

### NORTH CAROLINA COMMUNITY COLLEGE SYSTEM

R. Scott Ralls, Ph.D. President

March 18, 2014

#### **MEMORANDUM**

То:	Presidents Chief Academic Officers
From:	Wesley Beddard, Associate Vice President Student Learning and Success
	~ ~ . ~ .

**Subject:** Curriculum Review Committee Course Approvals

The Curriculum Review Committee (CRC) has the responsibility for maintaining the curriculum courses in the Combined Course Library (CCL). The approved course requests from the Spring 2014 meeting are attached for your information.

Course revisions may involve the removal of required prerequisites or corequisites. Please note that colleges may add local prerequisites and/or corequisites if they determine a need exists.

The CRC approved requests to revise the **course description, prerequisite(s), corequisite(s), and/or class/lab hours** of core courses found on the curriculum standards listed below. Please note that the only change indicated on the printed standard will be the inclusion of the statement "*CRC Revised-Electronic Only 2/27/14*", since only the electronic version of the standard template will be revised.

> Agricultural Biotechnology (A20110) Civil Engineering Technology (A40140) Computer Information Technology (A25260) Computer Programming (A25130) Histotechnology (A45370) Information Systems Security (A25270) Information Systems Security/Security Hardware (A2527B) Networking Technology (A25340) Physical Therapist Assistant (2-year program) (A45620)

> > CC14-009 Email

Presidents Chief Academic Officers Page 2 March 18, 2014

The State Board of Community Colleges has delegated authority to the Senior Vice President and Chief Academic Officer to approve curriculum standard changes involving **core course title and/or credit hour changes** resulting from CRC action. The standard listed below has been revised as a result of CRC-approved changes to one or more core courses:

Clinical Trials Research Associate (A45190)

Please be aware that you must update your college's electronic program of study and receive approval from the System Office prior to implementation of the revised courses and programs. The revised standards are attached for your convenience.

Curriculum standards, curriculum courses and procedures for submitting requests to the CRC are available on the Academic Programs home page at <u>http://www.nccommunitycolleges.edu/programs</u>. If you need assistance or clarification, please contact Ms. Jennifer Frazelle, Director of Academic Programs at <u>frazellej@nccommunitycolleges.edu</u> or (919) 807-7120.

WB/dm
Attachments
c: Curriculum Review Committee
Dr. Sharon E. Morrissey
Ms. Elizabeth Self
Ms. Cynthia Liston
Ms. Jennifer Frazelle
Program Coordinators

CC14-009 E-mail

Course			Effective	
Prefix #	Title	Request	Semester	Curriculum Standard Core Course
ACA 122	College Transfer Success	Change effective term from fall of 2014 to summer of 2014	Summer 2014 (2014*02)	NA
ART 120	3D Printing for the Artist	New CCL course	Summer 2014 (2014*02)	NA
ASM 117	Aero Electrical Assemblies	New CCL course	Summer 2014 (2 <u>014*02)</u>	NA
BIO 090	Foundations of Biology	Change prerequisites from "RED 090 to "DRE 098"	Fall 2014 (2014*03) Early Implement	NA
BIO 092	Basics of Cell Biology	Change prerequisites from "RED 090" to "DRE 097"	Fall 2014 (2014*03) Early Implement	NA
BIO 094	Concepts of Human Biology	Change prerequisites from "ENG 095 or RED 090" to "DRE 098"	Fall 2014 (2014*03) Early Implement	NA
BTC <u>150</u>	Bioethics	Change prerequisite from "RED 090" to "DRE 098"	Fall 2014 (2014*03) Early Implement	Agricultural Biotechnology (A20110)
CCT 250	Network Vulnerabilities I	Change prerequisites from "NET 110" to " NET 110 or CTI 120"	Spring 2015 (2015*01)	NA
CEG 235	Project Management & Estimating	Change prerequisites from "Take one Set: CIS 110 and CEG 115, CIS 110 and EGR 115, CIS 111 and CEG 115, CIS 111 and EGR 115, EGR 125 and CEG 115, EGR 125 and EGR 115" to "CIS 110, CIS 111, CEG 115, EGR 115 or EGR 125"	Summer 2014 (2014*02)	Civil Engineering Technology (A40140)
CTR 220	Research Site Management	Change course hours from "3-0- 0-3" to "3-3-0-4"	Fall 2014 (2014*03) Early Implement	Clinical Trials Research Associate (A45190)

Course	<b>T</b> '41-	Demand	Effective	
Prefix #	litie	Request	Semester	Curriculum Standard Core Course
		New Course	Summer 2014	
DMA 065	Algebra for Precalculus	(DEI Math Task Force Team)	(2014*02)	NA
			Fall 2014	
		Change corequisites from "HTO	(2014*03)	
HTO 130	Histotechniques	120" to "None"	Early Implement	Histotechnology (A45370)
	· ·			
		Change prerequisite from "ENG	Fall 2014	
		095 or RED 090 and ENG 090"	(2014*03)	
HUM 115	Critical Thinking	to "DRE 098	Early Implement	NA
			Summer 2014	
MAT 001	Math Skills Support	New CCL course	(2014*02)	NA
		Add the following prerequisite	Add to current	
MAT 161	College Algebra	040, 050, and 065		ΝΔ
			course.	
		Add the following prerequisite	Add to current	
		option: DMA 010, 020, 030.	version of	
MAT 171	Precalculus Algebra	040, 050 and 065.	course.	NA
		Change prerequisites from"		Computer Programming (A25130)
		NOS-110" or "CET-211" to	Fall 2014	Networking Technology (A25340)
NOS 120	Linux/UNIX Single Llear	"NOS-110" or "CET-211" or "CTT 120"	-(2014°03) Early Implement	Information Systems Security (A25270)
1105 120	Linux/UNIX Single User	130	Early implement	mornation Systems Security/Security Hardware (A2527B)
		Change prerequisites from"		Computer Information Technology (A25260)
		NOS-110" or "CET-211" to	Fall 2014	Computer Programming (A25130)
		"NOS-110" or "CET-211" or "CTI	(2014*03)	Networking Technology (A25340)
NOS 130	Windows Single User	130"	Early Implement	Information Systems Security/Security Hardware (A2527B)
				Computer Information Technology (A25260)
			Fall 2014	Networking Technology (A25340)
			(2014*03)	Information Systems Security (A25270)
NOS 230	Windows Administration I	Change course description	Early Implement	Information Systems Security/Security Hardware (A2527B)

