

BOARD MEETING DATE: June 18, 2024

ITEM: VII- B

RECOMMEND that the District Board of Trustees for North Florida College reviews the attached item as an informational item

ATTORNEY REVIEW STATUS: N/A

THIS RECOMMENDATION: will expand educational opportunities to residents within NFC's service district

Florida Department of Education
Curriculum Framework

Program Title: Agribusiness Management
Career Cluster: Agriculture, Food and Natural Resources

AS	
CIP Number	1101010100
Program Type	College Credit
Program Length	60 credit hours
CTSO	N/A
SOC Codes (all applicable)	Please see the CIP to SOC Crosswalk located at the link below.
CTE Program Resources	http://www.fldoe.org/academics/career-adult-edu/career-tech-edu/program-resources.stml

Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Agriculture, Food and Natural Resources career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of the Agriculture, Food and Natural Resources career cluster.

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.

Additional Information relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

Program Structure

This program is a planned sequence of instruction consisting of 60 credit hours.

Standards

After successfully completing this program, the student will be able to perform the following:

- 01.0 Obtain and dispose of an agricultural enterprise.
- 02.0 Prepare and administer an agricultural oriented plan (manage the crop/livestock plan).
- 03.0 Supervise and manage the operation, maintenance, and repair of equipment.
- 04.0 Manage facilities and structures.
- 05.0 Select sources and methods of financing operation.
- 06.0 Interpret and 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, and demonstrate management activities.
- 13.0 Demonstrate a basic understanding of legal and 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

- 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

- 26.0 Demonstrate an understanding of the use of communications in an irrigation business environment.
- 27.0 Demonstrate an understanding of the types of pipe installation common to irrigation systems.
- 28.0 Demonstrate an understanding of irrigation system components.
- 29.0 Demonstrate an understanding of basic design principles used in irrigation systems.
- 30.0 Demonstrate an understanding of basic irrigation system maintenance and operation.

- 31.0 Demonstrate an understanding of distribution systems used in the irrigation industry.
- 32.0 Demonstrate an understanding of control systems used in irrigation installation and repair.
- 33.0 Demonstrate an understanding of water supply.
- 34.0 Demonstrate an understanding of sprinkler performance.
- 35.0 Demonstrate an understanding of site analysis in residential and commercial irrigation systems.
- 36.0 Demonstrate an understanding of and practice in design principles used in residential and commercial irrigation systems.
- 37.0 Demonstrate an understanding of job preparation necessary in residential and commercial irrigation systems.
- 38.0 Demonstrate an understanding of installation techniques used in residential and commercial irrigation systems.
- 39.0 Demonstrate an understanding of how to obtain site information necessary in the residential irrigation system design process.
- 40.0 Demonstrate an understanding of selection and safe use of equipment for residential irrigation system installation.
- 41.0 Demonstrate an understanding of how to select pipe sizes and valves appropriate for specific residential irrigation system installations.
- 42.0 Demonstrate an understanding of microcomputer applications used to design residential irrigation systems.
- 43.0 Demonstrate an understanding of the role of "the green industry."
- 44.0 Demonstrate an understanding of the basic principles of plant growth.
- 45.0 Demonstrate an understanding of the role of plant nutrients and fertilizers.
- 46.0 Demonstrate an understanding of pest management practices.
- 47.0 Demonstrate an understanding of the role of irrigation.
- 48.0 Demonstrate an understanding of the role of soil science.
- 49.0 Demonstrate an understanding of plants used in urban and suburban landscapes.
- 50.0 Demonstrate an understanding of the basic safety issues involved in the "green industry."
- 51.0 Demonstrate an understanding of the water cycle.
- 52.0 Demonstrate an understanding of the uses of water resources.
- 53.0 Demonstrate an understanding of water resource policies in Florida.
- 54.0 Demonstrate an understanding of surface water supplies.
- 55.0 Demonstrate an understanding of groundwater supplies.
- 56.0 Demonstrate an understanding of drip system components.
- 57.0 Demonstrate an understanding of the characteristics of water emission devices.
- 58.0 Demonstrate an understanding of basic design principles for low volume irrigation systems.
- 59.0 Demonstrate an understanding of procedures involved in installation of low volume irrigation systems.
- 60.0 Demonstrate an understanding of irrigation system computer software currently used in industry.
- 61.0 Demonstrate an understanding of materials selection and costing needed for sales presentations.
- 62.0 Develop an understanding of the breadth of the irrigation industry.
- 63.0 Demonstrate an understanding of irrigation water requirements.
- 64.0 Demonstrate an understanding of economic analysis as applied to irrigation investment decisions.
- 65.0 Demonstrate an understanding of methods of develop overall operating and maintenance procedures.
- 66.0 Demonstrate an understanding of analysis of irrigation systems.
- 67.0 Demonstrate an understanding of how to obtain site information necessary in the commercial irrigation system design process.
- 68.0 Demonstrate an understanding of selection and safe use of equipment for a commercial irrigation system installation.
- 69.0 Demonstrate an understanding of how to select pipe sizes and valves appropriate for specific commercial irrigation system installations.
- 70.0 Demonstrate an understanding of writing irrigation specifications.

