

**2012 - 2013**

**Florida Department of Education  
Curriculum Framework**

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

	<b>AS</b>	<b>AAS</b>
CIP Number	1103050601	0103050601
Program Type	College Credit	College Credit
Standard Length	75 credit hours	75 credit hours
CTSO	N/A	N/A
SOC Codes (all applicable)	19-1032	19-1032
Targeted Occupation List	<a href="http://www.labormarketinfo.com/wec/TargetOccupationList.htm">http://www.labormarketinfo.com/wec/TargetOccupationList.htm</a>	
Perkins Technical Skill Attainment Inventory	<a href="http://www.fldoe.org/workforce/perkins/perkins_resources.asp">http://www.fldoe.org/workforce/perkins/perkins_resources.asp</a>	
Statewide Articulation	<a href="http://www.fldoe.org/workforce/dwdframe/artic_frame.asp">http://www.fldoe.org/workforce/dwdframe/artic_frame.asp</a>	

### **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 forestry sector within the Agriculture, Food and Natural Resources career cluster.

The content includes but is not limited to instruction that prepares individuals to assist foresters and forest resource managers in the professional management, harvesting, regeneration and multiple-use concepts of the forest and forest lands. Instruction includes the study of forest measurements, forest management and planning, dendrology, forest economics, silviculture and reforestation, forest protection, forest law, forest soils, hydrology and water quality, forest ecology, aerial photo interpretation, forest surveying and mapping, forest equipment maintenance and operations, computerized forestry skills, forest safety and human relations, including communication skills.

### **Program Structure**

This program is a planned sequence of instruction consisting of 75 hours.

## **Laboratory Activities**

Laboratory activities are an integral part of this program. These activities include instruction in the use of safety procedures, tools, equipment, materials, and processes related to these occupations. Equipment and supplies should be provided to enhance hands-on experiences for students.

## **Special Notes**

The program shall meet the standards as set forth by the Society of American Foresters (SAF), the national organization that represents all segments of the forestry profession. (The Society of American Foresters "accredits" baccalaureate programs and "recognizes" associate programs.) The typical length of this program for the average achieving student is the associate degree. The standard credit hour length for this program is 75 hours.

Planned and supervised occupational activities may be provided through directed laboratory experience, practical 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.

## **Accommodations**

Federal and state legislation requires the provision of accommodations for students with disabilities as identified on the secondary student's IEP or 504 plan or postsecondary student's accommodations' plan 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 postsecondary service provider. 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.

## **Articulation**

To be transferable statewide between institutions, this program must have been reviewed, and a "transfer value" assigned the curriculum content by the appropriate Statewide Course Numbering System discipline committee. This does not preclude institutions from developing specific articulation agreements with each other.

For details on articulation agreements which correlate to programs and industry certifications refer to [http://www.fldoe.org/workforce/dwdframe/artic\\_frame.asp](http://www.fldoe.org/workforce/dwdframe/artic_frame.asp).

## **Program Length**

The AS degree requires the inclusion of a minimum of 15 credits of general education coursework according to SACS, and it must be transferable according to Rule 6A-14.030 (2),

F.A.C. The AAS degree requires the inclusion of a minimum of 15 credits of general education coursework according to SACS. The standard length of this program is 75 credit hours according to Rule 6A-14.030, F.A.C.

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

### **Standards**

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

- 01.0 Prepare and administer forest management plans.
- 02.0 Plan and administer forest inventories.
- 03.0 Assist registered land surveyor in location of property corners and boundary lines, road and bridge construction and drainage projects.
- 04.0 Prepare and administer forest fire and smoke management plans and assist in forest fire suppression and control.
- 05.0 Identify major forest tree species.
- 06.0 Identify and control major forest insects and diseases.
- 07.0 Evaluate forest ecosystems.
- 08.0 Evaluate forest goals with respect to chemical and fertilizer applications and hydrology.
- 09.0 Collect, maintain and/or analyze data and records.
- 10.0 Prepare, analyze and enforce contracts and other legal documents
- 11.0 Supervise contractors and sub-contractors.
- 12.0 Supervise and train forest technicians and other employees.
- 13.0 Demonstrate communication and managerial skills.
- 14.0 Administer the purchase, sale and/or marketing of forest products.
- 15.0 Demonstrate effective human resource skills as a paraprofessional manager.
- 16.0 Prepare and effect work schedules.
- 17.0 Demonstrate decision-making skills.
- 18.0 Demonstrate skills in effective conflict resolution.