Course			Effective	
Prefix #	Title	Request	Semester	Curriculum Standard Core Course
			Fall 2014	
			(2014*03)	
NOS 231	Windows Administration II	Change course description	Early Implement	NA
		Change prerequisites from	Fall 2014	
		"NOS 231" to "NOS 230"	(2014*03)	
NOS 232	Windows Admininistration III	Change course description	Early Implement	NA
			Summer 2014	
NOS 233	Windows Administration IV	New CCL course	(2014*02)	NA
			Summer 2014	
NOS 234	Windows Admininstration V	New CCL course	(2014*02)	NA
		New CCL course	Summer 2014	
NOS 235	Windows Administration VI	(Wake Tech CC)	(2014*02)	NA
		Change prerequisite from "ENG	Fall 2014	
		090 and RED 090" to "DRE	(2014*03)	
PED 165	Sport Science as a Career	097"	Early Implement	NA
			Fall 2014	
		Change prerequisites from	(2014*03)	
PHO 228	Adv Corr & Finishing	"PHO 121" to "None"	Early Implement	NA
			Fall 2014	
		Change prerequisites from "PTA	(2014*03)	
PTA 240	Physical Therapy Procedures IV	160" to "None"	Early Implement	Physical Therapist Assistant (2-year program) (A45620)
			Summer 2014	
SGD 288	SGD Portfolio Design	New CCL course	(2014*02)	NA

Course			Effective	
Prefix #	Title	Request	Semester	Curriculum Standard Core Course
		Change prerequisites from	Fall 2014	
		"RED 090 and SOC 210" to	(2014*03)	
SOC 245	Drugs and Society	"DRE 098 and SOC 210"	Early Implement	NA
			Summer 2014	
TDP 110	Introduction to 3D Printing	New CCL course	(2014*02)	NA
			Summer 2014	
			Summer 2014	
TDP 140	Precision 3D Printing	New CCL course	(2014*02)	NA
			Summer 2014	
TDP 289	TDP Project	New CCL course	(2014*02)	NA

#### **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		<b>Effective Term:</b> Fall 2013 (2013*03)			
Progran	Program Majors Under Pathway				
Program Major / Classification of Instruction	Credential Level(s)	Program			
Code	Offered	Major Code			
Agricultural Biotechnology	CIP Code 26.0308	AAS/Diploma/Certificat	e A20110		
Biotechnology	CIP Code: 26.1201	AAS/Diploma/Certificat	e A20100		
Environmental Biotechnology	CIP Code: 40.0509	AAS/Diploma/Certificat	e A20150		
Laboratory Technology	CIP Code: 41.0101	AAS/Diploma/Certificat	e A20160		
Marine Biotechnology	CIP Code: 26.1304	AAS/Diploma/Certificat	e 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 4<sup>th</sup> 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.

**Environmental Biotechnology:** A program that focuses on the scientific study of natural systems (air, water, and soil) through the use of chemical techniques and instrumentation, with an emphasis on the movement and fate of pollutants and chemical aspects of contaminant remediation. Potential course work includes instruction in analytical, inorganic, organic, and physical chemistry; aquatic, soil, and atmospheric chemistry; environmental engineering; environmental toxicology; and analytical methods.

**Laboratory Technology:** A program that prepares individuals to apply scientific principles and technical skills in support of biologists and biotechnologists in research, industrial, and government settings. Potential course work includes instruction in fermentation technology, cell culturing, protein purification, biologic synthesis, assaying and testing, quality control, industrial microbiology, bioprocessing, chromatography and bioseparation, genetic technology, laboratory and hazardous materials safety, and computer applications.

**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.

<sup>\*</sup>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 12/14/12; Editorial Revision 12/17/12; Editorial Revision 08/21/13; CRC Revised – Electronic Only 02/27/14.

#### I. General Education Academic Core

[Curriculum Requirements for associate degree, diploma, and certificate programs in accordance with 23 NCA1D SBCCC 400.97(3)]: 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 must be in communications. General education is optional in certificate programs.

Science and Math: Biotechnology					
Recommended	<b>General Education Academic Core</b>	e	AAS	Diploma	Certificate
Minimum Gen	eral Education Hours Required:		15 SHC	6 SHC	0 SHC
Courses listed be standard. Colleg courses to meet le	low are recommended general educations are recommended general educations and the set of	n courses for this curriculum alternative general education			
*Recommended of <u>not</u> be included in	certificate and diploma level curriculum a associate degree programs.	a courses. These courses may			
Communication *COM 101 COM 110 COM 120 COM 231 *ENG 101 *ENG 102 ENG 110 ENG 111 ENG 112 ENG 114 ENG 115 ENG 116	Workplace Communication Introduction to Communication Intro Interpersonal Com Public Speaking Applied Communications I Applied Communications II Freshman Composition Expository Writing Argument-Based Research Prof Research & Reporting Oral Communication Technical Report Writing	3 SHC 3 SHC	6 SHC	3-6 SHC	Optional
Humanities/Find           *HUM         101           HUM         110           HUM         110           HUM         230           PHI         230           PHI         240	e Arts: Values in the Workplace Technology and Society Critical Thinking Leadership Development Introduction to Logic Introduction to Ethics	2 SHC 3 SHC 3 SHC 3 SHC 3 SHC 3 SHC 3 SHC	5586	0-3 SHC	Optional
Social /Behavior ECO 151 ECO 251 GEO 110 GEO 111 *PSY 101 *PSY 102 PSY 118 PSY 135 PSY 150 *SOC 105 SOC 210 SOC 215	al Sciences: Survey of Economics Prin of Microeconomics Introduction to Geography World Regional Geography Applied Psychology Human Relations Interpersonal Psychology Group Processes General Psychology Social Relationships Introduction to Sociology Group Processes	3 SHC 3 SHC 3 SHC 3 SHC 2 SHC 3 SHC 3 SHC 3 SHC 3 SHC 3 SHC 3 SHC 3 SHC	3 SHC	0-3 SHC	Optional

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Natural Scie	ences/	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	101	Applied Mathematics I	3 SHC			
MAT	110	Mathematical Measurement	3 SHC			
MAT	115	Mathematical Models	3 SHC			
MAT	120	Geometry and Trigonometry	3 SHC			
MAT	121	Algebra/Trigonometry I	3 SHC			
MAT	140	Survey of Mathematics	3 SHC			
MAT	151	Statistics I	3 SHC			
MAT	155	Statistical Analysis	3 SHC			
PHY	110	Conceptual Physics	3 SHC			
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.