71.0 Demonstrate an understanding of advanced hydraulic and head lay out concepts.

Horticulture Technician

72.0 Demonstrate an understanding of plant physiology and growth.

73.0 Classify plants.

74.0 Select, operate, and maintain tools and equipment.

75.0 Fertilize plants.

76.0 Manage a pest-control program.

77.0 Prune and shape plants.

78.0 Maintain landscape plants.

79.0 Demonstrate employability skills.

80.0 Determine drainage system needs and design a drainage system.

81.0 Maintain and analyze records.

82.0 Prepare growing media and seedbeds.

83.0 Propagate plants.

84.0 Grow plants.

85.0 Harvest, process, and ship plants.

86.0 Market plants.

87.0 Design, install, and maintain nursery irrigation systems.

Golf Course Technician

88.0 Supervise and manage the operation, maintenance, and repair of golf course equipment.

89.0 Schedule irrigation and manage the design, installation, and maintenance of golf course irrigation systems.

90.0 Prescribe, supervise, and manage the application of agricultural chemicals for the prevention and control of pests.

91.0 Prescribe, supervise, and manage the fertilization of the turf and landscape.

92.0 Train and supervise employees in grooming and maintaining greens, tees, fairways, roughs, and other areas.

93.0 Provide a safe environment for workers and patrons.

94.0 Keep and analyze maintenance, employee, equipment, and inventory records.

95.0 Observe local, state, and federal laws and regulations.

96.0 Demonstrate leadership, communication, public relations, employability, and human relations skills.

97.0 Demonstrate an understanding of the types of pipe installation common to irrigation system.

98.0 Demonstrate an understanding of irrigation system components.

99.0 Demonstrate an understanding of basic design principles used in irrigation systems.

100.0 Demonstrate an understanding of basic irrigation system maintenance and operation.

101.0 Demonstrate an understanding of sprinkler performance.

102.0 Demonstrate an understanding of the basic principles of plant growth.

103.0 Demonstrate an understanding of the role of plant nutrients and fertilizers.

104.0 Demonstrate an understanding of pest management practice.

105.0 Demonstrate an understanding of the role of irrigation.

106.0 Demonstrate an understanding of the basic safety issues involved in the “green industry”.

- 107.0 Demonstrate an understanding of the drip system components.
- 108.0 Demonstrate an understanding of basic design principles for low volume irrigation systems.
- 109.0 Demonstrate an understanding of procedures involved in installation of low volume irrigation systems.
- 110.0 Demonstrate an understanding of plant physiology and growth.
- 111.0 Classify plants.
- 112.0 Select, operate, and maintain tools and equipment.
- 113.0 Fertilize plants.
- 114.0 Manage a pest-control program.

Livestock Production Management

- 115.0 Manage crops.
- 116.0 Manage livestock.
- 117.0 Manage machinery and equipment.
- 118.0 Manage facilities.
- 119.0 Keep and analyze financial, production and production records.
- 120.0 Integrate state and federal regulations into the operation.
- 121.0 Demonstrate leadership, communication, employability and human relations skills.

Florida Department of Education
Student Performance Standards

Program Title: Agribusiness Management
CIP Number: 1101010100
Program Length: 60 credit hours

At the completion of this program, the student will be able to:

01.0	Obtain and dispose of an agricultural enterprise. The student will be able to:
01.01	Develop plan for type and size of agricultural enterprise.
01.02	Obtain title to real estate.
01.03	Complete farm rental/lease agreement.
01.04	Purchase building insurance.
01.05	Purchase liability insurance.
01.06	Transfer agribusiness ownership.
02.0	Prepare and 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 and review Soil Conservation Service Practices if applicable.
02.05	Contract for custom services.
02.06	Develop plan for purchase and 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 and manage the operation, maintenance, and repair of equipment. The student will be able to:
03.01	Develop budgets for changing the machinery and equipment program.
03.02	Prepare inventory of farm machinery and equipment; harvest, fuel, and lubricants.
03.03	Obtain machinery and equipment by purchase, rent, lease or trade.
03.04	Develop plan for machinery and 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 and methods of financing operation. The student will be able to:
05.01	Analyze major sources of agricultural production credit.
05.02	Analyze and select sources of credit for capital items and real estate.
05.03	Prepare a case using accepted forms for obtaining credit from an agricultural lending institution.
05.04	Analyze contracts, leases, and other legal documents.
05.05	Analyze and 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 and 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, and registrations.
06.03	Maintain a file of current rules and regulations relative to operation.
06.04	List reasons for the necessity of inspections, certification, and 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 and bank reconciliation.
07.08	Interpret financial statements.
07.09	Demonstrate knowledge of the accounting cycle.
07.10	Demonstrate knowledge of budget principles and interpret budgets.
07.11	Demonstrate accounting operations on a computer.
07.12	Calculate and 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 and record capital gains and 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 and losses schedule, Investment credit schedule, 1040 schedule.

08.0	Perform communication activities. The student will be able to:
08.01	Demonstrate effective telephone usage and courtesy.
08.02	Demonstrate effective listening skills.
08.03	Give, follow, and interpret oral and written communication.
08.04	Demonstrate knowledge of e-mail etiquette and ethics.
08.05	Compose business correspondence and related documents and 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 and other visual media.
08.09	Research and interpret information retrieved from print and electronic resources.
08.10	Annotate letters, reports, and news articles.
08.11	Proofread and edit documents.
08.12	Research and 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 and 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 and demonstrate the unique human relations skills needed for success in the business sector.
09.06	Recognize different personality styles and how to interact effectively with them in the workplace.
09.07	Differentiate between an acceptable and unacceptable code of ethical conduct in business.

09.08	Discuss how values and attitudes influence behavior.
09.09	Explain how understanding of self-concept and self-esteem impacts human relations skills.
09.10	Identify or demonstrate appropriate responses to criticism from employer, supervisor, or other persons.
10.0	Demonstrate employability skills. The student will be able to:
10.01	Demonstrate understanding of acceptable hygiene and grooming habits.
10.02	Identify sources of employment opportunities.
10.03	Identify appropriate attire and grooming for a business office.
10.04	Identify documents that may be required when applying for a job.
10.05	Complete a resume and 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 and demonstrate appropriate responses to feedback from supervisors.
10.12	Identify and 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 and lead an effective meeting.
11.02	Define effective leadership.
11.03	Identify and explain key leadership behaviors.
11.04	Compare different styles of leadership.
11.05	Relate leadership to other management and communication skills.
11.06	Examine ways effective leaders develop, coach, and motivate.
11.07	Define organization vision and mission.
11.08	Identify characteristics of effective goals.
11.09	Describe personal leadership style.
11.10	Explain how effective leaders identify problems and 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	Identify, classify and demonstrate 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, and hiring and firing.
12.04	Demonstrate knowledge of the relationship between authority and responsibility to task accomplishment.
12.05	Select the most effective communication systems.
12.06	Identify problems and make appropriate decisions.

