

Curriculum Standard for Natural Resources Technology

Career Cluster: Agriculture, Food, and Natural Resources **

Cluster Description: The production, processing, marketing, distribution, financing, and development of agricultural commodities and resources including food, fuel, fiber, wood products, natural resources, horticulture, and other plant and animal products/resources.

Pathway: Natural Resource Systems

Effective Term: Fall 2013 (2013*03)

Program Majors Under Pathway

Program Major / Classification of Instruction Programs (CIP) Code	Credential Level(s) Offered	Program Major Code
Fish and Wildlife Management Technology	CIP Code: 03.0601	AAS/Diploma/Certificate A15160
Forestry Management Technology	CIP Code 03.0511	AAS/Diploma/Certificate A15200

Pathway Description:

The Natural Resources System curriculum is designed to provide the practice and academic skills essential for success in Natural Resource Management.

Students will gain an understanding of the principles and develop competencies and technical skills in the production, utilization and conservation of natural resources. Students will also learn many technical and conservation skills.

Graduates qualify for positions in natural resources technician positions in a wide range of outdoor national venues.

*Program Major Description: Choose one of the following 4th paragraphs to use in conjunction with the first three paragraphs of the pathway description above for documentation used to identify each **Program Major**:*

Fish and Wildlife Management Technology: A program that prepares individuals to conserve and manage wilderness areas and the life therein, and manage wildlife reservations and zoological/aquarium facilities for recreational, commercial, and ecological purposes. Potential course work includes instruction in wildlife biology, marine/aquatic biology, environmental science, freshwater and saltwater ecosystems, natural resources management and policy, outdoor recreation and parks management, the design and operation of natural and artificial wildlife habitats, applicable law and regulations, and related administrative and communications skills.

Forestry Management Technology: A program that prepares individuals to manage and produce forest resources. Potential course work includes instruction in woods and field skills, tree identification, timber measurement, logging and timber harvesting, forest propagation and regeneration, forest fire-fighting, resource management, equipment operation and maintenance, record-keeping, sales and purchasing operations, and personnel supervision.

**Within the degree program, the institution shall include opportunities for the achievement of competence in reading, writing, oral communication, fundamental mathematical skills, and basic use of computers.*

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I. General Education Academic Core

[Curriculum Requirements for associate degree, diploma, and certificate programs in accordance with 1D SBCCC 400.10]: Degree programs must contain a minimum of 15 semester hours including at least one course from each of the following areas: humanities/fine arts, social/behavioral sciences, and natural sciences/mathematics. Degree programs must contain a minimum of 6 semester hours of communications. Diploma programs must contain a minimum of 6 semester hours of general education; 3 semester hours must be in communications. General education is optional in certificate programs.

Natural Resources Technology

Recommended General Education Academic Core	AAS	Diploma	Certificate			
Minimum General Education Hours Required:	15 SHC	6 SHC	0 SHC			
<i>Courses listed below are recommended general education courses for this curriculum standard. Colleges may choose to include additional or alternative general education courses to meet local curriculum needs.</i>						
<i>*Recommended certificate and diploma level curriculum courses. These courses may <u>not</u> be included in associate degree programs.</i>						
Communication:						
*COM 101 Workplace Communication 3 SHC	6 SHC	3-6 SHC	Optional			
COM 110 Introduction to Communication 3 SHC						
COM 120 Intro Interpersonal Com 3 SHC						
COM 231 Public Speaking 3 SHC						
*ENG 101 Applied Communications I 3 SHC						
*ENG 102 Applied Communications II 3 SHC						
ENG 110 Freshman Composition 3 SHC						
ENG 111 Expository Writing 3 SHC						
ENG 112 Argument-Based Research 3 SHC						
ENG 114 Prof Research & Reporting 3 SHC						
ENG 115 Oral Communication 3 SHC						
ENG 116 Technical Report Writing 3 SHC						
Humanities/Fine Arts:						
*HUM 101 Values in the Workplace 2 SHC				3 SHC	0-3 SHC	Optional
HUM 110 Technology and Society 3 SHC						
HUM 115 Critical Thinking 3 SHC						
HUM 230 Leadership Development 3 SHC						
PHI 230 Introduction to Logic 3 SHC						
PHI 240 Introduction to Ethics 3 SHC						
Social /Behavioral Sciences:						
ECO 151 Survey of Economics 3 SHC	3 SHC	0-3 SHC	Optional			
ECO 251 Prin of Microeconomics 3 SHC						
GEO 110 Introduction to Geography 3 SHC						
GEO 111 World Regional Geography 3 SHC						
*PSY 101 Applied Psychology 3 SHC						
*PSY 102 Human Relations 2 SHC						
PSY 118 Interpersonal Psychology 3 SHC						
PSY 135 Group Processes 3 SHC						
PSY 150 General Psychology 3 SHC						
*SOC 105 Social Relationships 3 SHC						
SOC 210 Introduction to Sociology 3 SHC						
SOC 215 Group Processes 3 SHC						
				3 SHC	0-3 SHC	Optional