	Science and Math: Biotechnology		AAS	Diploma	Certificate
Minin	Minimum Major Hours Required:			30 SHC	12 SHC
A. T	echnical Core:				
	BIO 111 General Biology I	4 SHC	24-35	12-23	
	BIO 112 General Biology II	4 SHC	SHC	SHC	
	CHM 132 Organic and Biochemistry	4 SHC			
B. P	Program Major(s).				
Agric	ultural 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			
Cours	AGR 170 Soil Science es required for the Agricultural Biotechnology	3 SHC diploma are designated w	ith *		

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B. Program Major(s) (Continued)		
Biotechnology		
+ Biotechnology Lab. Choose one.		
BTC 181 Basic LabTechniques	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	
Chamistry Chaosa ana:		
+ 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	
+ Genetics. Choose one: BIO 250 Constiss	4 SHC	
BIO 250 Deficitles of Genetics	4 SHC 3 SHC	
BIC 250 Finicipies of Genetics	5 5110	
Courses required for the Biotechnology diploma an	re designated with +	
Environmental Biotechnology		
# Biotechnology Lab. Choose one.		
BTC 181 Basic LabTechniques	4 SHC	
BTC 288 Biotech Lab Experience	2 SHC	
# Microbiology. Choose one.	2 0110	
BIO 1/5 General Microbiology	3 SHC	
BIO 275 Microbiology BTC 275 Industrial Microbiology	4 SHC	
BTC 275 Industrial Microbiology	4 5110	
# 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	
# Environment. Choose one:	4 6110	
ENV 214 water Quality	4 SHC	
ENV 218 Environmental Health	3 SHC	
# Science. Choose one:		
ENV 110 Environmental Science	3 SHC	
BIO 140 Environmental Biology	3 SHC	
# Waste Management. Choose one:		
ENV 210 Management of Waste	4 SHC	
BIO 240 Waste Management	3 SHC	
<i>Courses required for the Environmental Biotechnolo</i> <i>designated with #</i>	ogy diploma are	

B. Program Major(s) (Continued)		
Laboratow, Tashnology		
Laboratory Technology	5 0110	
LBT 110 Laboratory Methods I	5 SHC	
LBT 125 Lab Instrumentation	2 SHC	
LBT 210 Laboratory Methods II	5 SHC	
LBT 250 Laboratory Methods III	5 SHC	
A Laboratory Technology diploma requires a r	ninimum of 12 SHC selected	
from the Laboratory Technology program main	or	
<i>j</i>		
Marine Riotechnology		
Select a minimum of 12 SHC from the followin	a courses for the Marine	
Biotechnology AAS program:	g courses for the martine	
AOU 215 Algae Culture	2 5110	
AQU 213 Algae Culture		
AQU 230 Fish Genetics & Breeding	3 SHC	
AQU 255 Invert Culture	3 SHC	
BTC 260 Marine Biotechnology	4 SHC	
BTC 181 Basic LabTechniques	4 SHC	
A Marine Biotechnology diploma requires a mir	imum of 12 SHC extracted from	
the required technical/program major core of th	ne AAS degree.	

#### C. Other Major Hours.

#### To be selected from the following prefixes:

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

*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 selfemployed business owner.

\*An **Employability Skills Resource Toolkit** has been developed by NC-NET for the competencies listed above. Additional information is located at: <u>http://www.nc-net.info/employability.php</u>

\*\*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: <u>http://www.nc-net.info/NC career clusters guide.php</u> 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

#### Curriculum Standard for Engineering and Technology: Civil Engineering and Geomatics Technologies

Career Cluster: Science, Technology, Engineering, Mathematics\*\*

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

Pathway:	Engineering and	Technology	Effe

**Effective Term:** Fall 2013 (2013\*03)

Program Majors Under Pathway							
Program Major / Classification of Instruction P	Credential Level(s)	Program Major					
		Offered	Code				
Civil Engineering Technology	CIP Code: 15.0201	AAS/Diploma/Certificate	A40140				
Geomatics Technology	CIP Code: 15.1102	AAS/Diploma/Certificate	A40420				
Geospatial Mapping Technology	CIP Code: 45.0702	AAS/Diploma/Certificate	A40110				
Environmental Engineering Technology	CIP Code: 15.0507	AAS/Diploma/Certificate	A40150				

**Pathway Description:** These curriculums are designed to prepare students through the study and application of principles from mathematics, natural sciences, and technology and applied processes based on these subjects.

Course work includes mathematics, natural sciences, engineering sciences and technology.

Graduates should qualify to obtain occupations such as technical service providers, materials and technologies testing services, engineering technicians, construction technicians and managers, industrial and technology managers, or research technicians.

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

**Civil Engineering Technology:** A course of study that prepares students to use basic engineering principles and technical skills to carry out planning, documenting and supervising tasks in sustainable land development and public works and facilities projects. Includes instruction in the communication and computational skills required for materials testing, structural testing, field and laboratory testing, site analysis, estimating, project management, plan preparation, hydraulics, environmental technology, and surveying. Graduates should qualify for technician-level jobs with both public and private engineering, construction, and surveying agencies.

**Geomatics Technology:** A course of study that prepares students to use mathematical and scientific principles for the delineation, determination, planning and positioning of land tracts, boundaries, contours and features applying principles of route surveying, construction surveying, photogrammetry, mapping, global positioning systems, geographical information systems, and other kinds of property description and measurement to create related maps, charts and reports. Includes instruction in applied geodesy, computer graphics, photointerpretation, plane and geodetic surveying, mensuration, traversing, survey equipment operation and maintenance, instrument calibration, and basic cartography. Graduates should qualify for jobs as survey party chief, instrument person, surveying technician, highway surveyor, mapper, GPS technician, and CAD operator. Graduates will be prepared to pursue the requirements necessary to become a Registered Land Surveyor in North Carolina.

**Geospatial Mapping Technology:** A course of study that prepares students to use mathematical and scientific principles for calculating, drawing, and verifying accuracy of mapmaking parameters which includes analysis of large amounts of geographic data through map making software. Includes instruction in cartographic theory and map projections, computer-assisted cartography, geographic information systems, map design and layout, photogrammetry, air photo interpretation, remote sensing, spatial analysis, geodesy, cartographic editing, and applications to specific industrial, commercial, research, and governmental mapping problems. Graduates should find employment as mapping assistants, cartography assistants, field technicians and remote sensing assistants in engineering firms, local, state and federal government.

**Environmental Engineering Technology:** A course of study that prepares students to use mathematical and scientific principles to modify, test, and operate equipment and devices used in the prevention, control and remediation of environmental problems and development of environmental remediation devices. Includes instruction in environmental safety principles, environmental standards, testing and sampling procedures, laboratory techniques, instrumentation calibration, safety and protection procedures, equipment maintenance, and report preparation.

<sup>\*</sup>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 400.97(3)]: 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 semester hours must be in communications. General education is optional in certificate programs.