12.07	Demonstrate understanding of organizational culture and its impact on communications.
12.08	Identify and discuss current management issues in business and other organizations.
12.09	Describe activities associated with the management functions of planning, organizing, staffing, leading and controlling.
12.10	Manage and supervise labor
12.11	Develop labor supply plan.
12.12	Hire and dismiss employees.
12.13	Establish and 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 understanding of legal and 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 and 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 and 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 southeastern 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 southeastern 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	
26.0	Demonstrate an understanding of the use of communications in an irrigation business environment. The student will be able to:
26.01	Explain the communications patterns used in the irrigation industry, including connected network and chain of command.
26.02	Define common irrigation vocabulary terms.
26.03	Locate specific engineering information from print and on-line sources.
27.0	Demonstrate an understanding of the types of pipe installation common to irrigation systems. The student will be able to:

27.01	List the different types and schedules of available Polyvinyl Chloride (PVC) pipes.
27.02	Describe the different types of available fittings including solvent weld, o-rings, and mechanical joint (MJ) joints.
27.03	Describe the basic chemical reactions that occur in the manufacture of PVC pipe.
27.04	Explain the process of connecting PVC pipe by using solvent weld chemicals.
27.05	Explain the process of connecting o-ring pipe by using push-on fittings.
28.0	Demonstrate an understanding of irrigation system components. The student will be able to:
28.01	Identify various irrigation system types such as rotors, sprays, and drip.
28.02	Explain the process of time clock selection.
28.03	Explain the process of valve selection.
28.04	Explain the process of sprinkler head selection.
28.05	Explain the process of low-voltage wire selection.
29.0	Demonstrate an understanding of basic design principles used in irrigation systems. The student will be able to:
29.01	Calculate the static or working water pressure at a given point in the system.
29.02	Determine the velocity for certain type and size pipe at a given flow.
29.03	Select appropriate sprinkler heads for specific applications.
29.04	Group irrigation heads to form irrigation zones complying with proper design criteria.
29.05	Calculate specific friction loss through piping.
29.06	Compute the precipitation rate for various sprinkler types and spacing patterns.
30.0	Demonstrate an understanding of basic irrigation system maintenance and operation. The student will be able to:
30.01	Determine the watering time needed per week per station.
30.02	Develop a water schedule based on proper design principles.
30.03	Read and explain an as-built drawing.
30.04	Explain the process of remove and install sprinkler heads.

30.05	Describe introductory the process of automatic control valve repair.
30.06	Describe the process of automatic controller repair.
30.07	Diagnose and correcting wiring problems.
31.0	Demonstrate an understanding of distribution systems used in the irrigation industry. The student will be able to:
31.01	Diagnose low and high pressure conditions that result from damaged piping, faulty installation, and clogged piping.
31.02	Repair zone lines using solvent weld fittings.
31.03	Repair main lines using mechanical joint (MJ) couplings.
32.0	Demonstrate an understanding of control systems used in irrigation installation and repair. The student will be able to:
32.01	Develop watering schedules and setting control timers.
32.02	Diagnose control system using test meters and wire tracking equipment.
32.03	Isolate problems into one of three areas for repair: control timer, field wiring, and control valve.
32.04	Repair or replacing an automatic control timer.
32.05	Repair/splicing field wiring.
32.06	Repair/replacing faulty parts on the irrigation control valve.
33.0	Demonstrate an understanding of water supply. The student will be able to:
33.01	Diagnose problems of water supply interruption.
33.02	Diagnose problems with water quality.
33.03	Repair or adjusting pump control systems.
33.04	Repair adjusting backflow prevention devices.
33.05	Clean filter media or screens.
34.0	Demonstrate an understanding of sprinkler performance. The student will be able to:
34.01	Diagnose sprinkler distribution problems.
34.02	Measure and analyze precipitation rates.

34.03	Remove, clean, and reinstall heads.
34.04	Repair and adjust heads.
34.05	Adjust sprinkler head spacing if required.
35.0	Demonstrate an understanding of site analysis in residential and commercial irrigation systems. The student will be able to:
35.01	Complete an accurate site drawing.
35.02	Determine the watering requirements in view of the site plan.
35.03	Identify unique site conditions that might affect installation.
35.04	Identify the appropriate water source.
36.0	Demonstrate an understanding of and practice in design principles used in residential and commercial irrigation systems. The student will be able to:
36.01	Lay out heads on a print utilizing graphic symbol.
36.02	Select/sizing control valve.
36.03	Select/sizing zone lines.
36.04	Select/sizing main line.
37.0	Demonstrate an understanding of job preparation necessary in residential and commercial irrigation systems. The student will be able to:
37.01	List the different types of underground utilities and how to locate them.
37.02	Prepare a list of materials necessary to install the class designed irrigation system.
37.03	Identify the tools and equipment needed to install the class designed irrigation system.
38.0	Demonstrate an understanding of installation techniques used in residential and commercial irrigation systems. The student will be able to:
38.01	Use a walk behind trencher to excavate trenches.
38.02	Hand digs a trench.
38.03	Backfill and compact a trench.
38.04	Measure, cut, clean, prime, and glue solvent weld PVC pipe.
38.05	Cut and install o-ring pipe and fittings.

38.06	Install spray heads and/or rotor heads.
38.07	Install control valves.
38.08	Install nozzles, adjusting flow rates, and setting pattern.
38.09	Identify and install low voltage direct burial wire.
38.10	Produce an "as-built" drawing.
39.0	Demonstrate an understanding of how to obtain site information necessary in the residential irrigation system design process. The student will be able to:
39.01	Develop an accurate plot plan or site drawing.
39.02	Determine the type of landscaping and water requirement for a specific site.
39.03	Identify environmental traits such as soil type and weather for a specific site.
39.04	Identify unique site conditions that might affect design or installation.
39.05	Identify possible water sources and select appropriate source.
40.0	Demonstrate an understanding of selection and safe use of equipment for residential irrigation system installation. The student will be able to:
40.01	Select appropriate sprinkler heads for each area.
40.02	Lay out heads on print utilizing graphic symbols in an irrigation design.
40.03	Group irrigation heads to form irrigation zones.
41.0	Demonstrate an understanding of how to select pipe sizes and valves appropriate for specific residential irrigation system installations. The student will be able to:
41.01	Determine the water volume and pressure available from the water supply.
41.02	Select and sizing a control valve for each zone.
41.03	Select and sizing pipe main line.
41.04	Select and sizing pipe for zone lines.
42.0	Demonstrate an understanding of microcomputer applications used to design residential irrigation systems. The student will be able to:
42.01	Enter the elements of a site plan into the computer.

