**NORTH CAROLINA COMMUNITY COLLEGE SYSTEM**
***R. Scott Ralls, Ph.D.***
***President***

March 23, 2015

**MEMORANDUM**

TO: Presidents
Chief Academic Officers

FROM: Wesley E. Beddard, Associate Vice President
Programs

SUBJECT: State Board Action on March 20, 2015
New and Revised Curriculum Standards

On March 20, 2015, the State Board of Community Colleges approved the requested revision to the following curriculum standards:

**Automation Engineering Technology (A40120)**
**Aviation Systems Technology (A60200)**
**Marine Technology (A15320)**
**Medical Assisting (A45400)**
**Therapeutic Massage (A45750)**

Please be aware that you must implement the revised standards no later than one year after the effective term. You must update your college's electronic programs of study and receive approval from the System Office prior to implementation of the revised programs.

An outline of the specific curriculum standard revisions and revised curriculum standards are attached for your convenience. You may view all curriculum standards and courses by visiting the Programs website at:

http://www.nccommunitycolleges.edu/Programs/index.html

If you have any questions concerning the State Board action items, please contact Jennifer Frazelle at 919.807.7120 or frazellej@nccommunitycolleges.edu.

WB/JF/gr
Attachments
c: Dr. Lisa M. Chapman
Ms. Jennifer Frazelle
Ms. Elizabeth Self
Program Coordinators

CC15-011
Email

**Attachment**

**Outline of Curriculum Standard Revisions**
**State Board of Community Colleges – March 20, 2015**

**Automation Engineering Technology (A40120) Revision:**

- Created 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 |

**Aviation Systems Technology (A60200) Revisions:**

- From the core of the Aviation Systems Technology curriculum standard:
  - Removed the Not Recommended (**NR)** from the *Diploma* column and replaced it with **43-45 SHC**.
  - Moved 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 (**):
  - Changed 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.

**Marine Technology (A15320) Revision:**

- Revised the program major curriculum description.

**Medical Assisting (A45400) Revision:**

- Revised the curriculum description to remove the phrase “medical transcription”

**Therapeutic Massage (A45750) Revision:**

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

# 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 2015 (2015*03)

## Program Majors Under Pathway

| Program Major / Classification of Instruction Programs (CIP) Code | | Credential Level(s) Offered | Program Major 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 problem-solving skills. The curriculum includes courses in safety, math, physics, electricity, engineering technology, and technology-specific 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 Manufacturers 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 03/20/15.*

**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.*

## *Engineering and Technology: Applied, Automation and Mechatronics Engineering Technology*

| **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.* | | | | | | |
| **Communications**: | | | | **6 SHC** | **3-6 SHC** | **Optional** |
| *COM | 101 | Workplace Communication | 3 SHC | | | |
| COM | 110 | Introduction to Communication | 3 SHC | | | |
| COM | 120 | Intro Interpersonal Com | 3 SHC | | | |
| COM | 231 | Public Speaking | 3 SHC | | | |
| *ENG | 101 | Applied Communications I | 3 SHC | | | |
| *ENG | 102 | Applied Communications II | 3 SHC | | | |
| ENG | 110 | Freshman Composition | 3 SHC | | | |
| ENG | 111 | Writing and Inquiry | 3 SHC | | | |
| ENG | 114 | Professional Research & Reporting | 3 SHC | | | |
| ENG | 116 | Technical Report Writing | 3 SHC | | | |
| **Humanities/Fine Arts**: | | | | **3 SHC** | **0-3 SHC** | **Optional** |
| *HUM | 101 | Values in the Workplace | 2 SHC | | | |
| HUM | 110 | Technology and Society | 3 SHC | | | |
| HUM | 115 | Critical Thinking | 3 SHC | | | |
| HUM | 230 | Leadership Development | 3 SHC | | | |
| PHI | 230 | Introduction to Logic | 3 SHC | | | |
| PHI | 240 | Introduction to Ethics | 3 SHC | | | |
| **Social/Behavioral Sciences**: | | | | **3 SHC** | **0-3 SHC** | **Optional** |
| ECO | 151 | Survey of Economics | 3 SHC | | | |
| ECO | 251 | Prin of Microeconomics | 3 SHC | | | |
| GEO | 110 | Introduction to Geography | 3 SHC | | | |
| GEO | 111 | World Regional Geography | 3 SHC | | | |
| GEO | 131 | Physical Geography I | 4 SHC | | | |
| *PSY | 101 | Applied Psychology | 3 SHC | | | |
| *PSY | 102 | Human Relations | 2 SHC | | | |
| PSY | 118 | Interpersonal Psychology | 3 SHC | | | |
| PSY | 135 | Group Processes | 3 SHC | | | |
| PSY | 150 | General Psychology | 3 SHC | | | |
| *SOC | 105 | Social Relationships | 3 SHC | | | |
| SOC | 210 | Introduction to Sociology | 3 SHC | | | |
| SOC | 215 | Group Process | 3 SHC | | | |
| **Natural Sciences/Mathematics**: | | | | **3 SHC** | **0-3 SHC** | **Optional** |
| MAT | 120 | Geometry and Trigonometry | 3 SHC | | | |
| MAT | 121 | Algebra/Trigonometry I | 3 SHC | | | |
| MAT | 161 | College Algebra | 3 SHC | | | |
| MAT | 171 | Precalculus Algebra | 3 SHC | | | |
| MAT | 175 | Precalculus | 4 SHC | | | |
| MAT | 223 | Applied Calculus | 3 SHC | | | |
| 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 03/20/15.*