Engineering and Technology: Civil Engineering and Geomatics Technologies						
General Ed	lucati	on Academic Core	<i>.</i>	AAS	Diploma	Certificate
Minimum	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 not be included in associate degree programs.						
Communica	tions:			CELLC	2 ( 5110	Onthread
*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	SHC			
*ENG	102	Applied Communications I	SHC			
ENG	1102	Freshman Composition				
ENG	110	Expository Writing				
ENG	111	Expository writing				
ENG	114	Traducture Writing	SHC			
ENG	110	Technical Report Writing	SHC			
Humanities	/Fine	Arts:				
*HUM	101	Values in the Workplace 2	2 SHC	3 SHC	0-3 SHC	Ontional
HUM	110	Technology and Society	3 SHC	55110	0-3 SHC	Optional
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/Behav	vioral	Sciences:				
ECO	151	Survey of Economics	3 SHC			
ECO	251	Prin of Microeconomics	3 SHC	2 5110	0.2 SHC	Ontional
GEO	110	Introduction to Geography	3 SHC	3 SHC	0-3 SHC	Optional
GEO	111	World Regional Geography	SHC			
GEO	131	Physical Geography I	I SHC			
*DCV	101	Applied Developer				
*DCV	101	Applied Fsychology				
"PSI DCV	102	Internet and Developed and Antonio				
PSI	110	C D				
PSI	155	Group Processes 3	SHC			
PS 1	150	General Psychology	SHC			
*SOC	105	Social Relationships	SHC			
SOC	210	Introduction to Sociology	3 SHC			
SOC	215	Group Process	3 SHC			
Natural Scie	ences/1	Mathematics:				
MAT	120	Geometry and Trigonometry	3 SHC			
MAT	121	Algebra/Trigonometry I	3 SHC	3 540	0.3 540	Ontional
MAT	161	College Algebra	3 SHC	5 5110	0-3 5110	Optional
MAT	171	Precalculus Algebra	3 SHC			
MAT	175	Precalculus	4 SHC			
MAT	223	Applied Calculus 3	3 SHC			
MAT	271	Calculus I 4	4 SHC			

Approved by the State Board of Community Colleges on August 16, 2012; Editorial Revision 9/5/12; Editorial Revision 11/28/12; Editorial Revision 08/21/13; CRC Revised – Electronic Only 02/27/14.

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

Engineering and Technology: Civil Engineering and Geomatics Technologies		AAS	Diploma	Certificate	
Minimum Major I	Minimum Major Hours Required:			30 SHC	12 SHC
A. Technical Core:	A. Technical Core:				
CEG 211 SRV 110	Hydrology & Erosion Control Surveying I	3 SHC 4 SHC			
Introductio Choose or	n to Engineering Technology				
CEG 115 EGR 115	Intro to Tech & Sustainability Intro to Technology	3 SHC 3 SHC			
<b>Computer</b> A Choose on	Aided Drafting				
CEG 151	CAD for Engineering Technology	3 SHC			
DFT 151	CAD I	3 SHC			
EGR 120	Eng and Design Graphics	3 SHC			
Spatial Dat Choose on	a Collection and Mapping				
CEG 111 OR	Intro to GIS and GNSS	4 SHC			
GIS 111 AND	Introduction to GIS	3 SHC			
GIS 112	Introduction to GPS	3 SHC			
<b>B. Program Major</b> For AAS Degree select of the same program major	<b>(s):</b> one program major plus additional courses r for a minimum of (12) semester hours of c	from the prefixes listed within redits.			
<u>Civil Engin</u>	eering Technology				
CEG 212	Introduction to Environmental Tech	3 SHC			
CEG 210	Construction Mtls & Methods	3 SHC			
CIV 111	Soils and Foundations	4 SHC			
SKV III	Surveying II	4 SHC			
Choose of	ne:				
EGR 250	Statics & Strength of Materials	5 SHC			
EGR 251	Statics	3 SHC			
MEC 210	Applied Mechanics	3 SHC			

Approved by the State Board of Community Colleges on August 16, 2012; Editorial Revision 9/5/12; Editorial Revision 11/28/12; Editorial Revision 08/21/13; CRC Revised – Electronic Only 02/27/14.

Choose one	e course or one set from the following (3-6 shc):				
CEG 235	Project Management & Estimating	3 SHC or			
CIV 230	Construction Estimating	3 SHC			
AND	Construction Estimating	5 5110			
CIV 240	Project Management	3 SHC or			
CST 242	Planning/Estimating II	4 SHC			
Geomatics T	'echnology				
CEG 230	Subdivision Planning & Design	3 SHC			
SRV 111	Surveying II	4 SHC			
SRV 210	Surveying III	4 SHC			
SRV 220	Surveying Law	3 SHC			
SRV 240	Topo/Site Surveying	4 SHC			
Geospatial N	Anning Technology				
GIS 121	Georeferencing & Manning	3 SHC			
GIS 231	Geo Position Sys Methods	3 SHC			
GIS 246	Prin of Property Mapping	3 SHC			
Chasses					
DPA 110	Detebase Concents	2 5110			
DBA 110	Database Concepts	3 SHC			
615 232	Spatial Databases	3 SHC			
Choose on	e:				
CIS 115	Intro to Prog & Logic	3 SHC			
GIS 161	Intro to Comp/BASIC & C++	3 SHC			
GIS 261	Programming in GIS	3 SHC			
CSC 133	C Programming	3 SHC			
CSC 134	C++ Programming	3 SHC			
CSC 153	C# Programming	3 SHC			
Environmen	tal Engineering Technology				
CEG 212	Intro to Environmental Tech	3 SHC			
CEG 230	Subdivision Planning & Design	3 SHC			
CIV 111	Soils and Foundations	4 SHC			
ENV 226	Environmental Law	3 SHC			
CHM 151	General Chemistry I	4 SHC			
Choose one.					
FGR 250	Statics & Strength of Materials	5 SHC			
EGR 251	Statics	3 SHC			
MEC 210	Applied Mechanics	3 5110			
MEC 210	Apprieu mechanics	JUIC	1	1	

*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: <u>http://www.nc-net.info/employability.php</u>

\*\*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: <u>http://www.nc-net.info/NC career clusters quide.php</u> or <u>http://www.careertech.org</u>.

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
<b>Total Semester Hours Credit (SHC)</b>	64-76	36-48	12-18

Effective Term Fall 2014 [2014\*03]

Curriculum Program Title	<b>Clinical Trials Research Associate</b>	Code	A45190
Concentration	(not onnliashla)		CIP Code: 51 0710

Concentration

(not applicable)

CIP Code: 51.0719

### **Curriculum Description**

The Clinical Trials Research Associate curriculum prepares individuals to assist physicians and clinical researchers in the initiation, administration, coordination, and management of clinical research studies for the development of new drugs, clinical products, and treatment regimens.

Course work includes in-depth study of drug development, Federal regulations, and clinical research processes. Supervised fieldwork provides skill application in subject recruitment, regulatory compliance, accountability for drugs/devices, and documentation of subject involvement in clinical research studies.

Graduates may be eligible to sit for national certification examinations. Research employment opportunities may include medical centers, hospitals, pharmaceutical industries, clinics, research facilities, biotechnology or device companies, and physicians' offices.

