STATE BOARD OF COMMUNITY COLLEGES

CURRICULUM STANDARD REVISIONS

The State Board is asked to approve revisions to the following curriculum standards:

Cape Fear Community College Marine Technology (A15320)

Cleveland Community College Automation Engineering Technology (A40120)

College of The Albemarle Aviation Systems Technology (A60200)

Haywood Community College Medical Assisting (A45400)

Lenoir Community College Therapeutic Massage (A45750)

<u>Contact Person:</u> Jennifer Frazelle, Director Academic Programs 919.807.7120 frazellej@nccommunitycolleges.edu

Cape Fear Community College Marine Technology (A15320)

Cape Fear Community College is seeking approval to revise the Marine Technology (A15320) curriculum standard, effective Fall 2015.

Proposed Revision

• Revise the program major description.

Rationale: The proposed revision will more accurately describe the Marine Technology program.

Vote Results: Cape Fear Community College is the only college approved to offer the Marine Technology (A15320) program.

Director: Jennifer Frazelle

PROPOSED Curriculum Standard for Natural Resource Systems: Marine Technology

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

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

Pathway: Natural Resource Systems

Effective Term: Fall 2013 (2013*03) Fall 2015 (2015*03)

Progran	n Majors Under Pa	athway	
Program Major / Classification of Instruction	Programs (CIP)	Credential Level(s)	Program
Code		Offered	Major Code
Marine Science	CIP Code 26.1302	AAS/Diploma/Certificate	A15310
Marine Technology	CIP Code: 03.0301	AAS/Diploma/Certificate	A15320

Pathway Description:

These curricula prepare individuals for a variety of marine-related occupations such as marine conservation, water analysis, marine scientific research support and commercial fishing. Individuals will be prepared as naturalists within the ecotourism industry and be trained in observational and measurement techniques aboard a variety of vessels including ocean-going research vessels.

Course work includes a unique blend of traditional and contemporary vocational, technical, and scientific marine education. Course work specific for Marine Sciences includes instruction in biological sciences, environmental sciences, and marine sciences. Field and laboratory experiences prepare students to identify, observe, and collect scientific data associated with the fauna and flora found in the rivers, estuaries, sounds, and ocean. Course work in Marine Technologies includes instruction in the use of physical, chemical, meteorological, biological, and geological oceanographic instrumentation and sampling equipment.

Graduates are prepared for employment opportunities with aquariums, fisheries, corps of engineers, marine patrol, ecotourism companies, commercial fishing industries, entry-level field or laboratory positions with industries, state and federal agencies, and educational facilities associated with marine science and research. Career opportunities include oceanography, environmental science, marine biology, geophysical exploration, and fisheries-related employment.

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

Marine Science: A program that focuses on the scientific study of the ecology and behavior of microbes, plants, and animals inhabiting oceans, coastal waters, and saltwater wetlands and their interactions with the physical environment. Potential course work includes instruction in chemical, physical, and geological oceanography; molecular, cellular, and biochemical studies; marine microbiology; marine botany; ichthyology; mammalogy; marine population dynamics and biodiversity; reproductive biology; studies of specific species, phyla, habitats, and ecosystems; marine paleocology and palentology; and applications to fields such as fisheries science and biotechnology.

Marine Technology:A program that focuses on the scientific study of the husbandry and production of nondomesticated fish and shellfish populations for recreational and commercial purposes and the management of fishing and marine/aquatic product processing to ensure adequate conservation and efficient utilization. Potential course work includes instruction in the principles of marine/aquatic biology, freshwater and saltwater ecosystems, water resources, fishing production operations and management, fishing policy and regulation, and the management of recreational and commercial fishing activities.

Marine Technology: A program that provides the practical and academic skills essential for success in marine scientific support. Training in the operation and maintenance of seismic and hydrographic instrumentation including: side scan sonar, multibeam echo sounders, and sub-bottom profilers is provided in the classroom and underway at sea. Additional course work includes: classic and digital navigation techniques, practical applications of boat handling, seamanship, marlinspike seamanship, and safety at sea. Instruction applicable to fisheries science and environmental assessment is provided.

^{*}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 08/21/13; CRC Revised—Electronic Only 05/29/14; SBCC Revised_____.

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.