**2012 - 2013**

**Florida Department of Education  
Student Performance Standards**

**Program Title:** Forest Management  
**CIP Numbers:** 1103050601 A.S.  
 0103050601 A.A.S.  
**Program Length:** 75 credit hours  
**SOC Code(s):** 19-1032

The AS degree requires the inclusion of a minimum of 15 credits of general education coursework according to SACS, and it must be transferable according to Rule 6A-14.030 (2), F.A.C. The AAS degree requires the inclusion of a minimum of 15 credits of general education coursework according to SACS. At the completion of this program, the student will be able to:

01.0 Prepare and administer forest management plans--The student will be able to:

- 01.01 Prepare and conduct a statistically based forest inventory.
- 01.02 Calculate, analyze and evaluate forest inventory data.
- 01.03 Utilize Geographical Information Systems (GIS) data to prepare tract maps and management recommendations.
- 01.04 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.
- 01.05 Select and execute appropriate silvicultural system for tract.
- 01.06 Conduct a prescribed burn including pre-planning, permitting, firing systems, smoke management and suppression techniques.
- 01.07 Plan and execute timber stand improvement when needed.
- 01.08 Plan and execute appropriate site preparation, tree planting and harvesting.
- 01.09 Incorporate wildlife and recreational components into management plan as appropriate.
- 01.10 Demonstrate knowledge of ordinances related to harvesting and regeneration activities.

02.0 Plan and administer forest inventories--The student will be able to:

- 02.01 Prepare and conduct a statistically based forest inventory using area samples, i.e. fixed-radius plot inventory.
- 02.02 Prepare and conduct a statistically based forest inventory using point sample, i.e. prism inventory.
- 02.03 Operate dendrometers such as tree calipers and diameter tape.
- 02.04 Operate hypsometers such as altimeter, clinometer and relaskop.
- 02.05 Operate hand-held magnetic compass and demonstrate proper pacing procedure in forested situations.
- 02.06 Locate forest tracts using legal description, maps, aerial photos and atlases.
- 02.07 Select and use appropriate volume tables.
- 02.08 Calculate timber volumes by forest products.
- 02.09 Calculate and prepare valuation of forest tract based on product and current market prices.
- 02.10 Prepare "lump sum" timber bid.

- 02.11 Prepare "per unit" timber bid.
  - 02.12 Calculate and prepare stand and stock tables.
  - 02.13 Calculate and prepare growth projections and regeneration stocking.
  - 02.14 Calculate tract averages using maps, aerial photos and/or pacing.
- 03.0 Assist registered land surveyor in location of property corners and boundary lines, road and bridge construction and drainage projects--The student will be able to:
- 03.01 Set up and operate transit to determine horizontal and vertical angles.
  - 03.02 Set up and operate level to determine forest topography and contours.
  - 03.03 Determine proper horizontal distance using tape (chain) and/or electronic distance measuring (EDM) device.
  - 03.04 Identify forest tracts based on legal description and write proper legal description for given forest tract.
  - 03.05 Conduct an on-the-ground survey and, using field notes, correct and close traverse, determine acreage and prepare map.
  - 03.06 Locate and mark forest tract corners and boundary lines.
  - 03.07 Determine forest road location and identify on the ground.
  - 03.08 Determine drainage patterns for watershed and locate proper stream crossing points.
  - 03.09 Determine proper stream crossing device, i.e. culvert, portable bridge, permanent bridge.
  - 03.10 Obtain proper permits for stream crossings, i.e. culverts, bridges.
  - 03.11 Prepare map of forest tract using GIS, when available.
  - 03.12 Assist land surveyor with use of Global Positioning System (GPS).
- 04.0 Prepare and administer forest fire and smoke management plans and assist in forest fire suppression and control--The student will be able to:
- 04.01 Demonstrate knowledge of various firing techniques.
  - 04.02 Demonstrate knowledge of weather conditions as related to forest fire-prescribed and wildfire - and smoke management.
  - 04.03 Select proper firing techniques based on landowner objectives and weather conditions.
  - 04.04 Demonstrate knowledge of fire suppression tools and equipment, both hand tools and mechanical.
  - 04.05 Demonstrate knowledge of pre-suppression forest fire activities.
  - 04.06 Evaluate acreage and damages of wildfire and recommend future forest management activities to renew resource.
  - 04.07 Plan and administer a fire and smoke management plan including proper burning authorizations.
  - 04.08 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").
- 05.0 Identify major forest tree species--The student will be able to:
- 05.01 Identify major forest tree species of the United States by scientific name, common name and habitat.

