CENTRAL CAROLINA COMMUNITY COLLEGE

Science, Technology, Engineering & Math (STEM)

Program Planning Guide

Information Technology-Business Systems & Operations Support Associate in Applied Science Degree (A25590BS)

Program Length: 6 semesters
Program Sites: Lee Main Campus - Day Program with some evening courses available
Career Pathway Options: Associate in Applied Science Degree in Information Technology-Business Systems & Operations Support

Suggested Course Schedule		Class	Lab	Work	Credits	Notes:
1st Semester (fall)						
ACA 122	College Transfer Success	0	2	0	1	
CTI 110	Web. Pgm, & Db Foundation	2	2	0	3	
CTI 120	Network & SEC Foundation	2	2	0	3	
CTS 115	Info Sys Business Concepts	3	0	0	3	
CTS 120	Hardware/Software Support	2	3	0	3	
NOS 130	Windows Single User	2	2	0	3	
	Total Semester Hours	11	11	0	16	
2nd Semester (spring)						
CIS 115	Intro to Prog & Logic	2	3	0	3	
CSC 113	Artificial Intelligence Fundamentals	2	2	0	3	
DBA 110	Database Concepts	2	3	0	3	
WEB 115	Web Markup & Scripting	2	3	0	3	
	Total Semester Hours	8	11	0	12	
3rd Semester (summer)						
ENG 111	Writing & Inquiry	3	0	0	3	
Mathematics requirement, select one:						
MAT 143	Quantitative Literacy	2	2	0	3	
MAT 171	Precalculus Algebra	3	2	0	4	
	Total Semester Hours	5/6	4	0	6/7	

Effective Term: 2023Fall

4th Semester (fall)						
NOS 230	Windows Administration I	2	2	0	3	
SEC 110	Security Concepts	2	2	0	3	
Programming Elective, select one:						
CSC 134	C++ Programming	2	3	0	3	
CSC 139	Visual BASIC Programming	2	3	0	3	
CSC 151	JAVA Programming	2	3	0	3	
Technical Elective, select one:						
CIS 110	Intro to Computers	2	2	0	3	
CSC 134	C++ Programming	2	3	0	3	
CSC 139	Visual BASIC Programming	2	3	0	3	
CSC 151	JAVA Programming	2	3	0	3	
CTI 140	Virtualization Concepts	1	4	0	3	
	Total Semester Hours	7/8	9/10/11	0	12	
5th Semester (spring)						
CTI 289	CTI Capstone Project	1	6	0	3	
DBA 120	Database Programming I	2	2	0	3	
NOS 120	Linux/UNIX Single User	2	2	0	3	
WEB 151	Mobile Applications Devl	2	2	0	3	
Social/Behavioral Science Elective		3	0	0	3	
	Total Semester Hours	10	12	0	15	
6th Semester (summer)						
Humanities/Fine Arts Elective		3	0	0	3	
Communications Elective		3	0	0	3	
	Total Semester Hours	6	0	0	6	
Total Semester Hours Credit required for Graduation: 67						

Course Descriptions

ACA 122 College Transfer Success
This course provides information and strategies necessary to develop clear academic and professional goals beyond the community college experience. Topics include the CAA, college policies and culture, career exploration, gathering information on senior institutions, strategic planning, critical thinking, and communications skills for a successful academic transition. Upon completion, students should be able to develop an academic plan to transition successfully to senior institutions. This course has been approved for transfer under the CAA/ICAA as a premajor and/or elective course requirement.

CIS 110 Introduction to Computers
This course introduces computer concepts, including fundamental functions and operations of the computer. Topics include identification of hardware components, basic computer operations, security issues, and use of software applications. Upon completion, students should be able to demonstrate an understanding of the role and function of computers and use the computer to solve problems.

CIS 115 Introduction to Programming and Logic
Prerequisites: MAT-003 P3 grade
This course introduces computer programming and problem solving in a structured program logic environment. Topics include language syntax, data types, program organization, problem solving methods, algorithm design, and logic control structures. Upon completion, students should be able to manage files with operating system commands, use top-down algorithm design, and implement algorithmic solutions in a programming language. This course has been approved for transfer under the CAA and ICAA as a general education course in Mathematics.

CSC 113 Artificial Intel. Fundamentals
This course provides a survey of artificial intelligence and machine learning. Topics include the history, development, and current applications of artificial intelligence and machine learning. Demonstrate general artificial intelligence and machine learning concepts.

CSC 134 C++ Programming
This course introduces computer programming using the C++ programming language with object-oriented programming principles. Emphasis is placed on event-driven programming methods, including creating and manipulating objects, classes, and using object-oriented tools such as the class debugger. Upon completion, students should be able to design, code, test and debug at a beginning level. This course has been approved for transfer under the CAA and ICAA as a premajor and/or elective course requirement.