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PHY 171 Applied Physics 1 A SHC	1111 DUV	121	Applied Physics I	4 SHC			

Approved by the State Board of Community Colleges on August 16, 2012; Editorial Revision 12/14/12; Editorial Revision 08/21/13; CRC Revised—Electronic Only 05/29/14; SBCC Revised _____.

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.

	Natural Resource Systems:	Marine	AAS	Diploma	Certificate
Mi	nimum Major Hours Required:		49 SHC	30 SHC	12 SHC
А.	Technical Core:				
	*MSC 122 Boat Handling/Seamanship	3 SHC	35 SHC	12-32	
	*MSC 124 Industrial Skills	3 SHC		SHC	
	*MSC 132 Fishing Gear Tech I	3 SHC			
	*MSC 150 Marine Navigation	3 SHC			
	*MSC 160 Oceanography	4 SHC			
	MSC 180 Water Analysis	3 SHC			
	MSC 276 Marine Vertebrate Zoo	4 SHC			
B.	Program Major(s): Marine Science				
	Select a minimum of 12 SHC from the followin	g courses for the Marine			
	Science AAS program:				
	BIO 111 General Biology I	4 SHC			
	BIO 146 Regional Natural History	4 SHC			
	BIO 243 Marine Biology	4 SHC			
	Ecology, Select 4-7 SHC:				
	BIO 145 Ecology	4 SHC or			
	ENV 110 Environmental Science	3 SHC and			
	ENV 220 Applied Ecology	4 SHC			
	Select a minimum of 12 SHC from technical co	re or program major			
	courses for a diploma in Marine Science.				
	Marine Technology				
	Select a minimum of 12 SHC from the followin	g courses for the Marine			
	Technology AAS program:				
	*MSC 110 Training Cruise I	1 SHC			
	*MSC 112 Training Cruise II	1 SHC			
	*MSC 114 Training Cruise III	1 SHC			
	*MSC 126 Marine Engines	2 SHC			
	*MSC 134 Fishing Gear Technology II	2 SHC			
	*MSC 152 Marine Instrumentation	2 SHC			
	*MSC 172 Marine Biology	3 SHC			
	*MSC 174 Marine Invertebrate Zoo	4 SHC			
	Courses required for the Marine Technology d	iploma are			
	designated with *	*			
C.	Other Major Hours.				

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To be selected from the following prefixes:

AGR, AQU, BIO, BUS, CHM, CIS, CSC, DFT, ELN, ETR. ENV, HEA, FOR, FWL, GIS, HOR, REC, TRF, MAT, MSC, PED, PHO, PHY, REC, TXY, VEN, WBL, WLD, WPP and ZAS

Up to three semester hour credits may be selected from the following prefixes: ARA, ASL, CHI, FRE, GER, ITA, JPN, LAT, POR, RUS and SPA.

III. Other Required Hours

A college may include courses to meet graduation or local employer requirements in a certificate (0-1 SHC), diploma (0-4 SHC), or an associate in applied science (0-7 SHC) program. These curriculum courses shall be selected from the Combined Course Library and must be approved by the System Office prior to implementation. Restricted, unique, or free elective courses may not be included as other required hours.

IV. Employability Competencies

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

- A. Interpersonal Skills and Teamwork The ability to work effectively with others, especially to analyze situations, establish priorities, and apply resources for solving problems or accomplishing tasks.
- **B.** Communication The ability to effectively exchange ideas and information with others through oral, written, or visual means.
- **C. Integrity and Professionalism** Workplace behaviors that relate to ethical standards, honesty, fairness, respect, responsibility, self-control, criticism and demeanor.
- **D. Problem-solving** The ability to identify problems and potential causes while developing and implementing practical action plans for solutions.
- **E.** Initiative and Dependability Workplace behaviors that relate to seeking out new responsibilities, establishing and meeting goals, completing tasks, following directions, complying with rules, and consistent reliability.
- F. Information processing The ability to acquire, evaluate, organize, manage, and interpret information.
- **G.** Adaptability and Lifelong Learning The ability to learn and apply new knowledge and skills and adapt to changing technologies, methods, processes, work environments, organizational structures and management practices.
- **H.** Entrepreneurship The knowledge and skills necessary to create opportunities and develop as an employee or self-employed business owner.

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

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

Cleveland Community College Automation Engineering Technology (A40120)

Cleveland Community College is seeking approval to revise the Automation Engineering Technology (A40120) curriculum standard, effective Fall 2015.