### Curriculum Requirements\*

- 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

[ref. 1D SBCCC 400.97(3)]

- 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.

	Clinical Trials Research Associate (A45190)					
			AAS	Diploma	Certificate	
Min	imum Major Hours Required		49 SHC	30 SHC	12 SHC	
А.	CORE		39 SHC			
Rea	nired Courses:					
neq	CTR 110 Intro to Clinical Research	3 SHC				
	CTR 112 Clinical Research Terminology	3 SHC				
	CTR 115 Clinical Research Regulations	3 SHC				
	CTR 120 Research Protocol Design	3 SHC				
	CTR 130 Clinical Research Management	4 SHC				
	CTR 150 Research Fieldwork I	5 SHC				
	CTR 210 Introduction to Clinical Data	3 SHC				
	CTR 220 Research Site Management	4 SHC				
	CTR 250 Research Fieldwork II	8 SHC				
	CTR 281 Professional Practice	3 SHC				
B.	<b>CONCENTRATION</b> (Not applicable)					
C.	OTHER MAJOR HOURS					
	To be selected from the following prefixes:					
	BIO, CIS, COE, CSC, CTR, HUM, MAT, PHM, PS	Y, SOC, and WBL				
	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.					

Approved by the State Board of Community Colleges on February 20, 1998; Corrected 3/15/99; SBCC Revised 11/16/01; SBCC Revised 5/17/02; SBCC/CRC Revised 03/09/05; SBCC Revised 09/21/07; CRC Revised 09/23/08; SBCC Template Revised 10/17/08; CRC Revised-Electronic Only 3/16/10; CRC Revised 02/27/14.

Effective Term Spring 2006 [2006\*01]

Curriculum Program Title	<b>Computer Information Technology</b>	Code	A25260
Concentration	(not applicable)		CIP Code: 11.0103

# Curriculum Description

The Computer Information Technology curriculum is designed to prepare graduates for employment with organizations that use computers to process, manage, and communicate information. This is a flexible curriculum that can be customized to meet community information systems needs.

Course work will develop a student's ability to communicate complex technical issues related to computer hardware, software, and networks in a manner that computer users can understand. Classes cover computer operations and terminology, operating systems, database, networking, security, and technical support.

Graduates should qualify for employment in entry-level positions with businesses, educational systems, and governmental agencies which rely on computer systems to manage information. Graduates should be prepared to sit for industry-recognized certification exams.

### Curriculum Requirements\*

- 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 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

[ref. 1D SBCCC 400.97(3)]

- 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.

Computer Information Technology A25260							
				AAS	Diploma	Certificate	
Mini	mum Majo	r Hours Required		49 SHC	30 SHC	12 SHC	
A.	CORE			35-36 SHC	12 SHC		
	A diploma o	ffered under this AAS degree requires a minim	um of 12 SHC extracted				
	from the req	uired subject/course core of the AAS degree.					
Requ	ired Cours	ses:					
	CIS 115	Intro to Programming and Logic	3 SHC				
	CTS 120	Hardware/Software Support	3 SHC				
	CTS 285	Systems Analysis & Design	3 SHC				
	CTS 289	Systems Support Project	3 SHC				
	DBA 110	Database Concepts	3 SHC				
	NOS 110	Operating System Concepts	3 SHC				
	NOS 130	Windows Single User	3 SHC				
	NOS 230	Windows Admin I	3 SHC				
	SEC 110	Security Concepts	3 SHC				
Requ	ired Subje	ct Areas:					
Basic	<b>Computer S</b>	Skills. Select one:					
	CIS 110	Introduction to Computers	3 SHC				
	CIS 111	Basic PC Literacy	2 SHC				
Busin	ess. Select o	one:					
	BUS 110	Introduction to Business	3 SHC				
	CTS 115	Info Sys Business Concepts	3 SHC				
Netw	orking. Sele	ect one:					
	NET 110	Networking Concepts	3 SHC				
	NET 125	Networking Basics	3 SHC				
B.	CONCEN	<b>VTRATION</b> (not applicable)					
C	OTHED						
C.	<b>UTHER</b>	MAJOR HOURS					
	To be selecte	ea from the following prefixes:	DRA DES DME ECO				
	ELN CIS	CD HPI HPC MIT NET NOS OMT	LOST SEC SCD				
	*WBL, an	d WEB	, 051, SEC, SOD,				
			- 1 f d f - 11:				
	Up to thre	e semesier nour creaits may be selected	eu jrom the jouowing				
	prefixes: SPA	ARA, ASL, CHI, FRE, GER, IIA, JPN	, LAT, POR, RUS and				
	<i>SI</i> 11.						
	*WBL pref	ix will be available in fall 2014.					

Approved by the State Board of Community Colleges on November 13, 1996; Revised 07/17/98, Revised 04/05/00; Revised 08/15/01; SBCC Revised 05/17/02; SBCC Revised 11/15/02; Revised 03/03/04; Revised 11/17/04; SBCC Revised 09/16/05; Revised 10/03/06; SBCC Revised 09/21/07; SBCC Revised 05/18/08; SBCC Template Revised 10/17/08; Revised 02/04/11; CRC Revised – Electronic Only 02/10/11; Revised 09/21/11; CRC Revised – Electronic Only 02/29/12; CRC Revised – Electronic Only 02/27/14.

Effective Term Summer 2006 [2006\*02]

Curriculum Program Title	<b>Computer Programming</b>	Code	A25130
Currentin Frogram Frae		couc	A23130

Concentration

(not applicable)

CIP Code: 11.0201

### Curriculum Description

The Computer Programming curriculum prepares individuals for employment as computer programmers and related positions through study and applications in computer concepts, logic, programming procedures, languages, generators, operating systems, networking, data management, and business operations.

Students will solve business computer problems through programming techniques and procedures, using appropriate languages and software. The primary emphasis of the curriculum is hands-on training in programming and related computer areas that provide the ability to adapt as systems evolve.

Graduates should qualify for employment in business, industry, and government organizations as programmers, programmer trainees, programmer/analysts, computer operators, systems technicians, or database specialists.

### Curriculum Requirements\*

- 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 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

[ref. 1D SBCCC 400.97(3)]

- 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.