CSC 139 Visual BASIC Programming
This course introduces computer programming using the Visual BASIC programming language with object-oriented programming principles. Emphasis is placed on event-driven programming methods, including creating and manipulating objects, classes, and using object-oriented tools such as the class debugger. Upon completion, students should be able to design, code, test and debug at a beginning level. This course has been approved for transfer under the CAA and ICAA as a premajor and/or elective course requirement.

CSC 151 JAVA Programming
This course introduces computer programming using the JAVA programming language with object-oriented programming principles. Emphasis is placed on event-driven programming methods, including creating and manipulating objects, classes, and using object-oriented tools such as the class debugger. Upon completion students should be able to design, code, test, debug JAVA language programs. This course has been approved for transfer under the CAA and ICAA as a premajor and/or elective course requirement.

CTI 110 Web, Pgm, & Db Foundation
This course covers the introduction of the tools and resources available to students in programming, mark-up language and services on the Internet. Topics include standard mark-up language Internet services, creating web pages, using search engines, file transfer programs; and database design and creation with DBMS products. Upon completion students should be able to demonstrate knowledge of programming tools, deploy a web-site with mark-up tools, and create a simple database table.

CTI 120 Network & Sec Foundation
This course introduces students to the Network concepts, including networking terminology and protocols, local and wide area networks, and network standards. Emphasis is placed on securing information systems and the various implementation policies. Upon completion, students should be able to perform basic tasks related to networking mathematics, terminology, media and protocols.

CTI 140 Virtualization Concepts
This course introduces operating system virtualization. Emphasis is placed on virtualization terminology, virtual machine storage, virtual networking and access control. Upon completion, students should be able to perform tasks related to installation, configuration and management of virtual machines.

CTI 289 CTI Capstone Project
Prerequisites: Take all: CTI 110, CTI 120, CTS 115
This course provides students an opportunity to complete a significant integrated technology project from the design phase through implementation with minimal instructor support. Emphasis is placed on technology policy, process planning, procedure definition, systems architecture, and security issues to create projects for the many areas in which computer technology is integrated. Upon completion, students should be able to create, implement, and support a comprehensive technology integration project from the planning and design phase through implementation.

CTS 115 Information Systems Business Concept
The course introduces the role of IT in managing business processes and the need for business process and IT alignment. Emphasis is placed on industry need for understanding business challenges and developing/managing information systems to contribute to the decision making process based on these challenges. Upon completion, students should be able to demonstrate knowledge of the 'hybrid business manager' and the potential offered by new technology and systems. This course has been approved for transfer under the CAA and ICAA as a premajor and/or elective course requirement.

CTS 120 Hardware/Software Support
This course covers the basic hardware of a personal computer, including installation, operations and interactions with software. Topics include component identification, memory-system, peripheral installation and configuration, preventive maintenance, hardware diagnostics/repair, installation and optimization of system software, commercial programs, system configuration, and device-drivers. Upon completion, students should be able to select appropriate computer equipment and software, upgrade/maintain existing equipment and software, and troubleshoot/repair non-functioning personal computers.

DBA 110 Database Concepts
This course introduces database design and creation using a DBMS product. Emphasis is placed on data dictionaries, normalization, data integrity, data modeling, and creation of simple tables, queries, reports, and forms. Upon completion, students should be able to design and implement normalized database structures by creating simple database tables, queries, reports, and forms.

DBA 120 Database Programming I
This course is designed to develop SQL programming proficiency. Emphasis is placed on data definition, data manipulation, and data control statements as well as on report generation. Upon completion, students should be able to write programs that create, update, and produce reports.

ENG 111 Writing and Inquiry
Prerequisite: Take one set: Set 1: DRE 097; Set 2: ENG 002; Set 3: BSP 4002
Corequisite: Take ENG 011
This course is designed to develop the ability to produce clear writing in a variety of genres and formats using a recursive process. Emphasis includes inquiry, analysis, effective use of rhetorical strategies, thesis development, audience awareness, and revision. Upon completion, students should be able to produce unified, coherent, well-developed essays using standard written English. This course has been approved for transfer under the CAA/ICAA as a general education course in English Composition.

MAT 143 Quantitative Literacy
Prerequisite: Take one set: Set 1: DMA 010, DMA 020, DMA 030, and DRE 098; Set 2: DMA 010, DMA 020, DMA 030, and ENG 002; Set 3: DMA 010, DMA 020, DMA 030, and BSP 4002; Set 4: DMA 025 and DRE 098; Set 5: DMA 025 and ENG 002; Set 6: DMA 025

and BSP 4002; Set 7: MAT 003 and DRE 098; Set 8: MAT 003 and ENG 002; Set 9: MAT 003 and BSP 4002; Set 10: BSP 4003 and DRE 098; Set 11: BSP 4003 and ENG 002; Set 12: BSP 4003 and BSP 4002
Corequisite: Take MAT 043
This course is designed to engage students in complex and realistic situations involving the mathematical phenomena of quantity, change and relationship, and uncertainty through project- and activity-based assessment. Emphasis is placed on authentic contexts which will introduce the concepts of numeracy, proportional reasoning, dimensional analysis, rates of growth, personal finance, consumer statistics, practical probabilities, and mathematics for citizenship. Upon completion, students should be able to utilize quantitative information as consumers and to make personal, professional, and civic decisions by decoding, interpreting, using, and communicating quantitative information found in modern media and encountered in everyday life. This course has been approved for transfer under the CAA/ICAA as a general education course in Mathematics (Quantitative).