Proposed Revision:

Create a Specialty subject area that contains the following courses

ATR 121	Intro to Machine Vision (previously a required course)
BAT 111	Building Automation Systems
HYD 110	Hydraulics/Pneumatics I
MEC 130	Mechanisms
MNT 250	PLC Interfacing

Rationale of Requesting College: The additional courses within the specialty area will aide student skill development in various technologies that are common to the automation industry.

Vote Results:

Colleges approved to offer the program:	2
Colleges in favor of the revision:	2

Coordinator: Frank Scuiletti

PROPOSED Curriculum Standard for Engineering and Technology: Applied, Automation, Mechatronics Engineering Technology

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	Effective Term:	Fall 2013 (2013*03)
			Fall 2015 (2015*03)
	Program Majors	Under Pathway	

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Program Major / Classification of Instruction P	rograms (CIP) Code	Credential Level(s)	Program Major
		Offered	Code
Applied Engineering Technology	CIP Code: 15.0000	AAS/Diploma/Certificate	A40130
Automation Engineering Technology	CIP Code: 15.0406	AAS/Diploma/Certificate	A40120
Mechatronics Engineering Technology	CIP Code: 15.0403	AAS/Diploma/Certificate	A40350

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, process improvement technicians, engineering technicians, industrial and technology managers, or research technicians.

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

Applied Engineering Technology: A course of study that prepares the students to use basic engineering principles and technical skills to solve technical problems in various types of industry. The course work emphasizes analytical and problemsolving skills. The curriculum includes courses in safety, math, physics, electricity, engineering technology, and technologyspecific specialty areas. Graduates should qualify for employment in a wide range of positions in research and development, manufacturing, sales, design, inspection, or maintenance. Employment opportunities exist in automation, computer, electrical, industrial, or mechanical engineering fields, where graduates will function as engineering technicians.

Automation Engineering Technology: A course of study that prepares the students to use basic engineering principles and technical skills to develop, install, calibrate, modify and maintain automated systems. Includes instruction in computer systems; electronics and instrumentation; programmable logic controllers (PLCs); electric, hydraulic and pneumatic control systems; actuator and sensor systems; process control; robotics; applications to specific industrial tasks. The graduates of this curriculum will be prepared for employment in industries that utilize control systems, computer hardware and software, electrical, mechanical and electromechanical devices in their automation systems.

Mechatronics Engineering Technology: A course of study that prepares the students to use basic engineering principles and technical skills in developing and testing automated, servomechanical, and other electromechanical systems. Includes instruction in prototype testing, manufacturing and operational testing, systems analysis and maintenance procedures. Graduates should be qualified for employment in industrial maintenance and manufacturing including assembly, testing, startup, troubleshooting, repair, process improvement, and control systems, and should qualify to sit for Packaging Machinery Manufactures Institute (PMMI) mechatronics or similar industry examinations.

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

Approved by the State Board of Community Colleges on August 16, 2012; Editorial Revision 09/08/12; Editorial Revision 12/14/12; CRC Revised—Electronic Only 05/29/13; Editorial Revision 08/21/13; Editorial Revision 01/17/14; Editorial Revision 10/16/14; SBCC Revised _____.

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 general education; 3 semester hours must be in communications. General education is optional in certificate programs.

