

# CURRICULUM STANDARD

Effective Term  
Fall 2015  
[2015\*03]

Curriculum Program Title	<b>Nanotechnology</b>	Program Code	<b>A20190</b>
Concentration	<b>(not applicable)</b>	CIP Code	<b>15.1601</b>

## Curriculum Description

The Nanotechnology curriculum prepares students to characterize and fabricate materials for biological, textile, chemical, and electrical applications at the atomic level.

Course work includes biology, chemistry, physics, mathematics, and an extensive array of very detailed nanotechnology-specific courses, using high-tech equipment and complying with high-precision quality control and clean-room protocols with a multidisciplinary focus.

Graduates should qualify for various positions in industry and government, including research and development, materials testing and processing, optics and sensors, electron microscopy, and emerging nanotechnology industries.

## 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.

	<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. 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.

### Nanotechnology A20190

	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>	<b>41-42 SHC</b>	<b>12 SHC</b>	
<b>Required Courses:</b> NAN 111 Introduction to Nanotechnology 3 SHC NAN 112 Fundamentals of Nanoscience 3 SHC NAN 131 Nano Safety Practices 2 SHC NAN 132 Nano Regulations & Ethics 2 SHC NAN 241 Nanofabrication 4 SHC NAN 242 Nanofabrication of Thin Films 4 SHC NAN 243 Nanocharacterization 4 SHC NAN 244 Electron Microscopy 4 SHC  <b>Required Subject Areas:</b> <b>Biology: Select one course.</b> BIO 110 Principles of Biology 4 SHC BIO 111 General Biology I 4 SHC  <b>Chemistry: Select one set.</b> CHM 131 Introduction to Chemistry & 3 SHC CHM 131A Introduction to Chemistry Lab 1 SHC <i>or</i> CHM 151 General Chemistry I 4 SHC  <b>Mathematics: Select one course.</b> MAT 122 Algebra/Trigonometry II 3 SHC MAT 172 Precalculus Trigonometry 4 SHC  <b>Physics: Select one course.</b> PHY 131 Physics – Mechanics 4 SHC PHY 151 College Physics I 4 SHC			
<b>B. CONCENTRATION</b> (Not applicable)			

<p><b>C. OTHER MAJOR HOURS</b>  <i>To be selected from the following prefixes:</i></p> <p>ATR, BIO, BPM, BTC, CET, CHM, CIS, CPT, CSC, CTC, CTR, CYT, EGR, ELC, ELN, ENV, HPC, ICT, ISC, LEO, MAC, MAT, MEC, MLG, NAN, NET, PHY, PLA, PTC, SGR, SUR, WAT, and WBL</p> <p><i>Up to two semester hour credits may be selected from ACA.</i></p> <p><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></p>			
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