



**NORTH CAROLINA COMMUNITY COLLEGE SYSTEM**

*Dr. R. Scott Ralls, President*

May 23, 2013

**MEMORANDUM**

TO: Presidents  
Chief Academic Officers

FROM: Wesley Beddard, Associate Vice President  
Student Learning and Success

SUBJECT: State Board Action on May 17, 2013  
Curriculum Standard Revisions

On May 17, 2013, the State Board of Community Colleges approved the requested revision to the following curriculum standard:

Nondestructive Examination Technology (A50350)

Please be aware that you must implement the revised standard 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 program.

If you have any questions concerning the State Board action item, please contact Ms. Jennifer Frazelle at 919.807.7120 or [frazellej@nccommunitycolleges.edu](mailto:frazellej@nccommunitycolleges.edu). An outline of the specific revisions and revised standard is 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>

WB/JF/gr

Attachments

c: Dr. Sharon E. Morrissey  
Ms. Elizabeth Self  
Ms. Jennifer Frazelle  
Program Coordinators

CC13-008  
Email

**Outline of Curriculum Standard Revisions**

**State Board of Community Colleges – May 17, 2013**

**Nondestructive Examination Technology (A50350)**

- Eliminate the following courses from the core:
  - NDE 141      Surface Testing (VT/PT)
  - NDE 151      Electromag Test (MT/ET)
  
- Add the following courses to the core:
  - NDE 142      Visual Testing-1,2
  - NDE 143      Liquid Penetrant Testing-1,2
  - NDE 152      Magnetic Particle Testing-1,2
  - NDE 153      Eddy Current Testing-1

**Curriculum Standard for Quality Assurance:  
Nondestructive Examination Technology**

**Career Cluster:** Manufacturing\*\*

**Cluster Description:** Planning, managing, and performing the processing of materials into intermediate or final products and related professional and technical support activities such as production planning and control, maintenance and manufacturing/process engineering.

**Pathway:** Quality Assurance

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

**Program Majors Under Pathway**

<b>Program Major / Classification of Instruction Programs (CIP) Code</b>	<b>Credential Level(s) Offered</b>	<b>Program Major Code</b>
Nondestructive Examination Technology	CIP Code: 41.0204	AAS/Diploma/Certificate
		A50350

**Pathway Description:** This curriculum is designed to prepare students to use scientific principles and technical skills to the operation of industrial and research testing equipment.

The 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, construction technicians and managers, industrial and technology managers, or research 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:*

**Nondestructive Examination Technology:** This course of study prepares the students to apply technical skills in nondestructive testing of materials and component parts for flaws or defects jeopardizing structural integrity. Course work includes ultrasonics, radiography, liquid penetrant, magnetic particle eddy current and visual testing methods. Applied math and physics are an integral part of NDE and the curriculum. The NDE curriculum meets the initial training requirements of ASNT's SNT-TC-1A, permitting graduates to obtain NDE certification after a few months of on-the-job experience. Career opportunities exist in applied NDE, material sciences, technical sales, and quality control in many industries.

\*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.

## I. General Education Academic Core

[Curriculum Requirements for associate degree, diploma, and certificate programs in accordance with 23 SBCC 02E.0204(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.

