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**Nanoscience Program Report
For Greater South Bay and Peninsula Region
(Santa Clara and San Mateo Counties)**

Nanotechnology

CIP 2010: A program that prepares individuals to apply mathematical, scientific, and engineering principles and technical skills to manipulate matter at the atomic and molecular level (in the range of 1-100 nanometers) and to design, fabricate, and integrate nanoscale structures, devices, and systems. Includes instruction in materials science, thermodynamics, nanomaterials, nanoelectronics, and nano/micro device fabrication and testing.

Target Occupations‡

Engineers, All Other (17-2199)

‡Based on EMSI crosswalk of the Classification of Instructional Programs (CIP) codes with Standard Occupational Classification (SOC) codes as published by the U.S. Department of Education.

In 2012, the number of nanoscience (nanotechnology) jobs in the target occupations in Santa Clara and San Mateo Counties totaled 2,894. The Bureau of Labor Statistics (BLS) expects the total number of positions to decrease by 1.6% over the next three years. Regional openings in 2012, which included created jobs and turnover, totaled 95. There were no regional completions in nanoscience, but there were 223 completions from other related programs. These other programs are linked to multiple occupations and not all those who complete will enter the target occupations indicated in this report.

Target Occupation Performance

2,894* Jobs (2012) National Location Quotient: 2.44†	-1.6%* Growth (2013-2016) National: 2.3%	\$52.48/hr Median Earnings National: \$44.24/hr
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*Based on total number of jobs for target occupations Santa Clara and San Mateo Counties.

†Represents occupation density as compared to national average (national average=1).

Regional Openings (2012)**	95
Regional Program Completions (2012)	0
All Regional Completions for Target Occupations†† (2012)	223

**Openings include created jobs and turnover.

†† Includes all regional programs applicable to target occupations.

Nanoscience Occupation Performance

Target Occupations	Regional Openings (2012)	Average Hourly Earnings	Growth (2013-2016)
Engineers, All Other (17-2199)	95	\$53.68	-1.6%

Regional Breakdown for Nanoscience

County Name	2013 Jobs	2016 Jobs	2013 Annual Openings	Median Hourly Earnings	2013 National Location Quotient
Santa Clara	2,367	2,311	51	\$52.96	2.68
San Mateo	557	566	16	\$50.41	1.67
Total	2,924	2,877	67	\$52.48	

Other regional programs may train individuals eligible for the targeted nanoscience occupations, which are based on an occupation-program crosswalk developed by the Department of Education. These additional programs are offered at San Jose State University, Stanford University, Cogswell College and Santa Clara University. As noted earlier, many postsecondary programs are linked to multiple occupations and not all those who complete the program will enter the target occupation.

Related Regional Programs Allowing Entry to Nanoscience

4		223				
Programs (2012)		Completions (2012)				
Program	2008	2009	2010	2011	2012	
Engineering, Other (14.9999)	102	110	114	142	129	
Engineering, General (14.0101)	122	135	152	111	90	
Engineering Physics/Applied Physics (14.1201)	3	1	2	3	4	
Systems Engineering (14.2701)	0	0	0	0	0	

Target Occupations Demographics

The demographics among those employed in nanoscience occupations in Santa Clara and San Mateo Counties for 2013 show that most are men (85.4%) and over half are between the ages of 25-44 (78.5%). The national breakdown of the education level among those employed in nanoscience occupations show that 81% have earned a Bachelor's degree or above.

Gender Demographics (Regional)

Gender	Jobs (2013)	% of Total	
Male	2,498	85.4%	
Female	426	14.6%	

Age Demographics (Regional)

Age	Jobs (2013)	% of Total	
14-18 Years	<10	0.1%	
19-21 Years	16	0.5%	
22-24 Years	65	2.2%	
25-34 Years	586	20.0%	
35-44 Years	852	29.1%	
45-54 Years	859	29.4%	
55-64 Years	444	15.2%	
65+ Years	101	3.5%	

Educational Attainment (National)

Doctoral or professional degree	6%	
Master's degree	26%	
Bachelor's degree	49%	
Associate's degree	8%	
Some college, no degree	8%	
High school diploma or equivalent	3%	
Less than high school diploma	0%	

Industries Employing Nanoscience Occupations

A number of industries in Santa Clara and San Mateo Counties employ those trained in nanoscience and its related occupations. The following table represents a regional industry breakdown of the number of nanoscience positions employed, the percentage of nanoscience jobs employed by industry and the percentage nanoscience jobs represent within all jobs by each industry. While electronic computer manufacturing employed 16.5% of all regional nanoscience positions in 2013, nanoscience occupations represent only 1.2% of the total jobs in that industry.

Inverse Staffing Patterns (Regional)

Top Five Industries	Occupation Jobs in Industry (2013)	% of Occupation in Industry (2013)	% of Total Jobs in Industry (2013)
Electronic Computer Manufacturing (334111)	483	16.5%	1.2%
Research and Development in the Physical, Engineering, and Life Sciences (except Biotechnology) (541712)	356	12.2%	1.3%
Semiconductor and Related Device Manufacturing (334413)	248	8.5%	0.8%
Engineering Services (541330)	170	5.8%	1.8%
Federal Government, Civilian, Excluding Postal Service (901199)	133	4.6%	1.6%

Data Sources and Calculations

State Data Sources

This report uses state data from the following agencies: California Labor Market Information Department

Institution Data

The institution data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

Completers Data

The completers data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

Occupation Data

EMSI occupation employment data are based on final EMSI industry data and final EMSI staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates also affected by county-level EMSI earnings by industry.

Staffing Patterns Data

The staffing pattern data in this report are compiled from several sources using a specialized process. For QCEW and Non-QCEW Employees classes of worker, sources include Occupational Employment Statistics, the National Industry-Occupation Employment Matrix, and the American Community Survey. For the Self-Employed and Extended Proprietors classes of worker, the primary source is the American Community Survey, with a small amount of information from Occupational Employment Statistics.

Industry Data

EMSI industry data have various sources depending on the class of worker. (1) For QCEW Employees, EMSI primarily uses the QCEW (Quarterly Census of Employment and Wages), with supplemental estimates from County Business Patterns and Current Employment Statistics. (2) Non-QCEW employees data are based on a number of sources including QCEW, Current Employment Statistics, County Business Patterns, BEA State and Local Personal Income reports, the National Industry-Occupation Employment Matrix (NIOEM), the American Community Survey, and Railroad Retirement Board statistics. (3) Self-Employed and Extended Proprietor classes of worker data are primarily based on the American Community Survey, Nonemployer Statistics, and BEA State and Local Personal Income Reports. Projections for QCEW and Non-QCEW Employees are informed by NIOEM and long-term industry projections published by individual states.