42.02	Use a scanner to enter a site plan into a microcomputer application.
42.03	Lay out heads using a microcomputer application.
42.04	Use a microcomputer application to group heads together to form irrigation zones.
42.05	Use a microcomputer application to select pipe size.
43.0	Demonstrate an understanding of the role of "the green industry". The student will be able to:
43.01	Describe the importance of the "green industry" to local, state, and national economies.
43.02	Explain the importance and impact of local, state, and federal regulations.
43.03	Describe the relationship of the "green industry" to the environment.
44.0	Demonstrate an understanding of the principles of plant growth. The student will be able to:
44.01	Describe the functions of plant parts including roots, stems, leaves, flowers, and fruits.
44.02	Describe the processes of plant growth including photosynthesis, respiration, nutrient uptake, and respiration.
44.03	Describe the growth characteristics, and use of subtropical and tropical landscape plants.
44.04	Identify various landscape designs, natural systems and the plants associated with them.
44.05	Describe the process of effective establishment of plants in the landscape.
44.06	Describe the influences of the environment on the landscape including pollutants.
45.0	The student will demonstrate an understanding of the role of plant nutrients and fertilizers. The student will be able to:
45.01	Identify the nutrients required for plant growth and the role of each.
45.02	Identify the types and kinds of fertilizers.
45.03	Read and interpreting fertilizer labels.
45.04	Describe the application of various fertilizer formulations.
45.05	Identify symptoms of nutritional deficiencies and toxicities of plants.
46.0	The student will demonstrate an understanding of pest management practices. The student will be able to:
46.01	Describe the principles and benefits of integrated pest management.

46.02	Explain the nature of physical and chemical damage to plants.
46.03	Describe the selection process involved in the use of horticultural chemicals for arthropod pest control and subsequent implications of their usage.
46.04	Explain the role of efficient irrigation in pest control.
46.05	Explain the role of plant health in pest control.
47.0	Demonstrate an understanding of the role of irrigation. The student will be able to:
47.01	List the components of Florida's fresh water systems.
47.02	Explain evaporation transpiration rate.
47.03	Explain hydro zoning/precipitation rate.
47.04	Identify the water needs of plants.
47.05	Explain the role of mulches in the landscape.
47.06	Describe soil moisture retention and movement for various soil types.
48.0	Demonstrate an understanding of the role of soil science. The student will be able to:
48.01	Identify soil types and textures.
48.02	Explain the role of soil pH and soluble salts on plant growth.
48.03	Explain the physical properties of fill soil.
48.04	Explain the role of soil type as it affects water retention.
48.05	Interpret soil test information.
48.06	Read and understand soil survey maps.
49.0	Demonstrate an understanding of plants used in urban and suburban landscapes. The student will be able to:
49.01	Describe the process of binomial nomenclature.
49.02	Describe the use of bedding plants and other herbaceous perennials.
49.03	Describe the use of ground covers, shrubs, trees, and vines including angiosperms and gymnosperms.
49.04	Describe the use of palms, grasses, and other monocots.

50.0	Demonstrate an understanding of the basic safety issues involved in the “green industry”. The student will be able to:
50.01	List the most common causes of accidents in the “green industry.”
50.02	Discuss the importance of following proper safety precautions.
50.03	Describe the symptoms of pesticide poisoning.
50.04	Extract pertinent information from material safety data sheets.
51.0	Demonstrate an understanding of the water cycle. The student will be able to:
51.01	Describe the role of precipitation.
51.02	Explain the effects of evaporation and transpiration.
51.03	Describe the effects of runoff on water supply and quality.
51.04	Explain the process of ground water infiltration.
51.05	Describe how different ecosystems affect the water supply.
52.0	Demonstrate an understanding of the uses of water resources. The student will be able to:
52.01	List the uses and quantity of water used on a global scale.
52.02	List the uses and quantity of water used in the United States.
52.03	List the uses and quantity of water used in Florida.
53.0	Demonstrate an understanding of water resource policies in Florida. The student will be able to:
53.01	Explain the role that planning agencies have on water supply and quality.
53.02	Explain the effect the current legislation has on water supply and quality.
53.03	List the pending legislation that may affect the water supply and quality.
54.0	Demonstrate an understanding of surface water supplies. The student will be able to:
54.01	Explain the role of rivers, lakes, and reservoirs.
54.02	Explain the importance of flood damage reduction planning.
54.03	Explain the issues involved in ensuring that surface water supplies are properly managed.

55.0	Demonstrate an understanding of groundwater supplies. The student will be able to:
55.01	Describe groundwater's role as a water source.
55.02	Describe the effect of pollutants on groundwater.
55.03	Describe the role of the aquifer and the regional aquifer characteristics.
55.04	Describe the effect that water pumped from the ground has on the water table.
56.0	Demonstrate an understanding of drip system components. The student will be able to:
56.01	Identify the various types of water emitters.
56.02	Identify and explain the use of drip lateral materials.
56.03	Identify and explain the use of pressure regulators.
56.04	Identify and explain the use of valves including flush valves, control valves and air vents.
57.0	Demonstrate an understanding of the characteristics of water emission devices. The student will be able to:
57.01	Identify and explain the operation of orifice emitters.
57.02	Identify and explain the operation of laminar flow emitters.
57.03	Identify and explain the operation of turbulent flow emitters.
57.04	Identify and explain the operation of vortex emitters.
57.05	Identify and explain the operation of pressure compensating emitters.
57.06	Explain emission uniformity and quality.
58.0	Demonstrate an understanding of basic design principles for low volume irrigation systems. The student will be able to:
58.01	Analyze the irrigation site and gathering appropriate site data.
58.02	Identify point or line source area.
58.03	Determine the appropriate irrigation method for each area.
58.04	Determine the number of water emitters required per plant per area.
58.05	Adapt irrigation requirements to available water supply.

