ECONOMIC ANALYSIS AS APPLIED TO IRRIGATION INVESTMENT DECISIONS** - the student will be able to:

53.01 Describe the procedure for determining equipment and installation cost.
53.02 Explain the process of computing ownership costs.
53.03 Explain the process of determining total system cost.

54.0 **DEMONSTRATE AN UNDERSTANDING OF METHODS OF DEVELOP OVERALL OPERATING AND MAINTENANCE PROCEDURES** - the student will be able to:

54.01 Develop an efficient site watering schedule.
54.02 Obtain product maintenance information.
54.03 Explain how to develop an “as-built” drawing.

55.0 **DEMONSTRATE AN UNDERSTANDING OF ANALYSIS OF IRRIGATION SYSTEMS** - the student will be able to:

55.01 List the different levels of evaluation.
55.02 Describe and performing a visual inspection of an irrigation system.
55.03 Describe and performing a flow inspection.
55.04 Describe and performing a catch can test.

56.0 **DEMONSTRATE AN UNDERSTANDING OF HOW TO OBTAIN SITE INFORMATION NECESSARY IN THE COMMERCIAL IRRIGATION SYSTEM DESIGN PROCESS** - the student will be able to:

56.01 Develop an accurate site drawing.
56.02 Determine the type of landscaping and water requirement for a specific site.
56.03 Identify environmental traits such as soil type and weather for a specific site.
56.04 Identify unique site conditions that might affect design or installation.
56.05 Identify possible water sources and Select appropriate source.

57.0 **DEMONSTRATE AN UNDERSTANDING OF SELECTION AND SAFE USE OF EQUIPMENT FOR A COMMERCIAL IRRIGATION SYSTEM INSTALLATION** - the student will be able to:

57.01 Select appropriate sprinkler heads for each area.
57.02 Lay out heads on print utilizing graphic symbols in an irrigation design.
57.03 Group irrigation heads to form irrigation zones.

58.0 **DEMONSTRATE AN UNDERSTANDING OF HOW TO SELECT PIPE SIZES AND VALVES APPROPRIATE FOR SPECIFIC COMMERCIAL IRRIGATION SYSTEM INSTALLATIONS** - the student will be able to:

58.01 Determine the water volume and pressure available from the water supply.
58.02 Select and sizing a control valve for each zone.
58.03 Select and sizing pipe main line.
58.04 Select and sizing pipe for zone lines.

59.0 **DEMONSTRATE AN UNDERSTANDING OF WRITING IRRIGATION SPECIFICATIONS** - the student will be able to:

59.01 Review manufacturing and engineering data sheets and downloading from web sites detailed drawings in preparation for an irrigation project.
59.02 Conform to the Florida Irrigation Society Guidelines for landscape irrigation systems.
59.03 Write specifications for a commercial irrigation project.

60.0 **DEMONSTRATE AN UNDERSTANDING OF ADVANCED HYDRAULIC AND HEAD LAYOUT CONCEPTS** - the student will be able to:

60.01 Describe the factors that Determine system flow requirements.
60.02 Explain the concepts of uniformity and efficiency.
60.03 Explain the concepts of uniformity indicators.
60.04 Demonstrate the ability to read sprinkler profiles.
60.05 Demonstrate the ability to read sprinkler dens grams.

HORTICULTURE TECHNICIAN

15.0 **DEMONSTRATE AN UNDERSTANDING OF PLANT PHYSIOLOGY AND GROWTH**— The student will be able to:

15.01 Describe the process of photosynthesis.
15.02 Identify and describe the functions of all parts of the plant.
15.03 Describe an asexual reproduction process.
15.04 Explain the differences between angiosperms and gymnosperms.
15.05 Identify the differences between woody and herbaceous plants.

16.0 **CLASSIFY PLANTS**--The student will be able to:

16.01 Identify and group shade and flowering trees.
16.02 Identify and group fruit trees and plants.
16.03 Identify and group annuals, vegetables, and herbs.
16.04 Identify and group woody ornamentals, vines, and ground covers.
16.05 Identify and group tropical foliage plants.
16.06 Identify and group turf and ornamental grasses.

17.0 **SELECT, OPERATE, AND MAINTAIN TOOLS AND EQUIPMENT** – The student will be able to:

17.01 Select and operate equipment for the job.
17.02 Maintain an inventory of parts and supplies.

18.0 **FERTILIZE PLANTS**--The student will be able to:

18.01 Evaluate influences of nutrients on plant growth.
18.02 Apply fertilizers, using appropriate methods (dry, liquid, slow-release, injection, etc.).
18.03 Demonstrate proper handling and storage of fertilizers, observing safety precautions.

