CURRICULUM STANDARD

Effective Term
Fall 2015
*[2015*03]*

Curriculum Program Title	**Nanotechnology**	Program Code	**A20190**
Concentration	**(not applicable)**	CIP Code	***15.1601***

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 400.10]

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

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
Minimum Major Hours Required					**49 SHC**	**30 SHC**	**12 SHC**
A. CORE					**41-42 SHC**	**12 SHC**	
Required Courses:							
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				
Required Subject Areas:							
Biology: Select one course.							
BIO	110	Principles of Biology	4 SHC				
BIO	111	General Biology I	4 SHC				
Chemistry: Select one set.							
CHM	131	Introduction to Chemistry **&**	3 SHC				
CHM	131A	Introduction to Chemistry Lab	1 SHC	***or***			
CHM	151	General Chemistry I	4 SHC				
Mathematics: Select one course.							
MAT	122	Algebra/Trigonometry II	3 SHC				
MAT	172	Precalculus Trigonometry	4 SHC				
Physics: Select one course.							
PHY	131	Physics – Mechanics	4 SHC				
PHY	151	College Physics I	4 SHC				
B. CONCENTRATION *(Not applicable)*							

Approved by the State Board of Community Colleges on September 17, 2004; SBCC Revised 09/21/07, Revised 11/16/09; SBCC Template Revised 10/17/08; CRC Revised-Electronic Only 3/16/10; SBCC 07/16/10; CRC Revised 09/28/10; Editorial Revision 12/17/12; Editorial Revision 07/01/14; SBCC 11/21/14; Prefix Addition 08/01/15; Editorial Revision 01/09/17; CRC Revised—Electronic Only 02/23/17; CCRC Revised--Electronic Only (RISE Initiative) 10/24/19.

C. OTHER MAJOR HOURS *To be selected from the following prefixes:* 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 *Up to two semester hour credits may be selected from ACA.* *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.*			