- 05.02 Identify major commercial forest species of the Southeast United States by scientific name, common name, habitat and commercial products derived from species.
  - 05.03 Identify major commercial forest species of Florida, with or without foliage, by personal observation using the five senses.
  - 05.04 Use dichotomous key to identify unfamiliar species.
- 06.0 Identify and control major forest insects and diseases--The student will be able to:
- 06.01 Identify major forest insects and diseases of the United States by scientific name, common name and damage inflicted.
  - 06.02 Identify major forest insects and diseases of the Southeast United States by scientific name, common name, symptoms, damage inflicted and recommendations for control.
  - 06.03 Identify major forest insects and diseases of Florida in the forest by personal observation and recommend appropriate controls.
  - 06.04 Demonstrate knowledge of chemical and biological control of forest pests.
  - 06.05 Where required, become properly licensed to handle and apply insecticides.
  - 06.06 Evaluate damages by forest insects and diseases and make recommendations for future forest management.
- 07.0 Evaluate forest ecosystems--The student will be able to:
- 07.01 Demonstrate knowledge of the major forest ecosystems of the United States.
  - 07.02 Identify the major forest ecosystems of Florida.
  - 07.03 Identify the relationship between human activities and forest flora and fauna.
  - 07.04 Demonstrate knowledge of carrying capacities and ecological niches.
  - 07.05 Identify endangered species of Florida and associated regulations and/or recommended forest practices.
  - 07.06 Demonstrate knowledge of threatened species of Florida and associated regulations and/or recommended forest practices.
  - 07.07 Demonstrate knowledge of forest ecosystem practices on both private and public lands.
- 08.0 Evaluate forest soils with respect to chemical and fertilizer applications and hydrology--  
The student will be able to:
- 08.01 Demonstrate knowledge of the major forest soil types in the Southeastern United States.
  - 08.02 Identify and classify the major forest soil types of Florida.
  - 08.03 Identify types, uses and application rates of approved forest herbicides.
  - 08.04 Prepare and execute a herbicide plan.
  - 08.05 Where required, become properly licensed to handle and apply forest herbicides.
  - 08.06 Identify fertilizer formulations applicable to Florida forest soils.
  - 08.07 Identify proper fertilizer formulations rates with proper soil type on Florida forest soils.
  - 08.08 Define major watersheds and hydrology of a given forest area.
  - 08.09 Demonstrate knowledge of Best Management Practices (BMP), especially streamside management zones (SMZ).
  - 08.10 Identify and locate SMZ on the ground.

- 08.11 Obtain proper permits relating to stream crossings, ditching, cut and fill and wetland harvesting.
- 09.0 Collect, maintain and/or analyze data and records--The student will be able to:
  - 09.01 Collect field data from forest inventory and enter into personal computer.
  - 09.02 Demonstrate knowledge of portable data terminals and personal computers.
  - 09.03 Setup and supervise equipment maintenance and service schedules.
  - 09.04 Setup and maintain files of technical forestry information.
  - 09.05 Setup spreadsheet on personal computer and analyze data.
  - 09.06 Setup and maintain personnel files.
  - 09.07 Setup and maintain accounting systems for billings and/or payments on wood accounts.
  - 09.08 Demonstrate knowledge of federal, state and local regulations related to forestry practices.
  - 09.09 Determine owning and operating costs for equipment, depreciation schedules and interest capitalization.
  - 09.10 Record and maintain accident reports and records.
  - 09.11 Setup and maintain inventory system.
- 10.0 Prepare, analyze and enforce contracts and other legal documents--The student will be able to:
  - 10.01 Demonstrate knowledge of types of contracts and legal documents related to forestry practices.
  - 10.02 Select proper timber sale contract for given situation and prepare and execute same under supervision of forester and/or legal counsel.
  - 10.03 Prepare and execute equipment lease.
  - 10.04 Prepare and execute land lease under supervision of forester and/or legal counsel.
  - 10.05 Prepare and execute other leases, such as hunting, mineral, bee and grazing, under supervision of forester and/or legal counsel.
  - 10.06 Demonstrate knowledge of equipment insurance.
  - 10.07 Obtain and maintain proper licensure, certifications and registrations.
  - 10.08 Maintain file of network of agencies or other sources of assistance and/or regulation.
- 11.0 Supervise contractors and sub-contractors--The student will be able to:
  - 11.01 Demonstrate knowledge of various approaches to management of people and/or organizations.
  - 11.02 Communicate clearly and concisely project expectations and requirements, both verbally and written.
  - 11.03 Successfully mediate conflicts involving contractors and sub-contractors.
  - 11.04 Negotiate contracts with contractor and sub-contractor.
  - 11.05 Negotiate and enforce time/work schedules for contractor and sub-contractor.
  - 11.06 Demonstrate knowledge of safety practices and regulations, especially Occupational Safety and Health Administration (OSHA), related to forestry, and wage and hour laws.
- 12.0 Supervise and train forest technicians and other employees--The student will be able to:

