NORTH CAROLINA COMMUNITY COLLEGE SYSTEM
Peter Hans
President

November 9, 2018

MEMORANDUM

To: Presidents
Chief Academic Officers

From: Peter Hans
President

Subject: Curriculum Standard Revision Approvals

Per 1D SBCCC 400.9 (b) *A revision of an existing curriculum standard shall:*

(1) Have written concurrence by two-thirds of colleges approved to offer the curriculum program; and
(2) Be in alignment with criteria outlined in 1D SBCCC 400.10(e).
(3) The President of the North Carolina Community College System shall have the authority to approve or deny the revision of an existing curriculum standard.

I am pleased to approve the requested revisions for the following attached curriculum standards which are in compliance with 1D SBCCC 400.9 (b):

Animal Systems: Equine Science Technology
Equine Business Technology (A15170)
Equine Training Technology (A15190)
Health and Fitness Science (A45630)
Human Services Technology/Animal Assisted Interactions (A4538F)
Pharmacy Technology (A45580)
Science and Math: Biotechnology
Agricultural Biotechnology (A20110)
Biotechnology (A20100)
Marine Biotechnology (A20170)

An outline of the specific curriculum standard revision is attached for your convenience. You may view all curriculum standards by visiting the Academic Programs website at:

https://www.nccommunitycolleges.edu/academic-programs/curriculum-standards

If you have any questions concerning the curriculum standard revisions, please contact Ms. Jennifer Frazelle at 919.807.7120 or frazellej@nccommunitycolleges.edu.

PH/jf

c:	Dr. Lisa Chapman	Mr. Wesley Beddard	CC18-060
	Ms. Jennifer Frazelle	Program Coordinators	Email

Attachment

Outline of Curriculum Standard Revisions

Animal Systems: Equine Science Technology
Equine Business Technology (A15170) and Equine Training Technology (A15190)
Revisions:

- Changed the program titles and program codes to the following:
  Equine Business (A15270) and Equine Training (A15290)

- Revised the description

- Removed the following courses from the core:
  EQU 212 Horse Farm Management II
  EQU 241 Equine Reproduction

- Added the following course as an option within the Equine Business major:
  AGR 212 Farm Business Management

- Added the following prefixes to the Equine Business major:
  AGR (Agriculture) and ANS (Animal Science)

Note: The removal of courses resulted in a change to core hours from 44 shc to 34 shc.

Health and Fitness Science (A45630)
Revisions:

- Added the following courses as an anatomy and physiology sequence option in the Required Subject Area Core:

  BIO 165 Anatomy & Physiology I
  BIO 166 Anatomy & Physiology II

- Revised the NR (not recommended) to 30 SHC in the diploma section.

Human Services Technology/Animal Assisted Interactions (A4538F)
Revisions:

- Revised curriculum description
- Added the following track as an option for the concentration:

  EQU 110 Intro Therapeutic Horsemanship
  EQU 115 Princ-Therapeutic Horsemanship
  EQU 125 Equine Behavior
  EQU 210 Training the Therapeutic Horse
  EQU 215 Therapeutic Horse-Teaching

Pharmacy Technology (A45580)
Revisions:

- Removed the * designation of required courses for a diploma for the following courses:
  - PHM 118 Sterile Product
  - PHM 125 Pharmacology II
- Reduced the minimum required clinical hours from 14 SHC to 8 SHC in the required subject area.

Note: The changes above resulted in a change in core hours from 48 SHC to 42 SHC for an associate degree and from 26 SHC to 19 SHC for the diploma.

Science and Math: Biotechnology
Agricultural Biotechnology (A20110), Biotechnology (A20100) and Marine Biotechnology (A20170) Effective Term:
Revision

- Added the following course as a chemistry option in the Technical Core:
  - CHM 152 General Chemistry II

Curriculum Standard for Animal Systems: Equine Science

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: Animal Systems | **Effective Term:** Fall 2019 (2019*03)

Program Majors Under Pathway

Program Major / Classification of Instruction Programs (CIP) Code		Credential Level(s) Offered	Program Major Code
Equine Business	CIP Code 01.0307	AAS/Diploma/Certificate	A15270
Equine Training	CIP Code 01.0507	AAS/Diploma/Certificate	A15290

Pathway Description:

This curriculum is designed to prepare students for positions within the horse industry. The curriculum is management oriented, preparing graduates for the widest range of available equine jobs; areas of specialization may be pursued during the internship.