			AAS	Diploma	Certificate
Minimum Majo	r Hours Required		49 SHC	30 SHC	12 SHC
A. CORE			41-42 SHC	12 SHC	
A diploma o from the req	ffered under this AAS degree requires a m uired subject/course core of the AAS degr	inimum of 12 SHC extracted ee.			
Required Cours	ses:				
CIS 115	Intro to Prog & Logic	3 SHC			
CTS 285	Systems Analysis & Design	3 SHC			
CSC 289	Programming Capstone Proj	3 SHC			
DBA 110	Database Concepts	3 SHC			
NOS 110	Operating Systems Concepts	3 SHC			
SEC 110	Security Concepts	3 SHC			
<b>Required Subje</b>	ect Areas:				
Basic Computer	Skills. Select one:				
CIS 110	Introduction to Computers	3 SHC			
CIS 111	Basic PC Literacy	2 SHC			
Business. Select o	ne:				
BUS 110	Introduction to Business	3 SHC			
CTS 115	Info Sys Business Concepts	3 SHC			
Networking. Sele	ect one:				
NET 110	Networking Concepts	3 SHC			
NET 125	Networking Basics	3 SHC			
Operating System	ns. Select one:				
NOS 120	Linux/UNIX Single User	3 SHC			
NOS 130	Windows Single User	3 SHC			
NOS 149	Operating System – MVS TM	3 SHC			
NOS 244	Operating System - AS/400	3 SHC			
		Continued on next page			

#### **Computer Programming A25130**

Approved by the State Board of Community Colleges on October 16, 1998; Revised 02/26/01; Revised 08/15/01; SBCC Revised 05/17/02; SBCC Revised 09/13/02; Revised 03/03/04; Revised 11/17/04; SBCC Revised 09/16/05; SBCC Revised 11/18/05; Revised 02/01/06; Revised 08/01/07. SBCC Revised 09/21/07, SBCC Template Revised 09/19/08; SBCC Template Revised 10/17/08; Revised 03/23/09; SBCC Corrected 05/15/09; CRC Revised – Electronic Only 02/10/11; CRC Revised - Electronic Only 02/27/14.

	Computer Programming A25130 (continued)				
Duesaus					
Progra	CSC 122 C Programming	2 540			
	CSC = 124 C + Drogramming	2 SHC			
	CSC 134 C++ Programming	3 SHC			
	CSC 135 COBOL Programming	3 SHC			
	CSC 136 Fortran Programming	3 SHC			
	CSC 138 RPG Programming	3 SHC			
	CSC 139 Visual BASIC Progr	3 SHC			
	CSC 141 Visual C++ Progr	3 SHC			
	CSC 142 Visual COBOL Progr	3 SHC			
	CSC 150 Visual RPG Progr	3 SHC			
	CSC 151 JAVA Programming	3 SHC			
	CSC 153 C# Programming	3 SHC			
Advanc	ced Programming. Select two:				
	CSC 233 Adv C Programming	3 SHC			
	CSC 234 Adv C++ Programming	3 SHC			
	CSC 235 Adv COBOL Programming	3 SHC			
	CSC 236 Adv Fortran Programming	3 SHC			
	CSC 238 Adv RPG Programming	3 SHC			
	CSC 239 Adv Visual BASIC Prog	3 SHC			
	CSC 241 Adv Visual C++ Prog	3 SHC			
	CSC 242 Adv Visual COBOL Prog	3 SHC			
	CSC 250 Adv Visual RPG Prog	3 SHC			
	CSC 251 Adv JAVA Programming	3 SHC			
	CSC 253 Adv C# Programming	3 SHC			
D	CONCENTER TION (and applicable)				
Б.	CONCENTRATION (not applicable)				
С.	OTHER MAJOR HOURS				
	To be selected from the following prefixes:				
	ACC BUS CET CIS COE CSC CTS DBA EC	'M ECO GRA GRD			
	ISC, MAT, NET, NOS, OMT, OST, SEC, SGD, SGR, *WBL, and WEB				
	Up to three semester hour credits may be sele	cted from the following			
1	prefixes: ARA, ASL, CHI, FRE, GER, ITA, JH	PN. LAT. POR. RUS and			
	SPA.				
	*WBL prefix will be available in fall 2014.				

Effective Term Fall 2010 [2010\*03]

Curriculum Program Title	Histotechnology	Code	A45370
Concentration	(not applicable)		CIP Code: 51.1007

### **Curriculum Description**

This curriculum provides individuals with the knowledge and skills necessary to prepare tissue specimens for microscopic examination using various stains and dyes to identify tissue and cell structures.

Course work emphasizes scientific concepts related to laboratory testing, quality assurance, histology, microscopy, and other related topics.

Graduates may be eligible to apply to take the national examination given by the Board of Registry of the American Society for Clinical Pathology. Employment opportunities include pathology laboratories in hospitals and clinics and medical or research laboratories.

### Curriculum Requirements\*

- 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 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

[ref. 1D SBCCC 400.97(3)]

- 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.

	Histotechnology (A45370)					
				AAS	Diploma	Certificate
Mini	mum Major H	Iours Required		49 SHC	30 SHC	12 SHC
А.	CORE			49 SHC		
Deer	Courses require	d for the diploma are designated with *				
Requ	lired Courses:					
	BIO 163	Basic Anatomy & Physiology	5 SHC			
	BIO 271 BIO 275	Patnophysiology	3 SHC			
	CHM 130	General Organic & Biochemistry	3 SHC			
	CHM 130A	General, Organic & Biochemistry Lab	1 SHC			
	HTO 110	Intro to Histotechnolgy	3 SHC			
	HTO 120	Histology	5 SHC			
	HTO 130	Histotechniques	5 SHC			
	HTO 140	Histochemistry	5 SHC			
	HTO 210	Histopathology	4 SHC			
	HTO 220	Histotechnology Clinical	8 SHC			
	HTO 230	Professional Issues	3 SHC			
В.	CONCENTI	RATION (Not applicable)				
C.	<b>OTHER MA</b>	AJOR HOURS				
	To be selected f	rom the following prefixes:				
	BIO, CHM, CIS, COE, CSC, HTO, and *WBL					
	Up to three semester hour credits may be selected from the					
	following pre	efixes: ARA, ASL, CHI, FRE, GER, ITA,	JPN, LAT,			
	POR, RUS at	nd SPA.	· ·			
	*WBL prefix w	vill be available in fall 2014.				
0	1 /	J				

Effective Term Spring 2006 [2006\*01]

Curriculum Program Title

Information Systems Security

Code A25270

Concentration

(not applicable)

CIP Code: 11.1003

### Curriculum Description

Information Systems Security covers a broad expanse of technology concepts. This curriculum provides individuals with the skills required to implement effective and comprehensive information security controls.

Course work includes networking technologies, operating systems administration, information policy, intrusion detection, security administration, and industry best practices to protect data communications.

Graduates should be prepared for employment as security administrators. Additionally, they will acquire the skills that allow them to pursue security certifications.

### Curriculum Requirements\*

- 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 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

# Major Hours [ref. 1D SBCCC 400.97(3)]

- Core. The subject/course core is comprised of subject areas and/or specific courses, which are required for each A. 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.