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<p>Natural Sciences/Mathematics:</p> <p>BIO 140 Environmental Biology 3 SHC BIO 160 Introductory Life Science 3 SHC MAT 110 Math Measurement & Literacy 3 SHC MAT 121 Algebra/Trigonometry I 3 SHC MAT 143 Quantitative Literacy 3 SHC MAT 152 Statistical Methods I 4 SHC MAT 171 Precalculus Algebra 4 SHC PHY 110 Conceptual Physics 3 SHC PHY 121 Applied Physics I 4 SHC</p>			
<p>II. Major Hours. AAS, diploma, and certificate programs must include courses which offer specific job knowledge and skills. Work-based learning may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit. Below is a description of each section under Major Hours.</p> <p>A. Technical Core. The technical core is comprised of specific courses which are required for all Program Majors under this Curriculum Standard. A diploma program offered under an approved AAS program standard or a certificate which is the highest credential level awarded under an approved AAS program standard must include a minimum of 12 semester hours credit derived from the curriculum core courses or core subject area of the AAS program.</p> <p>B. Program Major(s). The Program Major must include a minimum of 12 semester hours credit from required subjects and/or courses. The Program Major is in addition to the technical core.</p> <p>C. Other Major Hours. Other major hours must be selected from prefixes listed on the curriculum standard. A maximum of 9 semester hours of credit may be selected from each prefix listed, with the exception of prefixes listed in the core.</p>			
Natural Resources Technology			
Minimum Major Hours Required:	AAS	Diploma	Certificate
	49 SHC	30 SHC	12 SHC
<p>A. Technical Core:</p> <p>FOR 121 Dendrology 4 SHC FOR 131 Forest Measurements 3 SHC FOR 212 Forest Survey & Aerial Interp 3 SHC</p> <p>GIS/GPS. Choose one. FOR 215 Intro to GIS/GPS 3 SHC</p> <p><i>or</i></p> <p>GIS 111 Introduction to GIS 3 SHC <i>and</i> GIS 112 Introduction to GPS 3 SHC</p> <p>B. Program Major(s): Fish and Wildlife Management Technology <i>Select a minimum of 12 SHC from the following courses for the Fish and Wildlife Management Technology AAS program:</i></p> <p># Maintenance. Select one: FWL 252 Wildlife Mgmt Techniques 3 SHC <i>or</i> REC 217 Maintenance/Facility Mgt 3 SHC</p> <p>#FWL 242 Fishery Management 3 SHC #FWL 126 Wildlife Ornithology 3 SHC #FWL 142 Wildlife Management 3 SHC #FWL 212 Wildlife Policy & Law 2 SHC</p>	25-28 SHC	12-14 SHC	

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<p>FWL 222 Wildlife Mammalogy 3 SHC</p> <p><i>Courses required for the Fish and Wildlife Management Technology diploma are designated with #</i></p> <p>Forestry Management Technology</p> <p>FOR 171 Introduction to Forest Resources 3 SHC</p> <p>FOR 232 Forest Mensuration 4 SHC</p> <p><i>Select additional courses from the FOR prefix for a minimum of 12 SHC for the Forest Management Technology AAS program.</i></p> <p><i>A Forest Management Technology diploma requires a minimum of 12 SHC extracted from the required technical/program major core of the AAS degree.</i></p>			
<p>C. Other Major Hours.</p> <p><i>To be selected from the following prefixes: ACC, AGR, ANS, ARC, BIO, BTC, BUS, CHM, CIS, CSC, CST, CUL, DFT, ECO, ETR, FOR, FWL, GCM, GIS, HET, HOR, IVS, LAR, LID, LSG, REC, SST, TRF, VEN and WBL</i></p> <p><i>Up to two semester hour credits may be selected from ACA.</i></p> <p><i>Up to three semester hour credits may be selected from the following prefixes: ARA, ASL, CHI, FRE, GER, ITA, JPN, LAT, POR, RUS and SPA.</i></p>			
<p>III. Other Required Hours</p> <p><i>A college may include courses to meet graduation or local employer requirements in a certificate (0-1 SHC), diploma (0-4 SHC), or an associate in applied science (0-7 SHC) program. These curriculum courses shall be selected from the Combined Course Library and must be approved by the System Office prior to implementation. Restricted, unique, or free elective courses may not be included as other required hours.</i></p>			

IV. Employability Competencies

Fundamental competencies that address soft skills vital to employability, personal, and professional success are listed below. Colleges are encouraged to integrate these competencies into the curriculum by embedding appropriate student learning outcomes into one or more courses or through alternative methods.

- A. Interpersonal Skills and Teamwork** – The ability to work effectively with others, especially to analyze situations, establish priorities, and apply resources for solving problems or accomplishing tasks.
- B. Communication** – The ability to effectively exchange ideas and information with others through oral, written, or visual means.
- C. Integrity and Professionalism** – Workplace behaviors that relate to ethical standards, honesty, fairness, respect, responsibility, self-control, criticism and demeanor.
- D. Problem-solving** – The ability to identify problems and potential causes while developing and implementing practical action plans for solutions.
- E. Initiative and Dependability** – Workplace behaviors that relate to seeking out new responsibilities, establishing and meeting goals, completing tasks, following directions, complying with rules, and consistent reliability.
- F. Information processing** – The ability to acquire, evaluate, organize, manage, and interpret information.
- G. Adaptability and Lifelong Learning** – The ability to learn and apply new knowledge and skills and adapt to changing technologies, methods, processes, work environments, organizational structures and management practices.
- H. Entrepreneurship** – The knowledge and skills necessary to create opportunities and develop as an employee or self-employed business owner.
- I.** **An **Employability Skills Resource Toolkit** has been developed by NC-NET for the competencies listed above. Additional information is located at: <http://www.nc-net.info/employability.php>*

**The North Carolina Career Clusters Guide was developed by the North Carolina Department of Public Instruction and the North Carolina Community College system to link the academic and Career and Technical Education programs at the secondary and postsecondary levels to increase student achievement. Additional information about Career Clusters is located at: http://www.nc-net.info/NC_career_clusters_guide.php or <http://www.careertech.org>.

Summary of Required Semester Hour Credits (SHC) for each credential:

	AAS	Diploma	Certificate
Minimum General Education Hours	15	6	0
Minimum Major Hours	49	30	12
Other Required Hours	0-7	0-4	0-1
Total Semester Hours Credit (SHC)	64-76	36-48	12-18