Course work includes farm management, breeding, nutrition, selection/judging, and health. Training, teaching, and riding are also included. Students are assigned a horse and practice day-to-day management at an equine facility.

Graduates should qualify for jobs with many different types of equine operations: grooms to assistant managers; private to recreational and racing barns; breed to discipline-oriented farms.

*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:***

Equine Business: A program that prepares individuals to manage the selection, breeding, care, and maintenance of work, athletic, show and/or therapeutic horses; and to manage horse farms, stables, tracks, or equine assisted-activity therapeutic centers, and related equipment and operations. Potential course work includes instruction in applicable principles of animal science, care, and health; stable and track management; design and operation of facilities and equipment; and related issues such as regulations, business management; and logistics.

Equine Training: A program that focuses on the horse, horsemanship, and related subjects and prepares individuals to care for horses and horse equipment; ride and drive horses for leisure, sport, show, and professional purposes; and manage the training of horses and riders. Potential course work includes instruction in horse breeding, nutrition, health, and safety; history of the horse and horsemanship; horse development and training; riding and equestrian technique; stable, paddock, and track management; and equipment maintenance and repair.

**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.*

Approved by the State Board of Community Colleges on August 16, 2012; Editorial Revision 09/13/12; Editorial Revision 12/14/12; Editorial Revision 08/21/13; CRC Revised—Electronic Only 05/29/14; Prefix Addition 08/01/15; Editorial Revision 03/09/16; SBCC Revised 03/17/17; SBCC Revised (A15170) 07/20/18 NCCCSO President Revised 11/09/18.

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.*

Animal Systems: Equine Science

Recommended General Education Academic Core				**AAS**	**Diploma**	**Certificate**
Minimum General Education Hours Required:				**15 SHC**	**6 SHC**	**0 SHC**
*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.*Recommended certificate and diploma level curriculum courses. These courses may <u>not</u> be included in associate degree programs.*						
Communication:						
*COM	101	Workplace Communication	3 SHC			
COM	110	Introduction to Communication	3 SHC	**6 SHC**	**3-6 SHC**	**Optional**
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			
HUM	110	Technology and Society	3 SHC			
HUM	115	Critical Thinking	3 SHC	**3 SHC**	**0-3 SHC**	**Optional**
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			
ECO	251	Prin of Microeconomics	3 SHC			
GEO	110	Introduction to Geography	3 SHC	**3 SHC**	**0-3 SHC**	**Optional**
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			
Natural Sciences/Mathematics:						
BIO	140	Environmental Biology	3 SHC			
BIO	160	Introductory Life Science	3 SHC			
MAT	110	Math Measurement & Literacy	3 SHC	**3 SHC**	**0-3 SHC**	**Optional**
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			

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PHY 121 Applied Physics I 4 SHC			

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.

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.

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.

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 or other Major Areas.

Animal Systems: Equine Science	**AAS**	**Diploma**	**Certificate**
Minimum Major Hours Required:	**49 SHC**	**30 SHC**	**12 SHC**
A. Technical Core:	**34 SHC**	**12 SHC**	
*Courses required for the Equine Diploma are designated with *			
*EQU 111 Horse Science I 5 SHC			
*EQU 112 Horse Science II 5 SHC			
EQU 120 Horsemanship I 3 SHC			
*EQU 150 Equine Nutrition 2 SHC			
EQU 211 Horse Farm Management I 6 SHC			
EQU 270 Equine Business Law 1 SHC			
B. Program Major(s):			
Equine Business			
MKT 120 Principles of Marketing 3 SHC			
Choose one:			
AGR 212 Farm Business Management 3 SHC *or*			
BUS 230 Small Business Management 3 SHC			
Choose one:			
BUS 135 Principles of Supervision 3 SHC *or*			
BUS 137 Principles of Management 3 SHC			
Select additional courses from the AGR, ANS, BUS, EQU, or MKT prefix for a minimum of 12 SHC for the Equine Business AAS program.			
Equine Training			
EQU 121 Horsemanship II 2 SHC			
EQU 220 Horse Training I 2 SHC			
EQU 221 Horse Training II 2 SHC			
EQU 260 Basic Colt Training 2 SHC			
Select additional courses from the EQU prefix for a minimum of 12 SHC for the Equine Training AAS program.			

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C. Other Major Hours. ***To be selected from the following prefixes:*** AGR, ANS, BUS, CIS, CSC, EQU, ETR, MKT and WBL

Up to two semester hour credits may be selected from ACA.