**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, Automation, Mechatronics Engineering Technology*** | | | **AAS** | **Diploma** | **Certificate** |
|---|---|---|---|---|---|
| **Minimum Major Hours Required:** | | | **49 SHC** | **30 SHC** | **12 SHC** |
| *Courses required for a diploma are designated with ** | | | **16-44 SHC** | **16-24 SHC** | |
| A. **Technical Core:** | | | | | |
| ***Computer Applications** | | | | | |
| *Choose one*: | | | | | |
| 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 one*: | | | | | |
| ISC 112 | Industrial Safety | 2 SHC | | | |
| ISC 115 | Construction Safety | 2 SHC | | | |
| **B. Program Major(s):** | | | | | |
| *For AAS Degree select one program major.* | | | | | |
| **Applied Engineering Technology** | | | | | |
| ***Computers** | | | | | |
| *Choose one:* | | | | | |
| DFT 119 | Basic CAD | 2 SHC | | | |
| ELC 127 | Software for Technicians | 2 SHC | | | |
| ***Electricity** | | | | | |
| *Choose one:* | | | | | |
| ELC 131 | Circuit Analysis I | 4 SHC | | | |
| ELC 138 | DC Circuit Analysis | 4 SHC | | | |
| ELC 139 | AC Circuit Analysis | 4 SHC | | | |
| ***Engineering** | | | | | |
| *Choose one:* | | | | | |
| 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 and Controls** | | | | | |
| *Choose one:* | | | | | |
| 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 | | | |
| ELN 131 | Analog Electronics I | 4 SHC | | | |
| ISC 129 | Qual Testing Lab Tech | 3 SHC | | | |
| MEC 110 | Intro to CAD/CAM | 2 SHC | | | |
| PCI 150 | Process Control Systems | 4 SHC | | | |

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| | | | | | |
|---|---|---|---|---|---|
| **Automation Engineering Technology** | | | | | |
| *ATR 112 | Intro to Automation | 3 SHC | | | |
| *ATR 215 | Sensors and Transducers | 3 SHC | | | |
| *ELC 128 | Intro to PLC | 3 SHC | | | |
| ELN 133 | Digital Electronics | 4 SHC | | | |
| PCI 171 | Fieldbus Systems | 4 SHC | | | |
| ***Basic Electricity** | | | | | |
| *Choose one set:* | | | | | |
| ELC 131 | Circuit Analysis I | 4 SHC | | | |
| ELC 133 | Circuit Analysis II | 4 SHC | | | |
| *OR* | | | | | |
| ELC 138 | DC Circuit Analysis | 4 SHC | | | |
| ELC 139 | AC Circuit Analysis | 4 SHC | | | |
| **Specialty** | | | | | |
| *Choose one:* | | | | | |
| ATR 121 | Intro to Machine Vision | 4 SHC | | | |
| BAT 111 | Building Automation Systems | 2 SHC | | | |
| HYD 110 | Hydraulics/Pneumatics I | 3 SHC | | | |
| MEC 130 | Mechanisms | 3 SHC | | | |
| MNT 250 | PLC Interfacing | 4 SHC | | | |
| **Mechatronics Engineering Technology** | | | | | |
| *ATR 112 | Intro to Automation | 3 SHC | | | |
| *ELC 213 | Instrumentation | 4 SHC | | | |
| ***Basic Electricity** | | | | | |
| *Choose one course or set:* | | | | | |
| ELC 111 | Intro to Electricity | 3 SHC | | | |
| *OR* | | | | | |
| 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 | | | |
| **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 SHC | | | |
| ELC 132 | Electrical Drawings | 2 SHC | | | |
| **Fluid Mechanics** | | | | | |
| *Choose one:* | | | | | |
| HYD 110 | Hydraulics/Pneumatics I | 3 SHC | | | |
| HYD 180 | Pneumatics in Automation | 3 SHC | | | |
| MEC 265 | Fluid Mechanics | 3 SHC | | | |
| **Mechanical Drives** | | | | | |
| *Choose one:* | | | | | |
| MEC 130 | Mechanisms | 3 SHC | | | |
| MEC 275 | Engineering Mechanisms | 3 SHC | | | |
| **Machines** | | | | | |
| *Choose one course or set:* | | | | | |
| ELC 117 | Motors and Controls | 4 SHC | | | |
| ELC 130 | Advanced Motors/Controls | 3 SHC | | | |
| ELC 135 | Electrical Machines I | 3 SHC | | | |
| *AND* | | | | | |
| ELC 136 | Electrical Machines II | 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 03/20/15.*