Eng	ineeri	ng and Technology: Applied, Au	tomation and Mechatron	ics Engine	ering Techn	ology
General E	ducati	on Academic Core		AAS	Diploma	Certificate
Minimum	Gener	al Education Hours Required:		15 SHC	6 SHC	0 SHC
Courses list standard. C courses to m	ed belo Colleges veet loco	w are recommended general education s may choose to include additional or a al curriculum needs.	a courses for this curriculum ulternative general education			
*Recommen be included	ded cer in asso	tificate and diploma level curriculum co ciate degree programs.	urses. These courses may <u>not</u>			
Communic	ations [.]					
*COM COM COM *ENG *ENG ENG ENG	101 110 120 231 101 102 110 111	Workplace Communication Introduction to Communication Intro Interpersonal Com Public Speaking Applied Communications I Applied Communications II Freshman Composition Writing and Inquiry	3 SHC 3 SHC 3 SHC 3 SHC 3 SHC 3 SHC 3 SHC 3 SHC 3 SHC	6 SHC	3-6 SHC	Optional
ENG	114	Professional Research & Reporting	3 SHC			
ENG	110	Technical Report writing	5 SHC			
Humanities	s/Fine A	Arts:		3 SHC	0-3 SHC	Optional
*HUM HUM HUM PHI PHI	101 110 115 230 230 240	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			
Social/Beha	vioral	Sciences:				
ECO ECO GEO GEO *PSY *PSY PSY PSY PSY *SOC SOC SOC	151 251 110 111 101 102 118 135 150 105 210 215	Survey of Economics Prin of Microeconomics Introduction to Geography World Regional Geography Physical Geography I Applied Psychology Human Relations Interpersonal Psychology Group Processes General Psychology Social Relationships Introduction to Sociology Group Process	3 SHC 3 SHC 3 SHC 3 SHC 4 SHC 3 SHC 3 SHC 3 SHC 3 SHC 3 SHC 3 SHC 3 SHC 3 SHC	3 SHC	0-3 SHC	Optional
Natural Sci	ences/N	Mathematics:				
MAT MAT MAT MAT MAT MAT	120 121 161 171 175 223	Geometry and Trigonometry Algebra/Trigonometry I College Algebra Precalculus Algebra Precalculus Applied Calculus	3 SHC 3 SHC 3 SHC 3 SHC 4 SHC 3 SHC	3 SHC	0-3 SHC	Optional
MAT	271	Calculus I	4 SHC			

Approved by the State Board of Community Colleges on August 16, 2012; Editorial Revision 09/08/12; Editorial Revision 12/14/12; CRC Revised—Electronic Only 05/29/13; Editorial Revision 08/21/13; Editorial Revision 01/17/14; Editorial Revision 10/16/14; SBCC Revised____.

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: Applied, Automa	ation, Mechatronics	AAS	Diploma	Certificate
	Engineering Technology				
Minimum Major Hou	rs Required:		49 SHC	30 SHC	12 SHC
Courses required for a di	ploma are designated with *		16-44 SHC	16-24 SHC	
A. Technical Core:					
*Computer	Applications				
Choose on	e:				
CIS 110	Introduction to Computers	3 SHC			
EGR 111	Eng Comp and Careers	3 SHC			
EGR 125	Appl Software for Tech	2 SHC			
ELC 127	Software for Technicians	2 SHC			
*Safety					
Choose or	le:				
ISC 112	Industrial Safety	2 SHC			
ISC 112	Construction Safety	2 SHC			
B Program Major(s)•	2 5110			
For AAS Degree select on	e program major.				
Applied Engine	ering Technology				
*Computers					
Choose of	ne:				
DFT 119	Basic CAD	2 SHC			
ELC 127	Software for Technicians	2 SHC			
*Electricity					
Choose on	e:				
ELC 131	Circuit Analysis I	4 SHC			
ELC 138	DC Circuit Analysis	4 SHC			
ELC 139	AC Circuit Analysis	4 SHC			
*Engineering	D.				
Choose of	ne:				
HYD 110	Hydraulics/Pneumatics I	3 SHC			
HYD 112	Hydraulics/Med/Heavy Duty	2 SHC			
HYD 115	Industrial Hydraulics	3 SHC			
MNT 165	Mechanical Industrial Sys	2 SHC			
*Motors an	d Controls				
Choose of	ne:				
ELC 117	Motors and Controls	4 SHC			
ELC 128	Intro to PLC	3 SHC			
*Specialty					
Choose one:					
ATR 112	Intro to Automation	3 SHC			
CET 110	Intro to CET	1 SHC			

Approved by the State Board of Community Colleges on August 16, 2012; Editorial Revision 09/08/12; Editorial Revision 12/14/12; CRC Revised—Electronic Only 05/29/13; Editorial Revision 08/21/13; Editorial Revision 01/17/14; Editorial Revision 10/16/14; SBCC Revised_____.