59.0	Demonstrate an understanding of procedures involved in installation of low volume irrigation systems. The student will be able to:
59.01	Connect the main water line to a point of connection.
59.02	Run lateral lines.
59.03	Run distribution tubing.
59.04	Install emitters.
59.05	Develop an irrigation schedule.
60.0	Demonstrate an understanding of irrigation system computer software currently used in industry. The student will be able to:
60.01	Participate in seminars presented by industry professionals.
60.02	Identify the basic concepts of computerized control systems.
61.0	Demonstrate an understanding of materials selection and costing needed for sales presentations. The student will be able to:
61.01	Research materials costs for an irrigation project.
61.02	Visit wholesale supply houses.
62.0	Develop an understanding of the breadth of the irrigation industry. The student will be able to:
62.01	Describe an irrigation company.
62.02	Describe an irrigation supply wholesale business.
62.03	Describe the use of irrigation in a greenhouse.
62.04	Describe the use of irrigation in a golf course.
62.05	Describe the use of irrigation in a park.
62.06	Describe the use of irrigation in a commercial irrigation installation.
62.07	Describe the use of irrigation in a residential irrigation installation.
63.0	Demonstrate an understanding of irrigation water requirements. The student will be able to:
63.01	Explain common system components and their effective water use.
63.02	Explain basic concepts such as application rates, sprinkler spacing, and distribution uniformity.

63.03	Explain matched precipitation rates.
63.04	List the different types of soils and their infiltration rates.
64.0	Demonstrate an understanding of economic analysis as applied to irrigation investment decisions. The student will be able to:
64.01	Describe the procedure for determining equipment and installation cost.
64.02	Explain the process of computing ownership costs.
64.03	Explain the process of determining total system cost.
65.0	Demonstrate an understanding of methods of develop overall operating and maintenance procedures. The student will be able to:
65.01	Develop an efficient site watering schedule.
65.02	Obtain product maintenance information.
65.03	Explain how to develop an "as-built" drawing.
66.0	Demonstrate an understanding of analysis of irrigation systems. The student will be able to:
66.01	List the different levels of evaluation.
66.02	Describe and performing a visual inspection of an irrigation system.
66.03	Describe and performing a flow inspection.
66.04	Describe and performing a catch can test.
67.0	Demonstrate an understanding of how to obtain site information necessary in the commercial irrigation system design process. The student will be able to:
67.01	Develop an accurate site drawing.
67.02	Determine the type of landscaping and water requirement for a specific site.
67.03	Identify environmental traits such as soil type and weather for a specific site.
67.04	Identify unique site conditions that might affect design or installation.
67.05	Identify possible water sources and select appropriate source.
68.0	Demonstrate an understanding of selection and safe use of equipment for a commercial irrigation system installation. The student will be able to:

68.01	Select appropriate sprinkler heads for each area.
68.02	Lay out heads on print utilizing graphic symbols in an irrigation design.
68.03	Group irrigation heads to form irrigation zones.
69.0	Demonstrate an understanding of how to select pipe sizes and valves appropriate for specific commercial irrigation system installations. The student will be able to:
69.01	Determine the water volume and pressure available from the water supply.
69.02	Select and sizing a control valve for each zone.
69.03	Select and sizing pipe main line.
69.04	Select and sizing pipe for zone lines.
70.0	Demonstrate an understanding of writing irrigation specifications. The student will be able to:
70.01	Review manufacturing and engineering data sheets and downloading from websites detailed drawings in preparation for an irrigation project.
70.02	Conform to the Florida Irrigation Society Guidelines for landscape irrigation systems.
70.03	Write specifications for a commercial irrigation project.
71.0	Demonstrate an understanding of advanced hydraulic and head layout concepts. The student will be able to:
71.01	Describe the factors that determine system flow requirements.
71.02	Explain the concepts of uniformity and efficiency.
71.03	Explain the concepts of uniformity indicators.
71.04	Demonstrate the ability to read sprinkler profiles.
71.05	Demonstrate the ability to read sprinkler dens grams.
Horticulture Technician	
72.0	Demonstrate an understanding of plant physiology and growth. The student will be able to:
72.01	Describe the process of photosynthesis.
72.02	Identify and describe the functions of all parts of the plant.

72.03	Describe an asexual reproduction process.
72.04	Explain the differences between angiosperms and gymnosperms.
72.05	Identify the differences between woody and herbaceous plants.
73.0	Classify plants. The student will be able to:
73.01	Identify and group shade and flowering trees.
73.02	Identify and group fruit trees and plants.
73.03	Identify and group annuals, vegetables, and herbs.
73.04	Identify and group woody ornamentals, vines, and ground covers.
73.05	Identify and group tropical foliage plants.
73.06	Identify and group turf and ornamental grasses.
74.0	Select, operate, and maintain tools and equipment. The student will be able to:
74.01	Select and operate equipment for the job.
74.02	Maintain an inventory of parts and supplies.
75.0	Fertilize plants. The student will be able to:
75.01	Evaluate influences of nutrients on plant growth.
75.02	Apply fertilizers, using appropriate methods (dry, liquid, slow-release, injection, etc.).
75.03	Demonstrate proper handling and storage of fertilizers, observing safety precautions.
76.0	Manage a pest-control program. The student will be able to:
76.01	Develop an integrated pest management program or schedule.
76.02	Train employees in the safe use of pesticides.
76.03	Obtain a pesticide license.
77.0	Prune and shape plants. The student will be able to:
77.01	Train employees in pruning techniques.

77.02	Identify and use tools for pruning.
77.03	Prune plants to achieve desired growth.
77.04	Demonstrate sanitation and safety practices when pruning.
77.05	Develop a pruning program and time schedule.
77.06	Select and use chemical growth regulators.
77.07	Root and prune ornamental plants and trees.
78.0	Maintain landscape plants. The student will be able to:
78.01	Determine water requirements and apply at proper rates.
78.02	Identify weeds and apply herbicides safely.
78.03	Determine fertilization requirements and apply at proper rates.
78.04	Regulate growth of landscape plants through chemical or mechanical needs.
78.05	Maintain turf viability (mow at proper height and frequency, aerate, edge, clip, and remove trash).
78.06	Identify plant pest problems and apply corrective measures.
78.07	Cultivate and mulch plants.
78.08	Brace and repair trees.
79.0	Demonstrate employability skills. The student will be able to:
79.01	Conduct a job search.
79.02	Secure information about a job.
79.03	Identify documents that may be required when applying for a job.
79.04	Complete a job application form.
79.05	Demonstrate competency in job interview techniques.
79.06	Identify or demonstrate appropriate responses to criticism from employer, supervisor, or other person.
79.07	Identify acceptable work habits.

