

**Peralta Community College District  
Annual Program Update Template 2013-2014  
DISTRICT-WIDE DATA by Subject/Discipline Fall Semesters**

<b>I. Overview</b>			
BI Download:	10/23/2013 17:41	Dept. Chair:	P. Thananjeyan
Subject/Discipline:	CIS	Dean:	Antonio Barreiro
Campus:	Berkeley City College		
Mission Statement	<p>The mission of the program is to educate students so that they can compete and perform successfully in today's ever-changing global business environment. Students in this program will acquire the computer technical knowledge and skills needed for initial employment, skill upgrades, career advancement, and career changes as well as the undergraduate courses needed to move into four-year business degree programs that have similar goals.</p> <p>The program fully supports the general institutional student learning outcomes of Ethics and Personal Responsibility, Information Competency, Communication, Critical Thinking, Computational Skills, Global Awareness and Valuing Diversity, Self-awareness and Interpersonal Skills.</p>		

<b>II. Enrollment</b>					
	<b>Alameda</b>	<b>Berkeley</b>	<b>Laney</b>	<b>Merritt</b>	<b>District</b>
Census Enrollment F10	501	500	536	339	1876
Census Enrollment F11	273	372	630	340	1615
Census Enrollment F12	319	347	613	241	1520
Sections F10	13	15	14	9	51
Sections F11	7	10	16	8	41
Sections F12	9	11	16	7	43
Total FTES F10	80.32	65.19	104.73	49.7	299.94
Total FTES F11	45.7	52.66	120.55	46.53	265.44
Total FTES F12	56.96	47.78	119.83	32.25	256.82
Total FTEF F10	3.87	3.71	4.81	2.31	14.7
Total FTEF F11	2.32	2.53	5.35	1.88	12.08
Total FTEF F12	2.77	2.53	5.53	1.79	12.62
FTES/FTEF F10	20.74	17.59	21.76	21.5	20.404
FTES/FTEF F11	19.7	20.79	22.52	24.69	21.9735
FTES/FTEF F12	20.54	18.86	21.68	18	20.3502

**III. Student Success**

	Alameda	Berkeley	Laney	Merritt	District
Total Graded F10	468	444	491	299	1702
Total Graded F11	253	352	592	316	1513
Total Graded F12	305	330	587	232	1454
Success F10	281	239	276	121	917
Success F11	135	168	353	100	756
Success F12	181	168	394	125	868
% Success F10	0.6	0.54	0.56	0.4	0.54
% Success F11	0.53	0.48	0.6	0.32	0.5
% Success F12	0.59	0.51	0.67	0.54	0.6
Withdraw F10	76	132	79	116	403
Withdraw F11	64	116	132	145	457
Withdraw F12	52	95	75	84	306
% Withdraw F10	0.16	0.3	0.16	0.39	0.24
% Withdraw F11	0.25	0.33	0.22	0.46	0.3
% Withdraw F12	0.17	0.29	0.13	0.36	0.21

**IV. Faculty**

	Alameda	Berkeley	Laney	Merritt	District
Contract FTEF F10	1.82	2.75	2.75	1.13	8.45
Contract FTEF F11	1.79	1.55	2	1.28	6.62
Contract FTEF F12	2.25	1.83	1.9	0.88	6.86
TEMP FTEF F10	1.71	0.52	1.53	0.61	4.37
TEMP FTEF F11	0	0.13	3.06	0.09	3.28
TEMP FTEF F12	0	0.49	3.17	0.91	4.57
Extra Service FTEF F10	0.34	0.44	0.53	0.57	1.88
Extra Service FTEF F11	0.53	0.85	0.29	0.52	2.19
Extra Service FTEF F12	0.53	0.21	0.46	0	1.2
Total FTEF F10	3.87	3.71	4.82	2.31	14.71
Total FTEF F11	2.32	2.53	5.36	1.89	12.1
Total FTEF F12	2.77	2.53	5.53	1.79	12.62
% Contract/Total F10	0.47	0.74	0.57	0.49	0.5744
% Contract/Total F11	0.77	0.61	0.37	0.68	0.547
% Contract/Total F12	0.81	0.72	0.34	0.49	0.5436

## V. Qualitative Assessments

**CTE and Vocational:** Community and labor market relevance. Present evidence of community need based on Advisory Committee input, industry need data, McIntyre Environmental Scan, McKinsey Economic Report, licensure and job placement rates, etc.