ELN 131	Analog Electronics I	4 SHC		
ISC 129	Oual Testing Lab Tech	3 SHC		
MEC 110	Intro to CAD/CAM	2 SHC		
DCL 150	Brogges Control Systems	2 SHC		
PCI 150	Process Control Systems	4 SHC		
<u>Automation E</u>	ngineering Technology			
*ATR 112	Intro to Automation	3 SHC		
ATR 121	Intro to Machine Vision	<mark>4 SHC</mark>		
*ATR 215	Sensors and Transducers	3 SHC		
*ELC 128	Intro to PLC	3 SHC		
ELC 120				
ELN 133	Digital Electronics	4 SHC		
PCI 171	Fieldbus Systems	4 SHC		
*Basic Electri	city			
Choose one	set:			
ELC 131	Circuit Analysis I	4 SHC		
ELC 131	Circuit Analysis I	A SHC		
CDD CDD	Circuit Analysis ii	4 5110		
		4 0110		
ELC 138	DC Circuit Analysis	4 SHC		
ELC 139	AC Circuit Analysis	4 SHC		
Specialty				
Choose one				
choose one.				
ATD 101	Intro to Mashing Vision			
AIR 121	Intro to Machine Vision	4 SHC		
BAT 111	Building Automation Systems	2 SHC		
HYD 110	Hydraulics/Pneumatics I	<u>3 SHC</u>		
MEC 130	Mechanisms	<u>3 SHC</u>		
MNT 250	PLC Interfacing	4 SHC		
	<u>_</u>			
Machatronics	Engineering Technology			
*ATD 112	Intro to Automation	2 5110		
*AIK 112		5 SHC		
*ELC 213	Instrumentation	4 SHC		
*Basic Elec	etricity			
Choose of	one course or set:			
ELC 111	Intro to Electricity	3 SHC		
OR	mus to Electrony	5 5110		
		5 0110		
ELC 112	DC/AC Electricity	5 SHC		
OR				
ELC 131	Circuit Analysis I	4 SHC		
OR				
ELC 138	DC Circuit Analysis	4 SHC		
ELC 139	AC Circuit Analysis	4 SHC		
LLC 157	The encourt T marysis	4 5110		
D				
Drawing				
Choose	one:			
DFT 119	Basic CAD	2 SHC		
DFT 151	CAD I	3 SHC		
DFT 154	Intro Solid Modeling	3 SHC		
DFT 170	Engineering Graphics	3 SHC		
EGR 120	Eng and Design Graphics	3 5110		
EUX 120	Electrical Drawings	2 5110		
ELC 132	Elecurical Drawings	2 SHC		
Fluid Mee	chanics			
Choose	one:			
HYD 110	Hydraulics/Pneumatics I	3 SHC		
HYD 180	Pneumatics in Automation	3 SHC		
MEC 265	Fluid Mechanics	3 500		
MEC 205		5 5110		
Mechanic	al Drives			
Choose	one:			
MEC 130	Mechanisms	3 SHC		
MEC 275	Engineering Mechanisms	3 SHC		

Approved by the State Board of Community Colleges on August 16, 2012; Editorial Revision 09/08/12; Editorial Revision 12/14/12; CRC Revised—Electronic Only 05/29/13; Editorial Revision 08/21/13; Editorial Revision 01/17/14; Editorial Revision 10/16/14; SBCC Revised____.

Machines			
Choose	one course or set:		
ELC 117	Motors and Controls	4 SHC	
ELC 130	Advanced Motors/Controls	3 SHC	
ELC 135 AND	Electrical Machines I	3 SHC	
ELC 136	Electrical Machines II	4 SHC	
Program	nable Logic Controllers (Choose one:)	
ELC 128	Intro to PLC	3 SHC	
ELN 260	Prog Logic Controllers	4 SHC	
*Physics (Choose one:)		
PHY 131	Physics-Mechanics	4 SHC	
PHY 151	College Physics I	4 SHC	
		• ~	

C. Other Major Hours. To be selected from the following prefixes:

AHR, ALT, ATR, BAT, BPM, BPR, BTB, BTC, BUS, CCT, CEG, CET, CHM, CIS, CIV, CMT, CSC, CTI, CTS, DBA, DDF, DEA, DFT, EGR, ELC, ELN, EPP, EPT, FBG, GRA, HET, HYD, HPC, ISC, LOG, MAC, MAT, MCM, MCO, MEC, MKT, MNT, MPS, MLG, MSM, NET, NOS, NUC, OMT, PCI, PHY, PKG, PMT, RCT, RVM, SEC, SST, TCT, TEL, TNE, TRN, WAT, WBL, WEB and WLD

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>

Approved by the State Board of Community Colleges on August 16, 2012; Editorial Revision 09/08/12; Editorial Revision 12/14/12; CRC Revised—Electronic Only 05/29/13; Editorial Revision 08/21/13; Editorial Revision 01/17/14; Editorial Revision 10/16/14; SBCC Revised_____.