- 12.01 Demonstrate knowledge of various management styles and human personalities.
  - 12.02 Demonstrate knowledge of company, agency or organization management structures.
  - 12.03 Demonstrate knowledge of company, agency or organization objectives, goals and expectations.
  - 12.04 Communicate clearly and concisely with trainee/employee, both verbally and written.
  - 12.05 Demonstrate knowledge of basic teaching-learning techniques and styles.
- 13.0 Demonstrate communication and managerial skills--The student will be able to:
- 13.01 Demonstrate ability to communicate properly with others by written and verbal method.
  - 13.02 Identify abilities and limitations of workforce and place workers accordingly.
  - 13.03 Demonstrate knowledge of modern technology such as personal computer, fax machines, copy machines, and portable electronic equipment.
  - 13.04 Properly use telephone systems, including phone etiquette.
  - 13.05 Prepare and deliver public speech to social, civic or other groups.
  - 13.06 Demonstrate basic knowledge of different types of media.
  - 13.07 Prepare media release.
  - 13.08 Prepare a current resume.
  - 13.09 Demonstrate knowledge of interviewing techniques.
  - 13.10 Plan and administer effective work flow and/or trail.
- 14.0 Administer the purchase, sale and/or marketing of forest products--The student will be able to:
- 14.01 Demonstrate knowledge of various forest products and markets.
  - 14.02 Identify Florida forest products and current market valuations.
  - 14.03 Identify timber harvesting systems used in Southeast United States.
  - 14.04 Demonstrate knowledge of operation and maintenance of timber harvesting equipment, including safety practices.
  - 14.05 Prepare and execute a timber sale, either lump sum or per unit.
  - 14.06 Supervise timber harvesting activities.
  - 14.07 Scale forest products.
  - 14.08 Maintain network of forest product manufacturers and/or processors.
- 15.0 Demonstrate effective human resource skills as a paraprofessional manager--The student will be able to:
- 15.01 Demonstrate knowledge of supervisory skills.
  - 15.02 Review and evaluate job applications, including resumes.
  - 15.03 Develop appropriate job description.
  - 15.04 Interview prospective employees based on job description.
  - 15.05 Evaluate employees.
- 16.0 Prepare and effect work schedules--The student will be able to:
- 16.01 Demonstrate knowledge of computer-based scheduling.
  - 16.02 Prepare work schedules utilizing data-bases or spread sheets.

- 16.03 Manipulate work schedules based on employer and employee needs.
- 16.04 Demonstrate knowledge of federal, state and local workforce regulations.

17.0 Demonstrate decision-making skills--The student will be able to:

- 17.01 Make appropriate job-related decisions.
- 17.02 Demonstrate knowledge of listening skills.
- 17.03 Justify management decisions.
- 17.04 Encourage employee participation in decision-making process.

18.0 Demonstrate skills in effective conflict resolution--The student will be able to:

- 18.01 Demonstrate basic negotiating skills.
- 18.02 Demonstrate ability to listen to all factors and all sides of an issue.
- 18.03 Effect compromise between conflicting parties.
- 18.04 Create situation where all parties are satisfied with decisions.