	Information Systems Security A25270					
				AAS	Diploma	Certificate
Min	imum Maj	or Hours Required		49 SHC	30 SHC	12 SHC
А.	CORE			44-45 SHC	12 SHC	
	A diploma from the re	offered under this AAS degree requires a minim quired subject/course core of the AAS degree.	num of 12 SHC extracted			
	Courses re	stricted to this curriculum are designated with	***			
Req	uired Cou	rses:				
-	CIS 115	Intro to Programming and Logic	3 SHC			
	DBA 110	Database Concepts	3 SHC			
	NET 125	Networking Basics	3 SHC			
	NET 126	Routing Basics	3 SHC			
	NOS 110	Operating System Concepts	3 SHC			
	NOS 130	Windows Single User	3 SHC			
	SEC 110	Security Concepts	3 SHC			
	SEC 150	Secure Communications	3 SHC			
	SEC 160	Secure Admin I	3 SHC			
	SEC 210	Intrusion Detection	3 SHC			
***	SEC 220	Defense-in-Depth	3 SHC			
***	SEC 289	Security Capstone Project	3 SHC			
Reg	uired Subj	ect Areas:				
Basi	c Computer	Skills. Select one:				
	CIS 110	Introduction to Computers	3 SHC			
	CIS 111	Basic PC Literacy	2 SHC			
Busi	ness. Select	one:				
	BUS 110	Introduction to Business	3 SHC			
	CTS 115	Info Sys Business Concepts	3 SHC			
Oper	rating Syste	ms. Select one:				
-	NOS 120	Linux/UNIX Single User	3 SHC			
	NOS 230	Windows Admin I	3 SHC			
B.	CONCE	NTRATION (not applicable)				

Approved by the State Board of Community Colleges on February 21, 2002; SBCC Revised 05/17/02; SBCC Revised 11/15/02; Revised 03/26/03; SBCC Revised 09/16/05; SBCC Revised 09/21/07; Revised 10/23/07; SBCC Template Revised 10/17/08; CRC Revised – Electronic Only 02/10/11; Revised 09/21/11; CRC Revised - Electronic Only 02/29/12; Revised 06/06/12; CRC Revised - Electronic Only 02/27/14.

	Information Systems Security A25270 (Continued)				
C.	<b>OTHER MAJOR HOURS</b> To be selected from the following prefixes:				
	ACC, BUS, CCT, CET, CIS, CJC, COE, CSC, CTI, CTS, DBA, ECM, ITN, NET, NOS, OMT, OST, SEC, TNE, *WBL, and WEB				
	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.				
	*WBL prefix will be available in fall 2014.				

Effective Term Summer 2006 [2006\*02]

Curriculum Program Title

**Information Systems Security** 

Code **A2527B** 

Concentration

**Security Hardware** 

CIP Code: 11.1003

### Curriculum Description

Security Hardware is a concentration under the curriculum title of Information Systems Security. This curriculum covers a broad expanse of technology concepts. This curriculum provides individuals with the skills required to implement effective and comprehensive information network security controls.

Course work includes advanced networking technologies, operating systems administration, information security policy, intrusion detection, firewall technologies, information assurance, security administration, and industry best practices to protect data communications.

Graduates should be prepared for employment as network security specialists, network administrators, or security administrators. Additionally, they will acquire the skills that allow them to pursue hardware, advanced networking and security certifications.

### Curriculum Requirements\*

- 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 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

[ref. 1D SBCCC 400.97(3)]

- 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.

	Information Systems Security/Security Hardware A2527B					
				AAS	Diploma	Certificate
Min	imum Maj	or Hours Required		49 SHC	30 SHC	12 SHC
A.	CORE	-		44-45 SHC	NR	NR
	Courses rest	tricted to this curriculum are designated w	vith ***			
Req	uired Cou	rses:				
-	CIS 115	Intro to Prog & Logic	3 SHC			
	DBA 110	Database Concepts	3 SHC			
	NET 125	Networking Basics	3 SHC			
	NET 126	Routing Basics	3 SHC			
	NOS 110	Operating System Concepts	3 SHC			
	NOS 130	Window Single User	3 SHC			
	SEC 110	Security Concepts	3 SHC			
	SEC 150	Secure Communications	3 SHC			
	SEC 160	Secure Admin I	3 SHC			
	SEC 210	Intrusion Detection	3 SHC			
***	SEC 220	Defense-in-Depth	3 SHC			
***	SEC 289	Security Capstone Project	3 SHC			
Req	uired Subj	ect Areas:				
Basi	c Computer	Skills. Select one:				
	CIS 110	Introduction to Computers	3 SHC			
	CIS 111	Basic PC Literacy	2 SHC			
Busi	ness. Select	one:				
	BUS 110	Introduction to Business	3 SHC			
	CTS 115	Info Sys Business Concepts	3 SHC			
Ope	rating Syste	ms. Select one:				
- I -	NOS 120	Linux/UNIX Single User	3 SHC			
	NOS 230	Windows Admin I	3 SHC			
			Continued on next page	e		

Approved by the State Board of Community Colleges on September 16, 2005; CRC Revised 09/28/05; SBCC Revised 03/17/06; SBCC Revised 09/21/07; Revised 10/23/07; SBCC Template Revised 10/17/08; CRC Revised – Electronic Only 02/10/11; Revised 09/21/11; CRC Revised - Electronic Only 02/29/12; CRC Revised – Electronic Only 02/27/14.

#### Information Systems Security/Security Hardware A2527B

B.	<b>CONCENTRATION</b> (not applicable)	<i>4</i> . **	13 SHC	NR	NR
** **	NET 225 Routing & Switching I NET 226 Routing & Switching II SEC 270 Secure Routing/Firewalls SEC 275 Advanced Firewalls	3 SHC 3 SHC 3 SHC 3 SHC 4 SHC			
C.	OTHER MAJOR HOURS				
	To be selected from the following prefixes:				
	BUS, CCT, CET, CIS, CJC, COE, CSC, CTI, CTS SEC, TNE, *WBL, and WEB				
	Up to three semester hour credits may be se prefixes: ARA, ASL, CHI, FRE, GER, ITA, S SPA.				
	*WBL prefix will be available in fall 2014.				

Effective Term Summer 2006 [2006\*02]

Curriculum Program Title	Networking Technology	Code	A25340
~ .		-	GTD G 1 44 4444

Concentration

(not applicable)

CIP Code: 11.0901

### **Curriculum Description**

The Networking Technology curriculum prepares individuals for employment supporting network infrastructure environments. Students will learn how to use technologies to provide reliable transmission and delivery of data, voice, image, and video communications in business, industry, and education.

Course work includes design, installation, configuration, and management of network infrastructure technologies and network operating systems. Emphasis is placed on the implementation and management of network software and the implementation and management of hardware such as switches and routers.

Graduates may find employment in entry-level jobs as local area network managers, network operators, network analysts, and network technicians. Graduates may also be gualified to take certification examinations for various network industry certifications, depending on their local program.