**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 <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
Total Semester Hours Credit (SHC)	64-76	36-48	12-18

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

Approved by the State Board of Community Colleges on August 16, 2012; Editorial Revision 09/08/12; Editorial Revision 12/14/12; CRC Revised—Electronic Only 05/29/13; Editorial Revision 08/21/13; Editorial Revision 01/17/14; Editorial Revision 10/16/14; SBCC Revised _____.

College of The Albemarle Aviation Systems Technology (A60200)

College of The Albemarle is seeking approval to revise the Aviation Systems Technology (A60200) curriculum standard, effective Summer 2015.

Proposed Revision:

From the core of the Aviation Systems Technology curriculum standard:

- Remove the Not Recommended (**NR**) from the *Diploma* column and replace it with **43-45 SHC**.
- Move the required core courses, except AVI 110 Aviation Maintenance-General, to the newly created Airframe and Powerplant subject areas.

In the footnote area designated with two asterisks (**):

• Change the reference on the curriculum standard signifying that the program is approved by the State Board Community Colleges to exceed the maximum allowable hours* for an applied science program to also indicate that the program may exceed the maximum allowable hours for a diploma program.

*1D SBCCC 400.95(d): On special approval by the State Board, a degree program title or a standalone diploma or certificate program title may exceed the maximum length of programs as set by the curriculum standards.

Rationale of Requesting College: Employers have indicated interest in hiring individuals with a Federal Aviation Administration (FAA) endorsement in Airframe or Powerplant in addition to those individuals who possess both (A & P) credentials. All Airframe and Powerplant courses listed on the curriculum standard have a prerequisite of AVI 110 Aviation Maintenance-General and are designed to meet FAA requirements. In order to make a diploma program possible, while meeting FAA program requirements for Airframe or Powerplant credentials, it becomes necessary to exceed the maximum allowable diploma hours. The suggested revision would allow colleges the opportunity to award students with diploma credentials that have marketable employment value, yet are also stackable into the associate in science degree program.

Vote Results:

Colleges approved to offer the program:	Ζ
Colleges in favor of the revision:	Z

Coordinator: Frank Scuiletti

PROPOSED CURRICULUM STANDARD



Curriculum Program Title

Aviation Systems Technology

Code

A60200

Concentration

(not applicable)

Curriculum Description

The Aviation Systems Technology provides individuals with the knowledge and skills to qualify for an aircraft mechanic's certificate with airframe and/or powerplant ratings. The curriculum is approved by the Federal Aviation Administration (FAA) under 14 CFR Part 147, which governs aviation maintenance schools.

Course work includes aviation mathematics, FAA regulations, basic electricity, aircraft drawings; aircraft structures, systems, and components; aircraft engines, theory, systems, and components; and engine inspections and maintenance.

Employment opportunities exist as entry-level mechanics with air carriers, manufacturers, repair stations, fixed base operators, flight schools, and government aviation operations.

Curriculum Requirements*

[for associate degree, diploma, and certificate programs in accordance with 1D SBCCC 400.97(3)]

- 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	73	30 43	12
Other Required Hours	0-3	0-4	0-1
Total Semester Hours Credit (SHC)	88-91**	36-48 49-52**	12-18

Major Hours

[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.

Aviation Systems Technology A	60200**		
	AAS	Diploma	Certificate
Minimum Major Hours Required	49 SHC	30 SHC	12 SHC
A. CORE	73 SHC **	NR 43-45 SHC	Not Recommended (NR)
Required Courses:			
AVI 110 Aviation Maintenance – General 15 SHC			
Required Subject Areas:			
Both subject areas are required for the AAS Degree. The diploma requires the			
selection of one of the following subject areas (Airframe or Powerplant).			
Airframe			
AVI 120 Airframe Maintenance I 12 SHC			
AVI 130 Airframe Maintenance II 9 SHC			
AVI 230 Airframe Maintenance III 7 SHC			
<u>Powerplant</u>			
AVI 240 Powerplant Maintenance I 6 SHC			
AVI 250 Powerplant Maintenance II 15 SHC			
AVI 260 Powerplant Maintenance III 9 SHC			
	NT A	NT A	NT A
B. CONCENTRATION (Not applicable)	NA	NA	NA
C. OTHER MAJOR HOURS	0-3 SHC	0	NR
To be selected from the following prefixes:			
AVI, CIS, CSC and WBL			
Up to three semester hour creaits may be selected from the following			
prefixes: ARA, ASL, CHI, FRE, GER, ITA, JPN, LAT, POR, RUS			
and SPA.	A A GHG	0.1	ND
D. OTHER REQUIRED HOURS	0-3 SHC	0-1	NK