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.

III. Other Required Hours *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.*

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.

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**

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CURRICULUM STANDARD

Effective Term
Fall 2019
*[2019*03]*

Curriculum Program Title	**Health and Fitness Science**	Program Code	**A45630**
Concentration	**(not applicable)**	CIP Code:	***31.0599***

Curriculum Description

The Health and Fitness Science program is designed to provide students with the knowledge and skills necessary for employment in the fitness and exercise industry.

Students will be trained in exercise science and be able to administer basic fitness tests and health risk appraisals, teach specific exercise and fitness classes and provide instruction in the proper use of exercise equipment and facilities.

Graduates should qualify for employment opportunities in commercial fitness clubs, YMCA's/YWCA's, wellness programs in business and industry, Parks & Recreation Departments and other organizations implementing exercise & fitness programs.

*Curriculum Requirements**

[for associate degree, diploma, and certificate programs in accordance with 1D SBCCC 400.10

I. General Education. 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.

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. *(See second page for additional information.)*

III. Other Required Hours. A college may include courses to meet graduation or local employer requirements in a certificate, diploma, or associate in applied science 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.

	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**

**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.*

Major Hours

A. **Core.** The subject/course core is comprised of subject areas and/or specific courses which are required for each curriculum program. 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 subject/course core of the AAS program.

B. **Concentration** *(if applicable).* A concentration of study must include a minimum of 12 semester hours credit from required subjects and/or courses. The majority of the course credit hours are unique to the concentration. The required subjects and/or courses that make up the concentration of study are in addition to the required subject/course core.

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 any prefix listed, with the exception of prefixes listed in the core or concentration. 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.

Health and Fitness Science A45630

				AAS	Diploma	Certificate
Minimum Major Hours Required				**49 SHC**	**30 SHC**	**12 SHC**
A.	**CORE**			**41 SHC**	**30 SHC**	**16 SHC**
Required Courses:						
	BIO	155	Nutrition	3 SHC		
	HEA	112	CPR & First Aid	2 SHC		
	HFS	110	Exercise Science	4 SHC		
	HFS	111	Fitness & Exercise Testing I	4 SHC		
	HFS	116	Prevention & Care of Exercise Related Injuries	3 SHC		
	HFS	118	Fitness Facility Management	4 SHC		
	HFS	120	Group Exercise Instruction	3 SHC		
	HFS	210	Personal Training	3 SHC		
	HFS	212	Exercise Programming	3 SHC		
	HFS	218	Lifestyle Changes/Wellness	4 SHC		
Required Subject Areas:						
Anatomy & Physiology. Select one sequence:						
	BIO	165	Anatomy & Physiology I	4 SHC &		
	BIO	166	Anatomy & Physiology II	4 SHC or		
	BIO	168	Anatomy & Physiology I	4 SHC &		
	BIO	169	Anatomy & Physiology II	4 SHC		
B.	**CONCENTRATION** *(Not applicable)*					
C.	**OTHER MAJOR HOURS** *To be selected from the following prefixes:* BIO, BUS, CIS, DAN, HEA, HFS, MUS, PED, PSF, PSY, RSM, SOC, and WBL *Up to two semester hour credits may be selected from ACA.* *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.*					

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CURRICULUM STANDARD

Effective Term
Fall 2019
*[2019*03]*

Curriculum Program Title	**Human Services Technology**	Program Code	**A4538F**
Concentration	**Animal Assisted Interactions**	CIP Code	***51.2313***

Curriculum Description

The Human Services Technology/Animal Assisted Interactions concentration prepares individuals for entry-level positions in service organizations providing animal interactions. The curriculum prepares students to incorporate specially- selected animals in goal-directed interactions to mental/physical disabilities, social, emotional, and/or cognitive functioning in people.

Course work includes a history of the field of animal interventions, scientific evidence regarding the benefits of interactions, theoretical models, application of the human-animal bond and current trends. Students gain skills in measurement methodology and in animal handling and management.

Graduates should qualify for employment in mental health, physical disabilities, youth services, social services, rehabilitation, correction, elder, and educational agencies. Upon completion of the degree, students may be eligible for certification through national or international organizations.

*Curriculum Requirements**

[for associate degree, diploma, and certificate programs in accordance with 1D SBCCC 400.10]

I. General Education. 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.

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. *(See second page for additional information.)*

III. Other Required Hours. A college may include courses to meet graduation or local employer requirements in a certificate, diploma, or associate in applied science 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.