### Quality Assurance: Nondestructive Examination Technology

Recommended General Education Academic Core	AAS	Diploma	Certificate																																																																																																																								
Minimum General Education Hours Required:	15 SHC	6 SHC	0 SHC																																																																																																																								
<p>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.</p> <p><i>*Recommended certificate and diploma level curriculum courses. These courses may not be included in associate degree programs.</i></p> <p><b>Communication:</b></p> <table> <tr> <td>*COM 101</td> <td>Workplace Communication</td> <td>3 SHC</td> <td rowspan="9"><b>6 SHC</b></td> <td rowspan="9"><b>3-6 SHC</b></td> <td rowspan="9"><b>Optional</b></td> </tr> <tr> <td>COM 120</td> <td>Intro Interpersonal Com</td> <td>3 SHC</td> </tr> <tr> <td>COM 231</td> <td>Public Speaking</td> <td>3 SHC</td> </tr> <tr> <td>*ENG 101</td> <td>Applied Communications I</td> <td>3 SHC</td> </tr> <tr> <td>*ENG 102</td> <td>Applied Communications II</td> <td>3 SHC</td> </tr> <tr> <td>ENG 110</td> <td>Freshman Composition</td> <td>3 SHC</td> </tr> <tr> <td>ENG 111</td> <td>Expository Writing</td> <td>3 SHC</td> </tr> <tr> <td>ENG 112</td> <td>Argument-Based Research</td> <td>3 SHC</td> </tr> <tr> <td>ENG 114</td> <td>Prof Research &amp; Reporting</td> <td>3 SHC</td> </tr> <tr> <td>ENG 116</td> <td>Technical Report Writing</td> <td>3 SHC</td> </tr> </table> <p><b>Humanities/Fine Arts:</b></p> <table> <tr> <td>*HUM 101</td> <td>Values in the Workplace</td> <td>2 SHC</td> <td rowspan="6"><b>3 SHC</b></td> <td rowspan="6"><b>0-3 SHC</b></td> <td rowspan="6"><b>Optional</b></td> </tr> <tr> <td>HUM 110</td> <td>Technology and Society</td> <td>3 SHC</td> </tr> <tr> <td>HUM 115</td> <td>Critical Thinking</td> <td>3 SHC</td> </tr> <tr> <td>HUM 230</td> <td>Leadership Development</td> <td>3 SHC</td> </tr> <tr> <td>PHI 230</td> <td>Introduction to Logic</td> <td>3 SHC</td> </tr> <tr> <td>PHI 240</td> <td>Introduction to Ethics</td> <td>3 SHC</td> </tr> </table> <p><b>Social /Behavioral Sciences:</b></p> <table> <tr> <td>ECO 151</td> <td>Survey of Economics</td> <td>3 SHC</td> <td rowspan="15"><b>3 SHC</b></td> <td rowspan="15"><b>0-3 SHC</b></td> <td rowspan="15"><b>Optional</b></td> </tr> <tr> <td>ECO 251</td> <td>Prin of Microeconomics</td> <td>3 SHC</td> </tr> <tr> <td>GEO 110</td> <td>Introduction to Geography</td> <td>3 SHC</td> </tr> <tr> <td>GEO 111</td> <td>World Regional Geography</td> <td>3 SHC</td> </tr> <tr> <td>GEO 131</td> <td>Physical Geography I</td> <td>4 SHC</td> </tr> <tr> <td>*PSY 101</td> <td>Applied Psychology</td> <td>3 SHC</td> </tr> <tr> <td>*PSY 102</td> <td>Human Relations</td> <td>2 SHC</td> </tr> <tr> <td>PSY 118</td> <td>Interpersonal Psychology</td> <td>3 SHC</td> </tr> <tr> <td>PSY 135</td> <td>Group Processes</td> <td>3 SHC</td> </tr> <tr> <td>PSY 150</td> <td>General Psychology</td> <td>3 SHC</td> </tr> <tr> <td>*SOC 105</td> <td>Social Relationships</td> <td>3 SHC</td> </tr> <tr> <td>SOC 210</td> <td>Introduction to Sociology</td> <td>3 SHC</td> </tr> <tr> <td>SOC 215</td> <td>Group Processes</td> <td>3 SHC</td> </tr> </table> <p><b>Natural Sciences/Mathematics:</b></p> <table> <tr> <td>MAT 120</td> <td>Geometry and Trigonometry</td> <td>3 SHC</td> <td rowspan="7"><b>3 SHC</b></td> <td rowspan="7"><b>0-3 SHC</b></td> <td rowspan="7"><b>Optional</b></td> </tr> <tr> <td>MAT 121</td> <td>Algebra and Trigonometry I</td> <td>3 SHC</td> </tr> <tr> <td>MAT 161</td> <td>College Algebra</td> <td>3 SHC</td> </tr> <tr> <td>MAT 171</td> <td>Precalculus Algebra</td> <td>3 SHC</td> </tr> <tr> <td>MAT 175</td> <td>Precalculus</td> <td>4 SHC</td> </tr> <tr> <td>MAT 223</td> <td>Applied Calculus</td> <td>3 SHC</td> </tr> <tr> <td>MAT 271</td> <td>Calculus I</td> <td>4 SHC</td> </tr> </table>	*COM 101	Workplace Communication	3 SHC	<b>6 SHC</b>	<b>3-6 SHC</b>	<b>Optional</b>	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 116	Technical Report Writing	3 SHC	*HUM 101	Values in the Workplace	2 SHC	<b>3 SHC</b>	<b>0-3 SHC</b>	<b>Optional</b>	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	ECO 151	Survey of Economics	3 SHC	<b>3 SHC</b>	<b>0-3 SHC</b>	<b>Optional</b>	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 Processes	3 SHC	MAT 120	Geometry and Trigonometry	3 SHC	<b>3 SHC</b>	<b>0-3 SHC</b>	<b>Optional</b>	MAT 121	Algebra and 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			
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**II. Major Hours.** AAS, diploma, and certificate programs must include courses which offer specific job knowledge and skills. Work experience, including cooperative education, practicums, and internships, 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.

<i>Quality Assurance: Nondestructive Examination Technology</i>	AAS	Diploma	Certificate
<b>Minimum Major Hours Required:</b>	<b>49 SHC</b>	<b>30 SHC</b>	<b>12 SHC</b>
<b>A. Technical Core:</b> <i>Courses required for the diploma are designated with an asterisk (*).</i>	<b>27 SHC</b>	<b>14 SHC</b>	
*NDE 110 Intro to Nondestr Exam 3 SHC			
*NDE 112 Materials and Processes 3 SHC			
*NDE 121 Prin of Ultrason Exam UT 4 SHC			
*NDE 122 Angle Beam Examination 4 SHC			
NDE 131 Rad Safety & Prin of RT 4 SHC			
NDE 142 Visual Testing-1,2 2 SHC			
NDE 143 Liquid Penetrant Testing-1,2 2 SHC			
NDE 152 Magnetic Particle Testing-1,2 2 SHC			
NDE 153 Eddy Current Testing-1 3 SHC			
<b>B. Program Major: Not Applicable</b>			
<b>C. Other Major Hours.</b> <i>To be selected from the following prefixes:</i>			
CIS, COE, CSC, DFT, EGR, ELC, ISC,MAC, MAT, MEC, NDE, PHY, SST, and WLD			
<i>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.</i>			

### III. Other Required Hours

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

### IV. Employability Competencies

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

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

*\*\*The North Carolina Career Clusters Guide was developed by the North Carolina Department of Public Instruction and the North Carolina Community College system to link the academic and Career and Technical Education programs at the secondary and postsecondary levels to increase student achievement. Additional information about Career Clusters is located at: [http://www.nc-net.info/NC\\_career\\_clusters\\_guide.php](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>