NC COMMUNITY COLLEGES
CREATING SUCCESS

NORTH CAROLINA COMMUNITY COLLEGE SYSTEM
Peter Hans
President

February 19, 2020

MEMORANDUM

To: Presidents
                 Chief Academic Officers

From: Peter Hans
                 President

Subject: Curriculum Standard Revision Approval

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 revision for the following attached curriculum standard which is in compliance with 1D SBCCC 400.9 (b):

Information Technology (A25590)

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 revision, please contact Dr. Hilmi Lahoud at 919.807.7116 or lahoudh@nccommunitycolleges.edu.

PH/HL/gr
Attachments
c: Mr. Wesley E. Beddard
       Dr. Lisa Eads
       Dr. Hilmi Lahoud
       Program Coordinators

                         CC20-017
                         Email

Outline of Curriculum Standard Revision

Information Technology (A25590)

Revision:

- Added WEB-110, Internet/Web Fundamentals, to the existing picklist under the Technical Core.
- Added DME and WEB prefixes to the Information System Subject Area.
- Added BAS-120, Intro to Analytics, to the existing picklist under the Database Administration and Data Center Technologies Subject Area.

Rationale: *The proposed revisions will allow colleges the flexibility to align their offerings with the local industry needs. Colleges wanting to retain their current program of study may continue to do so without change.*

Curriculum Standard for Information Technology

Career Cluster: Web and Digital Communications, Information Support and Services, Programming and Software Development, and Network Systems.

Cluster Description: Building linkages in IT occupations framework: for entry level, technical, and professional careers related to the design, development, support, and management of hardware, software, multi-media, and systems integration services.

Pathway: Information Technology	**Effective Term:** Fall 2020 (2020*03)

Program Major Under Pathway

Program Major / Classification of Instruction Programs (CIP) Code		Credential Level(s) Offered	Program Major Code
Information Technology	CIP Code: 11.0103	AAS/Diploma/Certificate	A25590

Pathway Description:

The Information Technology (IT) curriculum prepares graduates for employment in the technology sector as designers, testers, support technicians, system administrators, developers, or programmers who use computer software and\or hardware to design, process, implement and manage information systems in specialties such as database services, security, business intelligence, healthcare informatics and others depending on the technical path selected within this curriculum.

Course work includes development of a student's ability to create, store, communicate, exchange and use information to solve technical issues related to information support and services, interactive media, network systems, programming and software development, information security and other emerging technologies based on the selected area of study.

Graduates should qualify for employment in entry-level positions with businesses, educational systems, and governmental agencies which rely on computer systems to design and manage information. The program will incorporate the competencies of industry-recognized certification exams.

I. General Education Academic Core

Curriculum Requirements for associate degree, diploma, and certificate programs in accordance with 1 D SBCC 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.

Information Technology

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:** COM 110 Introduction to Communication 3 SHC COM 120 Intro Interpersonal Com 3 SHC COM 231 Public Speaking **U** 3 SHC ENG 111 Writing and Inquiry **U** 3 SHC ENG 112 Writing/Research in the Disc **U** 3 SHC ENG 114 Prof Research & Reporting 3 SHC ENG 116 Technical Report Writing 3 SHC	**6 SHC**	**3-6 SHC**	**Optional**

*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 September 18, 2015. Editorial revision September 21, 2015; Editorial Revision 09/25/15; CRC Revised 10/22/15; CRC Revised 05/26/16; CRC Revised—Electronic Only 05/25/17; Prefix addition 09/18/17; CCRC Revised—Electronic Only 05/23/19; CCRC Revised--Electronic Only (RISE Initiative) 10/24/19; Revised 02/13/20.

