

# CURRICULUM STANDARD

Effective Term  
Fall 2005  
[2005\*03]

Curriculum Program Title

**Materials Science Technology**

Code

**A40340**

Concentration

**(not applicable)**

## ***Curriculum Description***

The Materials Science Technology program addresses basic metallurgical concepts and their applications in industry.

The program includes instruction in principles of metallurgy, related manufacturing systems, laboratory techniques, testing and inspection procedures, instrument calibration, system and equipment maintenance, and applications to specific processes. Course work also includes nondestructive testing, physical metallurgy, metallography, metal casting, and failure analysis of a variety of materials.

Graduates of this program should be able to apply advanced sciences such as chemistry, mathematics, physics and engineering principles to materials systems. Materials Science technicians may be employed in metallurgical quality control, metallurgical process operations, materials research, and nondestructive testing.

## ***Curriculum Requirements\****

*[for associate degree, diploma, and certificate programs in accordance with 23 NCAC 02E.0204 (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 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. *(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.

	<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>

*\*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. 23 NCAC 02E.0204 (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 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.

### Materials Science Technology A40340

	AAS	Diploma	Certificate														
<b>Minimum Major Hours Required</b>	<b>49 SHC</b>	<b>30 SHC</b>	<b>12 SHC</b>														
<b>A. CORE</b> <i>Courses required for the diploma are designated with *</i>  <b>Required Courses:</b> <table style="width: 100%; border: none;"> <tr> <td style="width: 80%;">* MEC 172 Introduction to Metallurgy</td> <td style="width: 20%; text-align: right;">3 SHC</td> </tr> <tr> <td>* MLG 111 Testing of Metals</td> <td style="text-align: right;">2 SHC</td> </tr> <tr> <td>* MLG 112 Principles of Metallography</td> <td style="text-align: right;">1 SHC</td> </tr> <tr> <td>* MLG 114 Principles of Heat Treat</td> <td style="text-align: right;">2 SHC</td> </tr> <tr> <td>* MLG 115 Principles of Failure Analysis</td> <td style="text-align: right;">1 SHC</td> </tr> <tr> <td>* MLG 116 Fundamentals of Nondestructive Testing</td> <td style="text-align: right;">2 SHC</td> </tr> <tr> <td>* MLG 118 Corrosion</td> <td style="text-align: right;">2 SHC</td> </tr> </table> <b>Required Subject Areas:</b>	* MEC 172 Introduction to Metallurgy	3 SHC	* MLG 111 Testing of Metals	2 SHC	* MLG 112 Principles of Metallography	1 SHC	* MLG 114 Principles of Heat Treat	2 SHC	* MLG 115 Principles of Failure Analysis	1 SHC	* MLG 116 Fundamentals of Nondestructive Testing	2 SHC	* MLG 118 Corrosion	2 SHC	<b>13 SHC</b>	<b>13 SHC</b>	
* MEC 172 Introduction to Metallurgy	3 SHC																
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<b>B. CONCENTRATION</b> (Not applicable)																	
<b>C. OTHER MAJOR HOURS</b> <i>To be selected from the following prefixes:</i>  ATR, BPR, CIS, COE, CSC, DDF, DFT, EGR, ELC, ELN, HYD, ISC, LEO, MAC, MAT, MEC, MLG, PCI, PHY, PLA, TEX, and WLD  <i>Foreign language courses (including ASL) that are not designated as approved other major hours may be included in all programs up to a maximum of 3 semester hours of credit.</i>																	