19.0 **MANAGE A PEST-CONTROL PROGRAM**--The student will be able to:

19.01 Develop an integrated pest management program or schedule.
19.02 Train employees in the safe use of pesticides.
19.03 Obtain a pesticide license.

20.0 **PRUNE AND SHAPE PLANTS**--The student will be able to:

20.01 Train employees in pruning techniques.
20.02 Identify and use tools for pruning.
20.03 Prune plants to achieve desired growth.
20.04 Demonstrate sanitation and safety practices when pruning.

21.0 **MAINTAIN LANSCAPE PLANTS** – The student will be able to:

21.01 Determine water requirements and apply at proper rates.
21.02 Identify weeds and apply herbicides safely.
21.03 Determine fertilization requirements and apply at proper rates.

21.04 Regulate growth of landscape plants through chemical or mechanical needs.
21.05 Maintain turf viability (mow at proper height and frequency, aerate, edge, clip, and remove trash).
21.06 Identify plant pest problems and apply corrective measures.
21.07 Cultivate and mulch plants.
21.08 Brace and repair trees.

22.0 **DEMONSTRATE EMPLOYABILITY SKILLS**--The student will be able to:

22.01 Conduct a job search.
22.02 Secure information about a job.
22.03 Identify documents that may be required when applying for a job.
22.04 Complete a job application form.
22.05 Demonstrate competency in job interview techniques.
22.06 Identify or demonstrate appropriate responses to criticism from employer, supervisor, or other person.
22.07 Identify acceptable work habits.
22.08 Demonstrate knowledge of how to make job changes.
22.09 Demonstrate acceptable employee health habits.

23.0 **DETERMINE DRAINAGE SYSTEM NEEDS AND DESIGN A DRAINAGE SYSTEM** --The student will be able to:

23.01 Determine the texture and percolation characteristics of the soil.

24.0 **PRUNE AND SHAPE PLANTS**--The student will be able to:

24.01 Develop a pruning program and time schedule.
24.02 Select and use chemical growth regulators.
24.03 Root and prune ornamental plants and trees.

25.0 **MAINTAIN AND ANALYZE RECORDS** – The student will be able to:

25.01 Maintain fertilizer and pesticide application records.
25.02 Use computers in the landscape and horticulture operations.

26.0 **PREPARE GROWING MEDIA AND SEEDBEDS** – The student will be able to:

26.01 Identify media materials.
26.02 Mix rooting and growing media according to plant requirements.
26.03 Sterilize rooting, potting, and growing media.
26.04 Collect and test a soil sample from field and potting media.
26.05 Adjust pH and nutritional levels of media.
26.06 Prepare planting beds and sites.
26.07 Fill and level benches and pots with media.
26.08 Demonstrate sanitation practices when handling and storing plant media materials.

27.0 **PROPAGATE PLANTS** – The student will be able to:

27.01 Collect propagation materials at proper time (seeds, cuttings, scions, bulbs, etc.).
27.02 Demonstrate propagation by grafting, budding, layering, separating, dividing, cutting, and tissue culturing.
27.03 Prepare flats and a seedbed and plant seeds.
27.04 Prepare a rooting bed.
27.05 Prepare propagation materials (seeds, cuttings, scions, etc.)
27.06 Apply growth stimulants to propagation materials.
27.07 Transplant rooted propagation materials including tissue Culture transplants.
27.08 Demonstrate sanitation and safety practices when propagating.

28.0 **GROW PLANTS** – The student will be able to:

28.01 Prepare media for containers.
28.02 Prepare field site for transplants.
28.03 Select plant containers.
28.04 Determine plant spacing in the field and on container beds.
28.05 Transplant propagated materials to various containers and to the field.
28.06 Determine and provide light requirements of various plant types.

29.0 **HARVEST, PROCESS, AND SHIP PLANTS** – The student will be able to:

29.01 Grade and harvest field-grown plants (ball, burlap, bare-root, “grow-bags”).
29.02 Select, grade, and assemble container-grown plants.
29.03 Prepare for shipment, loading, and transporting harvested plant materials.

30.0 **MARKET PLANTS** – The student will be able to:

30.01 Identify, inventory, and label marketable plants.

31.0 **DESIGN, INSTALL, AND MAINTAIN NURSERY IRRIGATION SYSTEMS** – The student will be able to:

31.01 Determine irrigation requirements.
31.02 Assess quality of irrigation water.
31.03 Operate and service various types of irrigation systems.