| | | | | | |
|---|---|---|---|---|---|
| **Programmable 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, HPC, HYD, ISC, LOG, MAC, MAT, MCM, MCO, MEC, MKT, MLG, MNT, MPS, 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: http://www.nc-net.info/employability.php*

**The *North Carolina Career Clusters Guide was developed by the North Carolina Department of Public Instruction and the North Carolina Community College system to link the academic and Career and Technical Education programs at the secondary and postsecondary levels to increase student achievement. Additional information about Career Clusters is located at: http://www.nc-net.info/NC_career_clusters_guide.php or http://www.careertech.org.*

*Summary of Required Semester Hour Credits (SHC) for each credential:*

*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 03/20/15.*

| | 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** |

*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 03/20/15.*

# CURRICULUM STANDARD

*Effective Term*
*Summer 2015*
*2015*02*

| | | | |
|---|---|---|---|
| Curriculum Program Title | **Aviation Systems Technology** | Program Code | **A60200** |
| Concentration | **(not applicable)** | CIP Code: | 47.0607 |

## *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 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 | 73 | 43 | 12 |
| Other Required Hours | 0-3 | 0-1 | 0-1 |
| **Total Semester Hours Credit (SHC)** | **88-91**** | **49-52**** | **12-18** |

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

# *Major Hours*

*[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 A60200**

| | AAS | Diploma | Certificate |
|---|---|---|---|
| **Minimum Major Hours Required** | **49 SHC** | **30 SHC** | **12 SHC** |
| **A. CORE**<br><br>**Required Courses:**<br>AVI 110 Aviation Maintenance – General 15 SHC<br><br>**Required Subject Areas:**<br><br>Both subject areas are required for the AAS Degree. The diploma requires the selection of one of the following subject areas (Airframe or Powerplant).<br><br>**Airframe**<br>AVI 120 Airframe Maintenance I 12 SHC<br>AVI 130 Airframe Maintenance II 9 SHC<br>AVI 230 Airframe Maintenance III 7 SHC<br><br>**Powerplant**<br>AVI 240 Powerplant Maintenance I 6 SHC<br>AVI 250 Powerplant Maintenance II 15 SHC<br>AVI 260 Powerplant Maintenance III 9 SHC | **73 SHC **** | **43-45 SHC** | **Not Recommended (NR)** |
| **B. CONCENTRATION** *(Not applicable)* | **NA** | **NA** | **NA** |
| **C. OTHER MAJOR HOURS**<br>*To be selected from the following prefixes:*<br><br>AVI, CIS, CSC and WBL<br><br>*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.* | **0-3 SHC** | **0** | **NR** |
| **D. OTHER REQUIRED HOURS** | **0-3 SHC** | **0-1** | **NR** |

*** 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 03/20/15.*

| 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 2015 (2015*03) |

## Program Majors Under Pathway

| Program Major / Classification of Instruction Programs (CIP) Code | | Credential Level(s) Offered | Program 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* ***4th 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 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.