** This program is approved by the State Board of Community Colleges to exceed maximum standard hours for an associate in applied science and diploma program. [ref. 1D SBCCC 400.95(d))].

Approved by the State Board of Community Colleges on January 17, 1997; SBCC Revised 11/17/00; SBCC Revised 05/17/02; SBCC Revised 09/21/07; SBCC Revised 09/19/08; SBCC Template Revised 10/17/08; Editorial Revision 12/19/12; SBCC Revised ____.

Haywood Community College Medical Assisting (A45400)

Haywood Community College is seeking approval to revise the Medical Assisting (A45400) curriculum standard, effective Fall 2015.

Proposed Revisions

• Revise the curriculum description to remove the phrase "medical transcription"

Rationale: The Commission on Accreditation of Allied Health Education Programs (CAAHEP) has removed "medical transcription" as a required competency to be taught in the Medical Assisting curriculum. The change is related to the electronic technology utilized in health records.

Vote Results:

Colleges approved to offer the program:	41
Colleges in favor of the recommendations:	33
Colleges that did not respond:	8

Coordinator: Renee Batts

PROPOSED CURRICULUM STANDARD

Effective Term Fall 2011 Fall 2015 [2011*03] [2015*03]

Curriculum Program Title	Medical Assisting	Code	A45400
Concentration	(not applicable)	-	CIP Code:51.0801

Curriculum Description

The Medical Assisting curriculum prepares multi-skilled health care professionals qualified to perform administrative, clinical, and laboratory procedures.

Course work includes instruction in scheduling appointments, coding and processing insurance accounts, billing, collections, medical transcription, computer operations; assisting with examinations/treatments, performing routine laboratory procedures, electrocardiography, supervised medication administration; and ethical/legal issues associated with patient care.

Graduates of CAAHEP-accredited medical assisting programs may be eligible to sit for the American Association of Medical Assistants' Certification Examination to become Certified Medical Assistants. Employment opportunities include physicians' offices, health maintenance organizations, health departments, and hospitals.

Curriculum Requirements*

[for associate degree, diploma, and certificate programs in accordance with 1D SBCCC 400.97 (3)]

- 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

Proposed

Major Hours

[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.

Medical Assisting A45400					
		U	AAS	Diploma	Certificate
Minimum Ma	jor Hours Required		49 SHC	30 SHC	12 SHC
A. CORE			31-34 SHC	12 SHC	
A diploma	offered under this AAS degree requires a minimum of				
12 SHC ex	tracted from the required subject/course core of the A	AS degree.			
Required Cou	rses:				
MED 110	Orientation to Medical Assisting	1 SHC			
MED 130	Administrative Office Procedures I	2 SHC			
MED 131	Administrative Office Procedures II	2 SHC			
MED 140	Exam Room Procedures I	5 SHC			
MED 150	Lab Procedures I	5 SHC			
MED 260	Medical Clinical Practicum	5 SHC			
Required Sub	ject Areas:				
Anatomy & Phy	vsiology. Select one:				
BIO 160	Introductory Life Science	3 SHC			
BIO 161	Introduction to Human Biology	3 SHC			
BIO 163	Basic Anatomy & Physiology	5 SHC			
BIO 166	Anatomy and Physiology II	4 SHC			
BIO 169	Anatomy and Physiology II	4 SHC			
MED 116	Introduction to Anatomy & Physiology	4 SHC			
Medical/Legal I	ssues Select one				
MFD 118	Medical I aw and Ethics	2 SHC			
OST 149	Med Legal Issues	3 SHC			
	0				
Terminology. S	elect one sequence:				
MED 121	Medical Terminology I	3 SHC &			
MED 122	Medical Terminology II	3 SHC			
OST 141	or Medical Terminology I- Medical Office	3 SHC &			
OST 142	Medical Terminology II- Medical Office	3 SHC			
B. CONCE	ENTRATION (Not applicable)	5 5110			
C. OTHER	R MAJOR HOURS				
To be sele	cted from the following prefixes				
ACC, BI	O, BUS, CIS, CSC, CTS, HIT, HSC, MED, NUI	R,			
NUT, OS	T, SPA, and WBL				
TT , .T	, , , , , , , , , , , , , , , , , , , ,	.1			
Up to th	ree semester hour credits may be selected fi	com the			
followin	g prefixes: ARA, ASL, CHI, FRE, GER, ITA	A, JPN, LAT,			
POR, RU	US and SPA.				