	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 in Program	**64-76**	**36-48**	**12-18**

**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.*

Major Hours

A. Core. The subject/course core is comprised of subject areas and/or specific courses which are required for each curriculum program. 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 subject/course core of the AAS program.

B. Concentration *(if applicable).* A concentration of study must include a minimum of 12 semester hours credit from required subjects and/or courses. The majority of the course credit hours are unique to the concentration. The required subjects and/or courses that make up the concentration of study are in addition to the required subject/course core.

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 any prefix listed, with the exception of prefixes listed in the core or concentration. 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.

Human Services Technology A4538F

			AAS	Diploma	Certificate
Minimum Major Hours Required			**49 SHC**	**30 SHC**	**12 SHC**
A. CORE			**25 SHC**	**12 SHC**	
*Courses required for the diploma are designated with **					
Required Courses:					
HSE 110	Introduction to Human Services	3 SHC			
HSE 112	Group Process I	2 SHC			
HSE 123	Interviewing Techniques	3 SHC			
HSE 125	Counseling	3 SHC			
HSE 210	Human Services Issues	2 SHC			
HSE 225	Crisis Intervention	3 SHC			
PSY 150	General Psychology	3 SHC			
Required Subject Areas:					
Psychology. Select one:					
PSY 110	Life Span Development	3 SHC			
PSY 241	Developmental Psychology	3 SHC			
PSY 281	Abnormal Psychology	3 SHC			
Sociology. Select one:					
SOC 210	Introduction to Sociology	3 SHC			
SOC 213	Sociology of the Family	3 SHC			
SOC 220	Social Problems	3 SHC			
B. CONCENTRATION					
Select one concentration track:					
*Courses unique to the concentration are designated with ***					
			13 SHC	**13 SHC**	
** AAI 110	Animal Interactions Intro	1 SHC			
AAI 120	Animals in Human Lives	3 SHC			
** AAI 130	Animal Handling Skills	3 SHC			
** AAI 210	Interaction Methodology	3 SHC			
** AAI 220	Interaction Methodology	3 SHC			
	Or				
** EQU 110	Intro Therapeutic Horsemanship	2 SHC	**12 SHC**	**12 SHC**	
** EQU 115	Princ-Therapeutic Horsemanship	3 SHC			
** EQU 125	Equine Behavior	3 SHC			
** EQU 210	Training The Therapeutic Horse	2 SHC			
** EQU 215	Therapeutic Horse-Teaching	2 SHC			

C. OTHER MAJOR HOURS *To be selected from the following prefixes:* AAI, BIO, BUS, CIS, CSC, DDT, GRO, HEA, HSC, HSE, MED, MHA, OST, PBT, POL, PSY, SAB, SOC, SWK, WBL, and WEB *Up to two semester hour credits may be selected from ACA.* *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*			

CURRICULUM STANDARD

Effective Term
Fall 2019
*[2019*03]*

Curriculum Program Title	**Pharmacy Technology**	Program Code	**A45580**
Concentration	**(not applicable)**	CIP Code	***51.0805***

Curriculum Description

The Pharmacy Technology Program prepares individuals to assist the pharmacist in duties that a technician can legally perform and to function within the boundaries prescribed by the pharmacist and the employment agency.

Students will prepare prescription medications, mix intravenous solutions and other specialized medications, update patient profiles, maintain inventories, package medications in unit-dose or med-card form, and gather data used by pharmacists to monitor drug therapy.

Employment opportunities include retail, hospitals, nursing homes, research laboratories, wholesale drug companies, and pharmaceutical manufacturing facilities. Graduates from the program may be eligible to take the National Certification Examination to become a certified pharmacy technician.

*Curriculum Requirements**

[for associate degree, diploma, and certificate programs in accordance with 1D SBCCC 400.10]

I. General Education. 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.

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. *(See second page for additional information.)*

III. Other Required Hours. A college may include courses to meet graduation or local employer requirements in a certificate, diploma, or associate in applied science 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.

	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**

**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.*

Major Hours

A. Core. The subject/course core is comprised of subject areas and/or specific courses which are required for each curriculum program. 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 subject/course core of the AAS program.

B. Concentration *(if applicable).* A concentration of study must include a minimum of 12 semester hours credit from required subjects and/or courses. The majority of the course credit hours are unique to the concentration. The required subjects and/or courses that make up the concentration of study are in addition to the required subject/course core.