79.08	Demonstrate knowledge of how to make job changes.
79.09	Demonstrate acceptable employee health habits.
80.0	Determine drainage system needs and design a drainage system. The student will be able to:
80.01	Determine the texture and percolation characteristics of the soil.
81.0	Maintain and analyze records. The student will be able to:
81.01	Maintain fertilizer and pesticide application records.
81.02	Use computers in the landscape and horticulture operations.
82.0	Prepare growing media and seedbeds. The student will be able to:
82.01	Identify media materials.
82.02	Mix rooting and growing media according to plant requirements.
82.03	Sterilize rooting, potting, and growing media.
82.04	Collect and test a soil sample from field and potting media.
82.05	Adjust pH and nutritional levels of media.
82.06	Prepare planting beds and sites.
82.07	Fill and level benches and pots with media.
82.08	Demonstrate sanitation practices when handling and storing plant media materials.
83.0	Propagate plants. The student will be able to:
83.01	Collect propagation materials at proper time (seeds, cuttings, scions, bulbs, etc.)
83.02	Demonstrate propagation by grafting, budding, layering, separating, dividing, cutting, and tissue culturing.
83.03	Prepare flats and a seedbed and plant seeds.
83.04	Prepare a rooting bed.
83.05	Prepare propagation materials (seeds, cuttings, scions, etc.)
83.06	Apply growth stimulants to propagation materials.

83.07	Transplant rooted propagation materials including tissue culture transplants.
83.08	Demonstrate sanitation and safety practices when propagating.
84.0	Grow plants. The student will be able to:
84.01	Prepare media for containers.
84.02	Prepare field site for transplants.
84.03	Select plant containers.
84.04	Determine plant spacing in the field and on container beds.
84.05	Transplant propagated materials to various containers and to the field.
84.06	Determine and provide light requirements of various plant types.
85.0	Harvest, process, and ship plants. The student will be able to:
85.01	Grade and harvest field-grown plants (ball, burlap, bare-root, "grow-bags").
85.02	Select, grade, and assemble container-grown plants.
85.03	Prepare for shipment, loading, and transporting harvested plant materials.
86.0	Market plants. The student will be able to:
86.01	Identify, inventory, and label marketable plants.
87.0	Design, install, and maintain nursery irrigation systems. The student will be able to:
87.01	Determine irrigation requirements.
87.02	Assess quality of irrigation water.
87.03	Operate and service various types of irrigation systems.
Golf Course Technician	
88.0	Supervise and manage the operation, maintenance, and repair of golf course equipment. The student will be able to:
88.01	Define the role of the golf course equipment mechanic in relation to the organization.
88.02	Determine the essential power, shop and hand tools required in a golf course mechanics shop.

88.03	Design a shop layout.
88.04	Compile a list of equipment required in the operation of an 18-hole golf course.
88.05	Demonstrate knowledge and use of golf course equipment.
88.06	Develop and supervise a system of preventive maintenance.
88.07	Sharpen and grind blades and cutting surfaces on all mowing equipment.
88.08	Monitor and record the use of fuel, lubricants, and consumable shop supplies.
88.09	Maintain a safe clean shop.
88.10	Maintain current catalogs for supplies and equipment.
88.11	Maintain tires and tire pressure on golf course equipment.
88.12	Train and supervise employees in the safe use of tools and equipment.
89.0	Schedule irrigation and manage the design, installation, and maintenance of golf course irrigation systems. The student will be able to:
89.01	Determine water requirements for a particular turf.
89.02	Illustrate the design, computations, pumping capacity, and pipe sizing needed to irrigate a given operation.
89.03	Schedule irrigation as required.
89.04	Store and handle chemicals safely.
89.05	Recognize symptoms of agricultural chemical poisoning and apply first aid.
89.06	Dispose of chemical containers.
89.07	Read and interpret safety precautions provided on equipment and pesticide containers.
90.0	Prescribe, supervise and manage the application of agricultural chemicals for the prevention and control of pests. The student will be able to:
90.01	Instruct employees in the safe use of agricultural chemicals.
90.02	Prepare proper proportions of chemicals and carrying agents.
90.03	Compute amounts of active ingredients of chemicals to be used.
90.04	Calibrate volume, pressure, and output of equipment.

90.05	Weigh and measure chemicals.
90.06	Adjust height and width of equipment to achieve desired spray pattern.
90.07	Recognize symptoms of pesticide damage.
90.08	Identify fungi and bacteria.
90.09	Recognize symptoms of insects and nematodes.
90.10	Identify common insects, weeds, diseases, and other pests common to golf courses.
90.11	Clean and store sprayers.
91.0	Prescribe, supervise and manage the fertilization of the turf and landscape. The student will be able to:
91.01	Take soil and leaf samples for chemical analysis.
91.02	Adjust pH level of soil.
91.03	Interpret soil and tissue chemical analysis results.
91.04	Apply fertilizer in liquid form.
91.05	Interpret labels on fertilizer containers.
91.06	Apply dry fertilizers.
91.07	Identify nutrient deficiency symptoms in turf and landscape plants.
91.08	Determine kind and type of fertilizer to apply to a given area.
91.09	Determine the nutrient requirements of various plants.
91.10	Determine amount of fertilizer to apply to a given area.
91.11	Analyze cost of various formulations and methods of application.
91.12	Recognize fertilizer injury to plant materials.
92.0	Train and supervise employees in grooming and maintaining greens, tees, fairways, roughs, and other areas. The student will be able to:
92.01	Supervise the mowing of greens, collars, roughs, aprons, and fairways.
92.02	Determine the placement and location of cups and tees.