MAT 171 Precalculus Algebra
Prerequisites: Take one set: Set 1: DMA 010, DMA 020, DMA 030, DMA 040, DMA 050; Set 2: DMA 010, DMA 020, DMA 030, DMA045; Set 3: DMA 025, DMA 045; Set 4: DMA 025, DMA 040, DMA 050; Set 5: MAT 121; Set 6: MAT 003; Set 7: BSP 4003
Corequisite: Take MAT 071
This course is designed to develop topics which are fundamental to the study of Calculus. Emphasis is placed on solving equations and inequalities, solving systems of equations and inequalities, and analysis of functions (absolute value, radical, polynomial, rational, exponential, and logarithmic) in multiple representations. Upon completion, students should be able to select and use appropriate models and techniques for finding solutions to algebra-related problems with and without technology. This course has been approved for transfer under the CAA/ICAA as a general education course in Mathematics.

NOS 120 Linux/UNIX Single User
This course develops the necessary skills for students to develop both GUI and command line skills for using and customizing a Linux workstation. Topics include Linux file system and access permissions, GNOME Interface, VI editor, X Window System expression pattern matching, I/O redirection, network and printing utilities. Upon completion, students should be able to customize and use Linux systems for command line requirements and desktop productivity roles.

NOS 130 Windows Single User
This course introduces operating system concepts for single-user systems. Topics include hardware management, file and memory management, system configuration/ optimization, and utilities. Upon completion, students should be able to perform operating systems functions at the support level in a single-user environment.

NOS 230 Windows Administration I
This course covers the installation and configuration of a Windows Server operating system. Emphasis is placed on the basic configuration of core network services, Active Directory and group policies. Upon completion, students should be able to install and configure a Windows Server operating system.

SEC 110 Security Concepts
This course introduces the concepts and issues related to securing information systems and the development of policies to implement information security controls. Topics include the historical view of networking and security, security issues, trends, security resources, and the role of policy, people, and processes in information security. Upon completion, students should be able to identify information security risks, create an information security policy, and identify processes to implement and enforce policy.

WEB 115 Web Markup and Scripting
This course introduces Worldwide Web Consortium (W3C) Internet programming using JavaScript. Topics include basic syntax, object-oriented programming, functions, variables, events, arrays, validation, accessibility, and web standards. Upon completion, students should be able to write, debug, maintain well-formed and well documented interactive web content using JavaScript code.

WEB 151 Mobile Application Dev I

This course introduces students to programming technologies, design, and development related to mobile applications. Topics include accessing device capabilities, compliance with industry standards, and programming for mobile applications. Upon completion, students should be able to develop basic applications for mobile devices.

Approved Humanities/Fine Arts Electives
Associate in Applied Science Degree/Diploma

ART 111	Art Appreciation
ART 114	Art History Survey I
ART 115	Art History Survey II
DRA 111	Theatre Appreciation
ENG 125	Creative Writing I
ENG 231	American Literature I
ENG 232	American Literature II
ENG 241	British Literature I
ENG 242	British Literature II
HUM 110	Technology & Society
HUM 115	Critical Thinking
HUM 120	Cultural Studies
HUM 122	Southern Culture
HUM 150	American Women's Studies
HUM 160	Introduction to Film
MUS 110	Music Appreciation
MUS 112	Introduction to Jazz
PHI 240	Introduction to Ethics
REL 110	World Religions
REL 211	Intro to Old Testament
REL 212	Intro to New Testament

Communications Electives:

COM 231	Public Speaking
ENG 112	Writing/Research in the Disc
ENG 114	Prof Research & Reporting

Approved Social/Behavioral Science Electives
Associate in Applied Science Degree/Diploma

ANT 210	General Anthropology
ANT 220	Cultural Anthropology
ECO 151	Survey of Economics
ECO 251	Principles of Microeconomics
ECO 252	Principles of Macroeconomics
HIS 111	World Civilization I
HIS 112	World Civilization II
HIS 131	American History I
HIS 132	American History II
HIS 222	African-American History I
HIS 223	African-American History II
HIS 226	The Civil War
HIS 236	North Carolina History
POL 120	American Government
PSY 150	General Psychology
PSY 237	Social Psychology
PSY 241	Developmental Psychology
PSY 246	Adolescent Psychology
PSY 281	Abnormal Psychology
SOC 210	Introduction to Sociology
SOC 213	Sociology of the Family
SOC 220	Social Problems
SOC 225	Social Diversity
SOC 232	Social Context of Aging
SOC 240	Social Psychology