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 any prefix listed, with the exception of prefixes listed in the core or concentration. 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.

Pharmacy Technology A45580

					AAS	Diploma	Certificate
Minimum Major Hours Required					**49 SHC**	**30 SHC**	**12 SHC**
A. CORE							**12 SHC**
*Courses required for the diploma are designated with **					**42 SHC**	**19 SHC**	
Required Courses:							
	*	PHM	110	Introduction to Pharmacy	3 SHC		
	*	PHM	111	Pharmacy Practice I	4 SHC		
	*	PHM	115	Pharmacy Calculations	3 SHC		
		PHM	118	Sterile Products	4 SHC		
	*	PHM	120	Pharmacology I	3 SHC		
		PHM	125	Pharmacology II	3 SHC		
	*	PHM	140	Trends in Pharmacy	2 SHC		
		PHM	150	Hospital Pharmacy	4 SHC		
		PHM	155	Community Pharmacy	3 SHC		
		PHM	160	Pharm Dosage Forms	3 SHC		
	*	PHM	165	Pharmacy Prof Practice	2 SHC		
Required Subject Area:							
***Pharmacy Clinical. Select a minimum of 8 SHC:**							
Select a minimum of 2 SHC for Diploma or Certificate:							
		PHM	132	Pharmacy Clinical	2 SHC		
		PHM	133	Pharmacy Clinical	3 SHC		
		PHM	134	Pharmacy Clinical	4 SHC		
		PHM	135	Pharmacy Clinical	5 SHC		
		PHM	136	Pharmacy Clinical	6 SHC		
		PHM	138	Pharmacy Clinical	8 SHC		
B. CONCENTRATION *(Not applicable)*							
C. OTHER MAJOR HOURS							
To be selected from the following prefixes:							
BIO, BUS, CIS, CSC, HSC, MED, PBT, PHM, PSY, SOC, and WBL							
Up to two semester hour credits may be selected from ACA.							
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.							

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Curriculum Standard for Science and Math: Biotechnology

Career Cluster: Science, Technology, Engineering, and Math **

Cluster Description: Planning, managing, and providing scientific research and professional and technical services (e.g., physical science, social science, engineering) including laboratory and testing services, and research and development services.

Pathway: Science and Mathematics	**Effective Term:** Spring 2019 (2019*01)

Program Majors Under Pathway

Program Major / Classification of Instruction Programs (CIP) Code		Credential Level(s) Offered	Program Major Code
Agricultural Biotechnology	CIP Code: 26.0308	AAS/Diploma/Certificate	A20110
Biotechnology	CIP Code: 26.1201	AAS/Diploma/Certificate	A20100
Marine Biotechnology	CIP Code: 26.1304	AAS/Diploma/Certificate	A20170

Pathway Description:

The Biotechnology curriculum, which has emerged from molecular biology and chemical engineering, is designed to meet the increasing demands for skilled laboratory technicians in various fields of biological and chemical technology.

Course work emphasizes biology, chemistry, mathematics, and technical communications. The curriculum objectives are designed to prepare graduates to serve in three distinct capacities: research assistant to a biologist or chemist, laboratory technician/instrumentation technician, and quality control/quality assurance technician.

Graduates should be qualified for employment in various areas of industry and government, including research and development, manufacturing, sales, and customer service.

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:***

Agricultural Biotechnology: A program that focuses on the application of molecular biology, biochemistry, and biophysics to the study of biomolecular structures, functions, and processes specific to plants and plant substances. Potential course work includes instruction in the biochemistry of plant cells, nuclear-cytoplasmic interactions, molecular cytostructures, photosynthesis, plant molecular genetics, and the molecular biology of plant diseases.

Biotechnology: A program that focuses on the application of the biological sciences, biochemistry, and genetics to the preparation of new and enhanced agricultural, environmental, clinical, and industrial products, including the commercial exploitation of microbes, plants, and animals. Potential course work includes instruction in general biology, general and organic chemistry, physics, biochemistry, molecular biology, immunology, microbiology, genetics, and cellular biology.

Marine Biotechnology: A program that focuses on the scientific study of the ecology and behavior of microbes, plants, and animals inhabiting aquatic environments. Potential course work includes instruction in geology and hydrology; aquatic ecosystems; microbiology; mycology; botany; ichthyology; mammalogy; population biology and biodiversity; studies of specific species, phyla, and habitats; and applications to fields such as natural resources conservation, fisheries science, and biotechnology.