**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.*

**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; Editorial Revision 07/01/14; Editorial Revision 02/24/15; SBCC Revised 03/20/15.*

# Natural Resource Systems: Marine 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.*<br>**Communication:** | | | | | |
| *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 | 3 SHC | | | |
| *ENG | 102 | Applied Communications II | 3 SHC | | | |
| ENG | 110 | Freshman Composition | 3 SHC | | | |
| ENG | 111 | Expository Writing | 3 SHC | | | |
| ENG | 112 | Argument-Based Research | 3 SHC | | | |
| ENG | 114 | Prof Research & Reporting | 3 SHC | | | |
| ENG | 115 | Oral Communication | 3 SHC | | | |
| ENG | 116 | Technical Report Writing | 3 SHC | | | |
| **Humanities/Fine Arts:** | | | | | |
| *HUM | 101 | Values in the Workplace | 2 SHC | **3 SHC** | **0-3 SHC** | **Optional** |
| HUM | 110 | Technology and Society | 3 SHC | | | |
| HUM | 115 | Critical Thinking | 3 SHC | | | |
| HUM | 230 | Leadership Development | 3 SHC | | | |
| PHI | 230 | Introduction to Logic | 3 SHC | | | |
| PHI | 240 | Introduction to Ethics | 3 SHC | | | |
| **Social /Behavioral Sciences:** | | | | | |
| ECO | 151 | Survey of Economics | 3 SHC | | | |
| ECO | 251 | Prin of Microeconomics | 3 SHC | | | |
| GEO | 110 | Introduction to Geography | 3 SHC | **3 SHC** | **0-3 SHC** | **Optional** |
| GEO | 111 | World Regional Geography | 3 SHC | | | |
| *PSY | 101 | Applied Psychology | 3 SHC | | | |
| *PSY | 102 | Human Relations | 2 SHC | | | |
| PSY | 118 | Interpersonal Psychology | 3 SHC | | | |
| PSY | 135 | Group Processes | 3 SHC | | | |
| PSY | 150 | General Psychology | 3 SHC | | | |
| *SOC | 105 | Social Relationships | 3 SHC | | | |
| SOC | 210 | Introduction to Sociology | 3 SHC | | | |
| SOC | 215 | Group Processes | 3 SHC | | | |
| **Natural Sciences/Mathematics:** | | | | | |
| BIO | 140 | Environmental Biology | 3 SHC | **3 SHC** | **0-3 SHC** | **Optional** |
| BIO | 160 | Introductory Life Science | 3 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 | | | |

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

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**II. Major Hours**. AAS, diploma, and certificate programs must include courses which offer specific job knowledge and skills. Work-based learning may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit. Below is a description of each section under Major Hours.

**A. Technical Core.** The technical core is comprised of specific courses which are required for all Program Majors under this Curriculum Standard. A diploma program offered under an approved AAS program standard or a certificate which is the highest credential level awarded under an approved AAS program standard must include a minimum of 12 semester hours credit derived from the curriculum core courses or core subject area of the AAS program.

**B. Program Major(s).** The Program Major must include a minimum of 12 semester hours credit from required subjects and/or courses. The Program Major is in addition to the technical core.

**C. Other Major Hours.** Other major hours must be selected from prefixes listed on the curriculum standard. A maximum of 9 semester hours of credit may be selected from each prefix listed, with the exception of prefixes listed in the core.

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

*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; Editorial Revision 07/01/14; Editorial Revision 02/24/15; SBCC Revised 03/20/15.*

**C. Other Major Hours.**

**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: 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** |

*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; Editorial Revision 07/01/14; Editorial Revision 02/24/15; SBCC Revised 03/20/15.*

# CURRICULUM STANDARD

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

| | | | |
|---|---|---|---|
| Curriculum Program Title | **Medical Assisting** | Program 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, 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 of general education; 3 semester hours must be in communications. General education is optional in certificate programs.

