

**Curriculum Standard for Engineering and Technology:  
Drafting Technology**

**Career Cluster:** Science, Technology, Engineering and 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)

**Program Majors Under Pathway**

Program Major / Classification of Instruction Programs (CIP) Code	Credential Level(s) Offered	Program Major Code
Computer-Aided Drafting Technology CIP Code 15.1302	AAS/Diploma/Certificate	A50150
Mechanical Drafting Technology CIP Code 15.1306	AAS/Diploma/Certificate	A50340

**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, engineering technicians, CAD systems managers, industrial and technology managers, research technicians and graphic technicians.

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

**Mechanical Drafting Technology:** A course of study that prepares the students to apply technical skills and advanced computer software and hardware to create working drawings, graphic representations and computer simulations for mechanical and industrial designs. Includes instruction in engineering graphics, specification interpretation, geometric dimensioning and tolerancing, drafting calculations, two dimensional and three dimensional engineering design, solids modeling, engineering animation, computer-aided drafting (CAD), computer-aided design (CADD) and manufacturing materials and processes. Graduates should qualify for employment in mechanical areas such as manufacturing, fabrication, research and development, and service industries.

**Computer-Aided Drafting Technology:** A course of study that prepares the students to apply technical skills and advanced computer software and hardware to develop plans and related documentation, and manage the hardware and software of a CAD system. Includes instruction in architectural drafting, computer-assisted drafting and design (CADD), creating and managing two and three-dimensional models, linking CAD documents to other software applications, and operating systems. Graduates should qualify for CAD jobs in architectural and engineering consulting firms and industrial design businesses.

\*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; Editorial Revision 03/21/14; Editorial Revision 04/22/14; Prefix Addition 08/01/15; SBCC Revised 03/17/17; CCRC Revised--Electronic Only (RISE Initiative) 10/24/19.

## I. General Education Academic Core

[Curriculum Requirements for associate degree, diploma, and certificate programs in accordance with 1D SBCCC 400.10]: Degree programs must contain a minimum of 15 semester hours including at least one course from each of the following areas: humanities/fine arts, social/behavioral sciences, and natural sciences/mathematics. Degree programs must contain a minimum of 6 semester hours of communications. Diploma programs must contain a minimum of 6 semester hours of general education; 3 semester hours must be in communications. General education is optional in certificate programs.

### Engineering and Technology: Drafting Technology

General Education Academic Core	AAS	Diploma	Certificate
<b>Minimum General Education Hours Required:</b>	<b>15 SHC</b>	<b>6 SHC</b>	<b>0 SHC</b>
<i>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.</i>			
<i>*Recommended certificate and diploma level curriculum courses. These courses may <u>not</u> be included in associate degree programs.</i>			
<b>Communications:</b> * 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 Expository Writing 3 SHC ENG 114 Professional Research & Reporting 3 SHC ENG 116 Technical Report Writing 3 SHC	<b>6 SHC</b>	<b>3-6 SHC</b>	<b>Optional</b>
<b>Humanities/Fine Arts:</b> * 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	<b>3 SHC</b>	<b>0-3 SHC</b>	<b>Optional</b>
<b>Social/Behavioral Sciences:</b> 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	<b>3 SHC</b>	<b>0-3 SHC</b>	<b>Optional</b>
<b>Natural Sciences/Mathematics:</b> MAT 110 Math Measurement & Literacy 3 SHC MAT 121 Algebra/Trigonometry 3 SHC MAT 143 Quantitative Literacy 3 SHC MAT 152 Statistical Methods I 4 SHC MAT 171 Precalculus Algebra 4 SHC MAT 223 Applied Calculus 3 SHC MAT 271 Calculus I 4 SHC PHY 110 Conceptual Physics 3 SHC PHY 121 Applied Physics I 4 SHC	<b>3 SHC</b>	<b>0-3 SHC</b>	<b>Optional</b>



### 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](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:*

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