Humanities/Fine Arts:							
	ART	111	Art Appreciation **U**	3 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			
	MUS	110	Music Appreciation **U**	3 SHC			
	PHI	240	Introduction to Ethics **U**	3 SHC			
Social /Behavioral Sciences:							
	ECO	151	Survey of Economics	3 SHC			
	ECO	251	Prin of Microeconomics **U**	3 SHC			
	ECO	252	Prin of Macroeconomics **U**	3 SHC	**3 SHC**	**0-3 SHC**	**Optional**
	POL	120	American Government **U**	3 SHC			
	PSY	118	Interpersonal Psychology	3 SHC			
	PSY	150	General Psychology **U**	3 SHC			
	SOC	210	Introduction to Sociology **U**	3 SHC			
Natural Sciences/Mathematics:							
	MAT	110	Math Measurement and Literacy	3 SHC			
	MAT	121	Algebra/Trigonometry I	3 SHC			
	MAT	143	Quantitative Literacy **U**	3 SHC	**3-4 SHC**	**0-3 SHC**	**Optional**
	MAT	152	Statistical Methods I **U**	4 SHC			
	MAT	171	Precalculus Algebra **U**	4 SHC			

U indicates a Universal General Education Transfer Component (UGETC) course included in the Comprehensive Articulation Agreement. UGETC courses are guaranteed to transfer to any of the sixteen University of North Carolina senior institutions as equivalent credit within defined distribution limits.

II. Major Hours. AAS, diploma, and certificate programs must include courses that offer specific job knowledge and skills. Work Based Learning (WBL) 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 of 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 of credit from required subjects and/or courses.

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.

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 September 18, 2015. Editorial revision September 21, 2015; Editorial Revision 09/25/15; CRC Revised 10/22/15; CRC Revised 05/26/16; CRC Revised—Electronic Only 05/25/17; Prefix addition 09/18/17; CCRC Revised—Electronic Only 05/23/19; CCRC Revised--Electronic Only (RISE Initiative) 10/24/19; Revised 02/13/20.

Information Technology	AAS	Diploma	Certificate
Minimum Major Hours Required:	**49 SHC**	**30 SHC**	**12 SHC**

A. Technical Core:

				AAS	Diploma	
A diploma offered under this AAS degree requires a minimum of 12 SHC extracted from the required subject/course core of the AAS degree				**18-27 SHC**	**12 SHC**	

CTS	115	Info Sys Business Concepts	3 SHC
CTI	110	Web, Pgm, & DB Foundation	3 SHC
CTI	120	Network & Sec Foundation	3 SHC

Select one:

CET	111	Computer Upgrade/Repair I	3 SHC
CIS	110	Introduction to Computers	3 SHC
CIS	115	Intro to Prog and Logic	3 SHC
CSC	120	Computing Fundamentals I	4 SHC
CTI	115	Computer Systems Foundation	3 SHC
CTI	130	Os and Device Foundation	6 SHC
CTS	120	Hardware/Software Support	3 SHC
NOS	110	Operating Systems Concepts	3 SHC
OST	137	Office Applications I	3 SHC
WEB	110	Internet/WEB Fundamentals	3 SHC

Information Technology
Required Subject Areas (Select one subject area):

Information Systems
12 SHC to be selected from:
    CIS, CTI, CTS, DME, NOS and/or WEB prefixes

Computer Programming and Development
Select one:

CSC	134	C++ Programming	3 SHC
CSC	139	Visual BASIC Programming	3 SHC
CSC	151	JAVA Programming	3 SHC
CSC	153	C# Programming	3 SHC

Select one:

CSC	234	Advanced C++ Programing	3 SHC
CSC	239	Advanced Visual BASIC Prog	3 SHC
CSC	249	Data Structure & Algorithms	3 SHC
CSC	251	Advanced JAVA Programing	3 SHC
CSC	253	Advanced C# Programing	3 SHC

Database Administration and Data Center Technologies
Select two:

BAS	120	Intro to Analytics	3 SHC
DBA	120	Database Programming I	3 SHC
DBA	210	Database Administration	3 SHC
CTI	140	Virtualization Concepts	3 SHC
CTI	141	Cloud & Storage Concepts	3 SHC
NOS	120	Linux/UNIX Single User	3 SHC

Data Management
Select two:

BUS	228	Business Statistics	3 SHC
CTS	130	Spreadsheet	3 SHC
DBA	110	Database Concepts	3 SHC
DBA	115	Database Applications	3 SHC
DBA	120	Database Programming I	3 SHC

Data Support Services
Select two:

DBA	110	Database Concepts	3 SHC
DBA	115	Database Applications	3 SHC
DBA	120	Database Programming I	3 SHC
DBA	220	Oracle DB Programing II	3 SHC
DBA	221	SQL Server DB Prog II	3 SHC
DBA	240	Database Analysis/ Design	3 SHC