**II.** **Major Hours**. AAS, diploma, and certificate programs must include courses which offer specific job knowledge and skills. Work-based learning may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit. *(See second page for additional information.)*

**III.** **Other Required Hours.** A college may include courses to meet graduation or local employer requirements in a certificate, diploma, or associate in applied science program. These curriculum courses shall be selected from the Combined Course Library and must be approved by the System Office prior to implementation. Restricted, unique, or free elective courses may not be included as other required hours.

| | **AAS** | **Diploma** | **Certificate** |
|---|---|---|---|
| Minimum General Education Hours | 15 | 6 | 0 |
| Minimum Major Hours | 49 | 30 | 12 |
| Other Required Hours | 0-7 | 0-4 | 0-1 |
| **Total Semester Hours Credit (SHC)** | **64-76** | **36-48** | **12-18** |

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

# *Major Hours*

*[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

| | AAS | Diploma | Certificate |
|---|---|---|---|
| **Minimum Major Hours Required** | **49 SHC** | **30 SHC** | **12 SHC** |
| **A. CORE**<br>*A diploma offered under this AAS degree requires a minimum of 12 SHC extracted from the required subject/course core of the AAS degree.* | **31-34 SHC** | **12 SHC** | |
| **Required Courses:** | | | |
| MED 110 Orientation to Medical Assisting 1 SHC<br>MED 130 Administrative Office Procedures I 2 SHC<br>MED 131 Administrative Office Procedures II 2 SHC<br>MED 140 Exam Room Procedures I 5 SHC<br>MED 150 Lab Procedures I 5 SHC<br>MED 260 Medical Clinical Practicum 5 SHC | | | |
| **Required Subject Areas:** | | | |
| **Anatomy & Physiology.** Select one:<br>BIO 160 Introductory Life Science 3 SHC<br>BIO 161 Introduction to Human Biology 3 SHC<br>BIO 163 Basic Anatomy & Physiology 5 SHC<br>BIO 166 Anatomy and Physiology II 4 SHC<br>BIO 169 Anatomy and Physiology II 4 SHC<br>MED 116 Introduction to Anatomy & Physiology 4 SHC | | | |
| **Medical/Legal Issues**. Select one:<br>MED 118 Medical Law and Ethics 2 SHC<br>OST 149 Med Legal Issues 3 SHC | | | |
| **Terminology.** Select one sequence:<br>MED 121 Medical Terminology I 3 SHC &<br>MED 122 Medical Terminology II 3 SHC<br>*or*<br>OST 141 Medical Terminology I- Medical Office 3 SHC &<br>OST 142 Medical Terminology II- Medical Office 3 SHC | | | |
| **B. CONCENTRATION** *(Not applicable)* | | | |
| **C. OTHER MAJOR HOURS**<br>*To be selected from the following prefixes*<br>ACC, BIO, BUS, CIS, CSC, CTS, HIT, HSC, MED, NUR, NUT, OST, SPA, and WBL<br><br>*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 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; Editorial Revision 02/25/15; SBCC Revised 03/20/15.*

# CURRICULUM STANDARD

| *Effective Term* |
|---|
| *Fall 2015* |
| *[2015*03]* |

| | | | |
|---|---|---|---|
| Curriculum Program Title | **Therapeutic Massage** | Program Code | **A45750** |
| Concentration | **(not applicable)** | CIP Code: | **51.3501** |

## *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.

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

**II. Major Hours**. AAS, diploma, and certificate programs must include courses which offer specific job knowledge and skills. Work-based learning may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit. *(See second page for additional information.)*

**III. Other Required Hours.** A college may include courses to meet graduation or local employer requirements in a certificate, diploma, or associate in applied science program. These curriculum courses shall be selected from the Combined Course Library and must be approved by the System Office prior to implementation. Restricted, unique, or free elective courses may not be included as other required hours.

| | AAS | Diploma | Certificate |
|---|---|---|---|
| Minimum General Education Hours | 15 | 6 | 0 |
| Minimum Major Hours | 49 | 30 | 12 |
| Other Required Hours | 0-7 | 0-4 | 0-1 |
| **Total Semester Hours Credit (SHC)** | **64-76** | **36-48** | **12-18** |

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

# *Major Hours*

*[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**<br>*Courses required for the diploma are designated with ** | | **45 SHC** | **22 SHC** | |
| **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 | | | |
| **Required 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**<br>BIO, BUS, CIS, ENG, HEA, MED, MTH, NUT, PED, PSF, PSY, SOC, and WBL<br>*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 February19, 1999; Revised 04/21/99, Corrected 06/06/00; Corrected 03/11/02; SBCC Revised 05/17/02; SBCC/CRC Revised 03/09/05, SBCC Revised 10/20/06; CRC Revised – Electronic Only 09/12/07; SBCC Revised 09/21/07; SBCC Template Revised 10/17/08; SBCC Revised 10/15/10; SBCC Revised 02/15/13; Editorial Revision 09/22/14; SBCC 03/20/15.*