92.03	Supervise the repair of divots.
92.04	Determine conditions necessary for verticutting and aerifying turf.
92.05	Supervise the care and maintenance of sand traps.
92.06	Prune trees and shrubs.
92.07	Develop maintenance schedule for grooming golf courses.
92.08	Train and supervise employees in the care of golf courses.
92.09	Follow written and verbal instructions.
93.0	Provide a safe environment for workers and patrons. The student will be able to:
93.01	Provide instruction for the safe use of chemicals, tools, and equipment.
93.02	Inspect tools and equipment for safe operation.
93.03	Apply emergency first aid.
93.04	Monitor employees work habits.
93.05	Maintain safety awareness.
94.0	Keep and analyze maintenance, employee, equipment, and inventory records. The student will be able to:
94.01	Maintain equipment use and maintenance records.
94.02	Maintain pesticide use information.
94.03	Keep inventory records.
94.04	Prepare a written report or summary based on records.
94.05	Observe and make recommendations based on records.
94.06	Evaluate employees, equipment and practices based on records.
95.0	Observe local, state and federal laws and regulations. The student will be able to:
95.01	Observe OSHA rules and regulations.
95.02	Observe EPA rules and regulations.

95.03	Maintain a list of agencies responsible for regulating the industry.
96.0	Demonstrate leadership, communication, public relations, employability, and human relations skills. The student will be able to:
96.01	Conduct a job search.
96.02	Secure information about a job.
96.03	Identify documents that may be required when applying for a job.
96.04	Complete a job application form correctly.
96.05	Demonstrate competence in job interview techniques.
96.06	Identify or demonstrate appropriate responses to criticism from employer, supervisor, or other persons.
96.07	Demonstrate acceptable employee health habits.
97.0	Demonstrate an understanding of the types of pipe installation common to irrigation systems. The student will be able to:
97.01	List the different types and schedules of available Polyvinyl Chloride (PVC) pipes.
97.02	Describe the different types of available fittings including solvent weld, o-rings, and mechanical joint (MJ) joints.
97.03	Describe the basic chemical reactions that occur in the manufacture of PVC pipe.
97.04	Explain the process of connecting PVC pipe by using solvent weld chemicals.
97.05	Explain the process of connecting o-ring pipe by using push-on fittings.
98.0	Demonstrate an understanding of irrigation system components. The student will be able to:
98.01	Identify various irrigation system types such as rotors, sprays, and drip.
98.02	Explain the process of time clock selection.
98.03	Explain the process of valve selection.
98.04	Explain the process of sprinkler head selection.
98.05	Explain the process of low-voltage wire selection.
99.0	Demonstrate an understanding of basic design principles used in irrigation systems. The student will be able to:
99.01	Calculate the static or working water pressure at a given point in the system.

99.02	Determine the velocity for certain type and size pipe at a given flow.
99.03	Select appropriate sprinkler heads for specific applications.
99.04	Group irrigation heads to form irrigation zones complying with proper design criteria.
99.05	Calculate specific friction loss through piping.
99.06	Compute the precipitation rate for various sprinkler types and spacing patterns.
100.0	Demonstrate an understanding of basic irrigation system maintenance and operation. The student will be able to:
100.01	Determine the watering time needed per week per station.
100.02	Develop a water schedule based on proper design principles.
100.03	Read and explain an as-built drawing.
100.04	Explain the process of remove and install sprinkler heads.
100.05	Describe introductory the process of automatic control valve repair.
100.06	Describe the process of automatic controller repair.
100.07	Diagnose and correcting wiring problems.
101.0	Demonstrate an understanding of sprinkler performance. The student will be able to:
101.01	Diagnose sprinkler distribution problems.
101.02	Measure and analyze precipitation rates.
101.03	Remove, clean, and reinstall heads.
101.04	Repair and adjust heads.
101.05	Adjust sprinkler head spacing if require
102.0	Demonstrate an understanding of the principles of plant growth. The student will be able to:
102.01	Describe the functions of plant parts including roots, stems, leaves, flowers, and fruits.
102.02	Describe the processes of plant growth including photosynthesis, respiration, nutrient uptake, and respiration.
102.03	Describe the growth characteristics, and use of subtropical and tropical landscape plants.

102.04	Identify various landscape designs, natural systems and the plants associated with them.
102.05	Describe the process of effective establishment of plants in the landscape.
102.06	Describe the influences of the environment on the landscape including pollutants.
103.0	The student will demonstrate an understanding of the role of plant nutrients and fertilizers. The student will be able to:
103.01	Identify the nutrients required for plant growth and the role of each.
103.02	Identify the types and kinds of fertilizers.
103.03	Read and interpreting fertilizer labels.
103.04	Describe the application of various fertilizer formulations.
103.05	Identify symptoms of nutritional deficiencies and toxicities of plants.
104.0	The student will demonstrate an understanding of pest management practices. The student will be able to:
104.01	Describe the principles and benefits of integrated pest management.
104.02	Explain the nature of physical and chemical damage to plants.
104.03	Describe the selection process involved in the use of horticultural chemicals for arthropod pest control and subsequent implications of their usage.
104.04	Explain the role of efficient irrigation in pest control.
104.05	Explain the role of plant health in pest control.
105.0	Demonstrate an understanding of the role of irrigation. The student will be able to:
105.01	List the components of Florida's fresh water systems.
105.02	Explain evaporation transpiration rate.
105.03	Explain hydro zoning/precipitation rate.
105.04	Identify the water needs of plants.
105.05	Explain the role of mulches in the landscape.
105.06	Describe soil moisture retention and movement for various soil types.
106.0	Demonstrate an understanding of the basic safety issues involved in the "green industry". The student will be able to:

106.01	List the most common causes of accidents in the “green industry.”
106.02	Discuss the importance of following proper safety precautions.
106.03	Describe the symptoms of pesticide poisoning.
106.04	Extract pertinent information from material safety data sheets.
107.0	Demonstrate an understanding of drip system components. The student will be able to:
107.01	Identify the various types of water emitters.
107.02	Identify and explain the use of drip lateral materials.
107.03	Identify and explain the use of pressure regulators.
107.04	Identify and explain the use of valves including flush valves, control valves and air vents.
108.0	Demonstrate an understanding of basic design principles for low volume irrigation systems. The student will be able to:
108.01	Analyze the irrigation site and gathering appropriate site data.
108.02	Identify point or line source area.
108.03	Determine the appropriate irrigation method for each area.
108.04	Determine the number of water emitters required per plant per area.
108.05	Adapt irrigation requirements to available water supply.
109.0	Demonstrate an understanding of procedures involved in installation of low volume irrigation systems. The student will be able to:
109.01	Connect the main water line to a point of connection.
109.02	Run lateral lines.
109.03	Run distribution tubing.
109.04	Install emitters.
109.05	Develop an irrigation schedule.
110.0	Demonstrate an understanding of plant physiology and growth. The student will be able to:
110.01	Describe the process of photosynthesis.