Approved by the State Board of Community Colleges on November 13, 1996; Revised 04/02/01; SBCC Revised 11/19/04; SBCC Revised 05/19/06; Revised 07/18/07; SBCC Revised 09/21/07; SBCC Revised11/21/08; SBCC Template Revised 10/17/08; CRC Revised 09/28/10; Editorial Revision 02/18/14; SBCC______.

Lenoir Community College Therapeutic Massage (A45750)

Lenoir Community College is seeking approval to revise the Therapeutic Massage (A45750) curriculum standard, effective Fall 2015.

Proposed Revisions

• Revise the curriculum description to reflect the Massage and Bodywork Licensing Exam (MBLEX) as the sole license examination for the profession.

Rationale: Effective February 1, 2015, the National Certification for Therapeutic Massage and Bodywork will no longer offer the massage licensing exam. The change in the curriculum description will accurately reflect that the Massage and Bodywork Licensing Exam (MBLEX) is the license exam for graduates.

Vote Results:

Colleges approved to offer the program:	16	
Colleges in favor of the recommendations:	8	
College that declined to vote	1	
Colleges that did not respond:	7	

Coordinator: Renee Batts

PROPOSED CURRICULUM STANDARD

Curriculum Program TitleTherapeutic MassageProgram Code[2015*03]Concentration(not applicable)CIP Code:51.3501

Effective Term

Summer 2013 Fall 2015 [2013*021

Curriculum Description

The Therapeutic Massage curriculum prepares graduates to work in direct client care settings to provide manipulation, methodical pressure, friction and kneading of the body for maintaining wellness or treating alterations in wellness throughout the lifespan.

Courses will include content in normal human anatomy and physiology, therapeutic massage, ethical/legal issues, business practices, nutrition and psychology.

Employment opportunities include hospitals/rehabilitation centers, health departments, home health, medical offices, nursing homes, spas/health/sports clubs, and private practice. Graduates may be eligible to take the Massage and Bodywork Licensing Exam. or the National Certification for Therapeutic Massage and Bodywork.

Curriculum Requirements*

[for associate degree, diploma, and certificate programs in accordance with 1D SBCCC 400.97 (3)]

- 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

Proposed

Major Hours

[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.

Therapeutic Massage (A45750)				
_		AAS	Diploma	Certificate
Minimum Major Hours Required		49 SHC	30 SHC	12 SHC
A. CORE		45 SHC	22 SHC	
Courses required for the diploma are designated with	th *			
Required Courses:				
BIO 271 Pathophysiology	3 SHC			
* MTH 110 Fundamentals of Massage	10 SHC			
* MTH 120 Ther Massage Applications	10 SHC			
* MTH 125 Ethics of Massage	2 SHC			
MTH 130 Therapeutic Massage Mgmt	2 SHC			
MTH 210 Adv Skills of Massage	8 SHC			
MTH 220 Outcome-Based Massage	7 SHC			
Paguirad Subject Areas				
Psychology/Human Relations Select one				
BUS 152 Human Relations	3 SHC			
PSY 118 Interpersonal Psychology	3 SHC			
PSY 150 General Psychology	3 SHC			
B. CONCENTRATION (Not applicable)				
C. OTHER MAJOR HOURS				
BIO, BUS, CIS, ENG, HEA, MED, MTH, NUT, PI	ED, PSF, PSY, SOC, and			
WDL				
Up to three semester hour credits may be selected f	rom the following prefixes:			
ARA, ASL, CHI, FRE, GER, ITA, JPN, LAT, POR, I	RUS and SPA.			
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