Digital Media Production
Select two:

DME	110	Intro to Digital Media	3 SHC
DME	115	Graphic Design Tools	3 SHC
DME	120	Intro to Multimedia Appl	3 SHC
DME	130	Digital Animation I	3 SHC
WEB	210	Web Design	3 SHC

Game and Simulation Programming
Select one:

CSC	134	C++ Programming	3 SHC
CSC	151	JAVA Programming	3 SHC
CSC	153	C# Programming	3 SHC
SGD	113	SGD Programing	3 SHC

Select one:

SGD	111	Introduction to SGD	3 SHC
SGD	112	SGD Design	3 SHC

Healthcare Informatics

HBI	110	Issues and Trends in HBI	3 SHC

Select one:

DBA	110	Database Concepts	3 SHC
DBA	120	Database Programming I	3 SHC
DBA	210	Database Administration	3 SHC
HBI	113	Survey of Med Insurance	3 SHC

IT Business Support
Select two:

CTS	130	Spreadsheet	3 SHC
CTS	240	Project Management	3 SHC
DBA	110	Database Concepts	3 SHC
DBA	240	Database Analysis/Design	3 SHC
WEB	151	Mobile Applications Dev I	3 SHC

Mobile Applications Developer
Select two:

CTI	150	Mobile Computing Devices	3 SHC
WEB	125	WEB Mobile Design	3 SHC
WEB	141	Mobile Interface Design	3 SHC
WEB	151	Mobile Applications Dev I	3 SHC
WEB	251	Mobile Applications Dev II	3 SHC

Network Management
Select one:

NET	110	Networking Concepts	3 SHC
NET	125	Introduction to Networking	3 SHC

Select one:

CTI	140	Virtualization Concepts	3 SHC
CTI	141	Cloud & Storage Concepts	3 SHC
NET	126	Routing Basics	3 SHC

NOS	120	Linux/UNIX Single User	3 SHC			
NOS	230	Windows Administration I	3 SHC			

Network Telecommunications
Select two:

NET	125	Introduction to Networking	3 SHC
NET	130	Convergence Concepts	3 SHC
NET	241	Introduction to VOIP	3 SHC
TNE	111	Campus Networks I	3 SHC
TNE	250	Intro to Telecom Networks	3 SHC

Software and Web Development
Select two:

CSC	139	Visual BASIC Programming	3 SHC
CSC	143	Object-Oriented Prog	3 SHC
CSC	151	JAVA Programming	3 SHC
CSC	153	C# Programming	3 SHC
DBA	120	Database Programming I	3 SHC
WEB	115	Web Markup and Scripting	3 SHC

Support and Services

CTS	155	Tech Support Functions	3 SHC

Select one:

CET	211	Computer Upgrade/Repair II	3 SHC
CTS	135	Integrated Software Intro	4 SHC
CTS	220	Adv Hard/Software Support	3 SHC
CTS	250	User Support & Software Eval	3 SHC
CTS	255	Adv Tech Support Functions	3 SHC
CTS	272	Desktop Support: Apps	3 SHC

Systems Security

SEC	110	Security Concepts	3 SHC

Select one:

CCT	110	Intro to Cyber Crime	3 SHC
NET	110	Networking Concepts	3 SHC
NET	125	Introduction to Networking	3 SHC
SEC	150	Secure Communications	3 SHC
SEC	160	Secure Administration I	3 SHC

Web Administration and Design
Select two:

DBA	120	Database Programming I	3 SHC
NOS	120	Linux/UNIX Single User	3 SHC
NOS	230	Windows Administration I	3 SHC
WEB	115	Web Markup and Scripting	3 SHC
WEB	210	Web Design	3 SHC
WEB	250	Database Driven Websites	3 SHC

C. Other Major Hours.

To be selected from the following prefixes:

ACC, ART, BAS, BUS, CCT, CET, CIS, CJC, CSC, CTI, CTS, DBA, DEA, DES, DFT, DME, ECM, ECO, EGR, ELC, ELN, ETR, GIS, GRA, GRD, HBI, HIT, HMT, ISC, ITN, MAT, MED, MIT, MKT, NET, NOS, OMT, OST, PCI, PHO, PMT, SEC, SGD, SGR, TNE, 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.

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

**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**