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.*

**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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Science and Math: Biotechnology

Recommended General Education Academic Core	AAS	Diploma	Certificate
Minimum General Education Hours Required:	**15 SHC**	**6 SHC**	**0 SHC**
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.			
Communication:	**6 SHC**	**3-6 SHC**	**Optional**
* COM 101 Workplace Communication 3 SHC			
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:	**3 SHC**	**0-3 SHC**	**Optional**
* HUM 101 Values in the Workplace 2 SHC			
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:	**3 SHC**	**0-3 SHC**	**Optional**
ECO 151 Survey of Economics 3 SHC			
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			
Natural Sciences/Mathematics:	**3 SHC**	**0-3 SHC**	**Optional**
BIO 140 Environmental Biology 3 SHC			
BIO 160 Introductory Life Science 3 SHC			
BIO 175 General Microbiology 3 SHC			
BIO 275 Microbiology 4 SHC			
CHM 131 Introduction to Chemistry 3 SHC			
CHM 131A Intro to Chemistry Lab 1 SHC			
CHM 151 General Chemistry I 4 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			
PHY 110 Conceptual Physics 3 SHC			
PHY 121 Applied Physics I 4 SHC			

**Recommended certificate and diploma level curriculum courses. These courses may <u>not</u> be included in associate degree programs.*

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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.

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.

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.

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.

Science and Math: Biotechnology		**AAS**	**Diploma**	**Certificate**
Minimum Major Hours Required:		**49 SHC**	**30 SHC**	**12 SHC**
A. Technical Core:				
BIO 111 General Biology I	4 SHC	**24-28 SHC**	**12-16 SHC**	
BIO 112 General Biology II	4 SHC			
CHM 132 Organic and Biochemistry	4 SHC *or*			
CHM 152 General Chemistry II	4 SHC			
B. Program Major(s).				
Agricultural Biotechnology				
*BIO 280 Biotechnology	3 SHC			
*BTC 150 Bioethics	3 SHC			
*BTC 285 Cell Culture	3 SHC			
*Agriculture. Select 6 SHC:				
AGR 160 Plant Science	3 SHC			
AGR 261 Agronomy	3 SHC			
ANS 110 Animal Science	3 SHC			
ANS 150 Animal Health Management	3 SHC			
HOR 134 Greenhouse Operations	3 SHC			
HOR 168 Plant Propagation	3 SHC			
AGR 170 Soil Science	3 SHC			
*Courses required for the Agricultural Biotechnology diploma are designated with **				
Program Major(s) Biotechnology				
+ Biotechnology Lab. Choose one.				
BTC 181 Basic Lab Techniques	4 SHC			
BTC 288 Biotech Lab Experience	2 SHC			
+ Microbiology. Choose one.				
BIO 175 General Microbiology	3 SHC			
BIO 275 Microbiology	4 SHC			
BTC 275 Industrial Microbiology	4 SHC			
+ Chemistry. Choose one:				
CHM 131 Introduction to Chemistry	3 SHC *and*			
CHM 131A Introduction to Chemistry Lab	1 SHC			
CHM 151 General Chemistry I	4 SHC			

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+ Genetics. Choose one:

BIO	250	Genetics	4 SHC
BTC	250	Principles of Genetics	3 SHC

Courses required for the Biotechnology diploma are designated with +

Marine Biotechnology

Select a minimum of 12 SHC from the following courses for the Marine Biotechnology AAS program:

AQU	215	Algae Culture	3 SHC
AQU	230	Fish Genetics & Breeding	3 SHC
AQU	255	Invert Culture	3 SHC
BTC	260	Marine Biotechnology	4 SHC
BTC	181	Basic Lab Techniques	4 SHC

A Marine Biotechnology diploma requires a minimum of 12 SHC extracted from the required technical/program major core of the AAS degree.

C. Other Major Hours.

T*o be selected from the following prefixes:*

ACC, AGR, ALT, ANS, AQU, BIO, BTC, BUS, CHM, CIS, CIV, COM, CSC, CTC, EHS, ENV, FOR, GEL, GIS, HEA, HOR, ISC, LBT, LID, MAT, MSC, NAN, PHS, PHY, SCI, SST, VEN, WAT, WBL, and WEB

Up to two semester hour credits may be selected from ACA.

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.

III. Other Required Hours

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.

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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.

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**

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