110.02 Identify and describe the functions of all parts of the plant.
110.03 Describe an asexual reproduction process.
110.04 Explain the differences between angiosperms and gymnosperms.
110.05 Identify the differences between woody and herbaceous plants.
111.0 Classify plants. The student will be able to:
111.01 Identify and group shade and flowering trees.
111.02 Identify and group fruit trees and plants.
111.03 Identify and group annuals, vegetables, and herbs.
111.04 Identify and group woody ornamentals, vines, and ground covers.
111.05 Identify and group tropical foliage plants.
111.06 Identify and group turf and ornamental grasses.
112.0 Select, operate, and maintain tools and equipment. The student will be able to:
112.01 Select and operate equipment for the job.
112.02 Maintain an inventory of parts and supplies.
113.0 Fertilize plants. The student will be able to:
113.01 Evaluate influences of nutrients on plant growth.
113.02 Apply fertilizers, using appropriate methods (dry, liquid, slow-release, injection, etc.).
113.03 Demonstrate proper handling and storage of fertilizers, observing safety precautions.
114.0 Manage a pest-control program. The student will be able to:
114.01 Develop an integrated pest management program or schedule.
114.02 Train employees in the safe use of pesticides.
114.03 Obtain a pesticide license.
Livestock Production Management

115.0	Manage crops. The student will be able to:
115.01	Prepare a land use plan.
115.02	Determine long-range conservation practices.
115.03	Prepare soil for crops.
115.04	Select crop varieties best suited for land, market and type of farm operation.
115.05	Determine seeding/planting rate and spacing.
115.06	Calibrate and adjust planting equipment
115.07	Plant crops.
115.08	Select appropriate cultural practices including cultivation, fertilization and irrigation.
115.09	Identify and control diseases, insects and pests.
115.10	Determine maturity of crops.
115.11	Harvest crops.
115.12	Store crops.
115.13	Determine the most advantageous method of marketing crops.
116.0	Manage livestock. The student will be able to:
116.01	Select and/or breed livestock.
116.02	Determine nutritional requirements and balance livestock rations.
116.03	Prepare a feeding schedule.
116.04	Determine quality of pasture range or forage.
116.05	Provide for winter rations and supplements.
116.06	Maintain pasture fertility and quality.
116.07	Develop a breeding/marketing plan for operation.
116.08	Cull unproductive animals.

116.09	Provide aid for animals with parturition problems.
116.10	Care for newborn livestock.
116.11	List causes of livestock infertility.
116.12	Provide mineral supplement for animals.
116.13	Determine most advantageous method of marketing livestock.
116.14	Transport livestock.
116.15	Identify and treat disorders, diseases and pests of livestock.
117.0	Manage machinery and equipment. The student will be able to:
117.01	Assess needs for the purchases of new or replacement equipment.
117.02	Maintain oil, fuel and hydraulic levels in equipment.
117.03	Maintain tires, batteries and coolant system on all equipment and vehicles.
117.04	Operate and service small gasoline engines.
117.05	Replace hoses, belts and lines.
117.06	Cut and weld with oxy-acetylene and arc welding equipment.
117.07	Observe safety procedures when operating farm equipment.
117.08	Develop a general maintenance schedule.
118.0	Manage facilities. The student will be able to:
118.01	Safely operate and maintain general farm shop tools and equipment.
118.02	Install and maintain electrical wiring and equipment.
118.03	Square and build a farm structure.
118.04	Determine a bill of materials for a farm construction project.
118.05	Form and pour concrete.
118.06	Build and repair fences, gates and pens.

118.07	Develop a general maintenance schedule for facilities and equipment.
119.0	Keep and analyze financial, production and personnel records. The student will be able to:
119.01	Keep fertilization and pesticide use records.
119.02	Keep equipment maintenance and service records.
119.03	Record cultural and production information.
119.04	Determine cost efficiency of operations.
120.0	Integrate state and federal regulations into operation. The student will be able to:
120.01	List agencies responsible for inspecting and regulating operation of product.
120.02	Secure necessary inspection certificates and registrations.
120.03	List reasons for the necessity of inspections, certifications and registrations.
121.0	Demonstrate leadership, communication, employability and human relations skills. The student will be able to:
121.01	Develop citizenship awareness and responsibility.
121.02	Demonstrate effective communication skills.
121.03	Complete an employment application
121.04	Demonstrate job interview skills.
121.05	Demonstrate job interview skills.
121.06	Recognize appropriate work habits.
121.07	Identify associations and societies associated with occupation or profession.

Additional Information

Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

Special Notes

The AS degree in Agribusiness Management is a degree into which various agricultural certificates or ATDs can articulate. Up to 30 credits of an approved college credit certificate can be articulated into the 60 credit AS giving the student a “specialty” in various agricultural areas such as: irrigation, forestry, horticulture or golf course operations.

It is also recommended that students be members of professional organizations associated with the selected agricultural specialty (example: Florida Nursery Growers and Landscape Association, Florida Forestry Association, Florida Irrigation Society, Florida Turfgrass Association)

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 may receive compensation for work performed.

General Education Course Requirements for AS and AAS Degrees

State Board of Education Rule 6A-14.030(4), F.A.C., identifies 15 credit hours as the minimum amount of general education coursework required in the Associate of Science (AS) degree and the Associate of Applied Science (AAS) degree. In addition, Rule 6A-14.0303, F.A.C., implements s. 1007.25, F.S., and requires students entering a technical education degree program in the 2022-2023 academic year, and thereafter, to complete at least one identified core course in each subject area as part of the general education course requirements (15 credit hours total) before a degree is awarded) The core subject areas include:

- Communication.
- Humanities.
- Mathematics.
- Natural Sciences.
- Social Sciences.

Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

Certificate Programs

A College Credit Certificate consists of a program of instruction of less than sixty (60) credits of college-level courses, which is part of an AS or AAS degree program and prepares students for entry into employment (Rule 6A-14.030, F.A.C.). This AS degree program includes the following College Credit Certificates:

Livestock Production Management (0101030200) – 30 credit hours

Standards for the above certificate programs are contained in separate curriculum frameworks.