### Curriculum Requirements\*

- 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

[ref. 1D SBCCC 400.97(3)]

- 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.

	Networking Technology A25340						
				AAS	Diploma	Certificate	
Mini	mum Majo	or Hours Required		49 SHC	30 SHC	12 SHC	
A.	CORE			44-45 SHC	12 SHC		
	A diploma	offered under this AAS degree requires	a minimum of 12 SHC				
	extracted f	rom the required subject/course core of	the AAS degree				
Requ	ired Cours	ses:					
_	CIS 115	Intro to Prog & Logic	3 SHC				
	CTS 120	Hardware/Software Support	3 SHC				
	DBA 110	Database Concepts	3 SHC				
	NET 125	Networking Basics	3 SHC				
	NET 126	Routing Basics	3 SHC				
	NET 225	Routing & Switching I	3 SHC				
	NET 226	Routing & Switching II	3 SHC				
	NOS 110	Operating Systems Concepts	3 SHC				
	NOS 120	Linux/UNIX Single User	3 SHC				
	NOS 130	Windows Single User	3 SHC				
	SEC 110	Security Concepts	3 SHC				
Requ	iired Subje	ect Areas:					
Basie	c Compute	r Skills. Select one:					
	CIS 110	Introduction to Computers	3 SHC				
	CIS 111	Basic PC Literacy	2 SHC				
Busi	ness. Selec	t one:					
	BUS 110	Introduction to Business	3 SHC				
	CTS 115	Info Sys Business Concepts	3 SHC				
Desig	gn. Select o	one:					
	NET 240	Network Design	3 SHC				
	NET 289	Networking Project	3 SHC				
Oper	rating Syste	em Administration. Select one:					
-	NOS 220	Linux/UNIX Admin I	3 SHC				
	NOS 230	Windows Admin I	3 SHC				
В.	CONCEN	NTRATION (Not applicable)					

Approved by the State Board of Community Colleges on November 13, 1996; SBCC Revised 05/17/02; SBCC Revised 09/16/05;SBCC Revised 09/21/07; SBCC Revised 11/18/05; Revised 10/23/07; Revised 12/03/07; SBCC Template Revised 10/17/08; Revised 03/23/10; CRC Revised – Electronic Only 02/10/11; Revised 09/21/11; Revised 12/14/11; CRC Revised - Electronic Only 02/29/12; Revised 06/06/12; CRC Revised—Electronic Only 05/29/13; CRC Revised – Electronic Only 02/29/12; Revised 06/06/12; CRC Revised—Electronic Only 05/29/13; CRC Revised – Electronic Only 02/27/14.

	Networking Technology A25340 (Continued)					
C.	OTHER MAJOR HOURS To be selected from the following prefixes:					
	BUS, CCT, CET, CIS, COE, CSC, CTI, CTS, DBA, ELC, HBI, NET, NOS, OMT, SEC, SGD, TNE, *WBL, and WEB					
	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.					
	*WBL prefix will be available in fall 2014.					

Approved by the State Board of Community Colleges on November 13, 1996; SBCC Revised 05/17/02; SBCC Revised 09/16/05;SBCC Revised 09/21/07; SBCC Revised 11/18/05; Revised 10/23/07; Revised 12/03/07; SBCC Template Revised 10/17/08; Revised 03/23/10; CRC Revised – Electronic Only 02/10/11; Revised 09/21/11; Revised 12/14/11; CRC Revised - Electronic Only 02/29/12; Revised 06/06/12; CRC Revised—Electronic Only 05/29/13; CRC Revised – Electronic Only 02/27/14.

*Effective Term Fall 1999* [1999\*03]

Curriculum Program Title	Physical Therapist Assista
e anno anann 1 rogram 1 ruo	i nysicai i nei apisi Assistai

cal Therapist Assistant (2-year program)

A45620

Code

Concentration

(not applicable)

CIP Code: 51.0806

# Curriculum Description

The Physical Therapist Assistant curriculum prepares graduates to work in direct patient care settings under the supervision of physical therapists. Assistants work to improve or restore function by alleviation or prevention of physical impairment and perform other essential activities in a physical therapy department.

Course work includes normal human anatomy and physiology, the consequences of disease or injury, and physical therapy treatment of a variety of patient conditions affecting humans throughout the life span.

Graduates may be eligible to take the licensure examination administered by the NC Board of Physical Therapy Examiners. Employment is available in general hospitals, rehabilitation centers, extended care facilities, specialty hospitals, home health agencies, private clinics, and public school systems.

### Curriculum Requirements\*

- 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 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
<b>Total Semester Hours Credit (SHC)</b>	64-76	36-48	12-18

[ref. 1D SBCCC 400.97(3)]

- 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.

Physical Therapist Assistant (2-year program) A45620							
					AAS	Diploma	Certificate
Mini	mum Majo	or Hours Required			49 SHC	30 SHC	12 SHC
А.	CORE				51-52 SHC	NR	
Requ	ired Cour	505.					
Kequ	PTA 110	Introduction to Physical Therapy	3 SHC				
	PTA 120	Functional Anatomy	3 SHC				
	PTA 130	Physical Therapy Procedures I	3 SHC				
	PTA 140	Therapeutic Exercise	4 SHC				
	PTA 150	Physical Therapy Procedures II	3 SHC				
	PTA 160	Physical Therapy Procedures III	3 SHC				
	PTA 170	Pathophysiology	3 SHC				
	PTA 212	Health Care Resources	2 SHC				
	PTA 222	Professional Interactions	2 SHC				
	PTA 240	Physical Therapy Procedures IV	5 SHC				
Requ	ired Subje	et Areas:					
Chine	DTA 180	PTA Clinical Education Introduction	3 SHC				
	DTA 182	PTA Clinical Education I	2 5110				
	PTA 210	PTA Clinical Education II	2 SHC				
	PTA 220	PTA Clinical Education III	2 SHC				
	PTA 230	PTA Clinical Education IV	8 SHC				
	PTA 260	Advanced PTA Clinical Education	10 SHC				
Anato	omv and Phy	vsiology. Select one sequence:					
	BIO 165	Anatomy & Physiology I	4 SHC	å			
	BIO 166	Anatomy & Physiology II	4 SHC	or			
	BIO 168	Anatomy & Physiology I	4 SHC	å			
	BIO 169	Anatomy & Physiology II	4 SHC				
R	CONCEP	NTRATION (Not applicable)					
Ъ.	CONCE						
			Contin	ued on next page			

	Physical Therapist Assistant (2-year program) A45620 (Continued)						
C.	<b>OTHER MAJOR HOURS</b> To be selected from the following prefixes:						
	BIO, CIS, COE, HSC, PHS, PHY, PTA, and *WBL						
	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.						
	*WBL prefix will be available in fall 2014.						