Labor Market Data attached at end of document. Relevant sections highlighted. The McIntyre Environmental Scan and US Department of Labor have identified CIS as a growth area.

All the existing certificated and required courses in the CIS department were updated in Fall 2013. Faculty will meet in Spring 2014 with the Advisory Committee to match program offerings to community needs. They will be submitted to the State in Spring 2014 for their approval. Advisory Committee meetings will be scheduled on a yearly basis.

Despite the reduction in courses and lack of support, CIS appears to be one of the skills in highest demand in the Bay Area. As shown in the EDD labor market reports attached, all areas of **computer programming and software engineering will continue to need workers.**

As we can see from this table that many related areas of **software development** show a significant growth in employment in the San Francisco, San Mateo, Alameda, and Santa Clara areas. In particular **computer software engineering** profession is projected to increase by 45% in Oakland-Fremont-Hayward Metropolitan Areas.

It also fulfills the needs of students who need one or two classes to upgrade their skills or meet requirements in their current organizations. **Unfortunately, students seeking immediate employment are not tracked due to limited department resources.** Our transfer courses are well received by four-year universities in the vicinity.

**Transfer and Basic Skills:** Describe how your course offerings address transfer, basic skills, and program completion.

Many of the CIS courses are transferable and the CIS curriculum meets the needs of students who are transferring to a four year school, as well as the needs of the students who are pursuing a terminal degree or certificate to join the work force or improve their positions in their current jobs. CIS 03 and CIS 20 need to be updated to meet the AS-T degree.

Action Plan:

**Update courses and create AS-T degree in CS.**

**VI. Program Outcomes and Assessments: For each one, cite Institutional Learning Outcomes (Appendix I)**

Note: If program assessment has not been completed, describe assessment plan, including date, under "Assessment Findings" and put "NA" under "Action Plan."

Program	Outcomes	Assessment Findings	Action Plan
<p><b>PROGRAM 1: Micro Computer Applications</b></p>	<p>Understand the basic components of a computer, computer programming, and operating systems. (Communication, Computational skills, information, critical thinking)</p> <p>Learn to use online resources, and use technology for personal and office use (Information competency, interpersonal skills)</p> <p>Basics concepts of computer programming and operating systems (Information competency, computational skills)</p> <p>Effective use of office applications (Communication, critical thinking, computational skills, information competency)</p>	<p>PROGRAM HAS BEEN COMPLETELY UPDATED AND WILL BE SUBMITTED TO STATE FOR REVIEW AND APPROVAL</p> <p>Individual course assessment and program assessment have been updated and assessment plans will be developed in Spring/Fall 2014.</p> <p>Assessment will be conducted in Fall 2014 after approval from State.</p>	<p>NA.</p> <p>All courses are assessed using homework, projects, and exams.</p>
<p><b>PROGRAM 2: Computer Programming/Web Programming</b></p>	<p>Advanced Programming and Problem solving, create functional web pages using current technology such as Java, JavaScript, JSP, Servlets, HTML. And CSS. (Communication, Computational skills, information, critical thinking)</p>	<p>PROGRAM HAS BEEN COMPLETELY UPDATED AND WILL BE SUBMITTED TO STATE FOR REVIEW AND APPROVAL.</p> <p>Individual course assessment and program assessment have been updated and assessment plans will be developed in</p>	<p>NA</p> <p>All courses are assessed using homework, projects, and exams.</p> <p>Certificates have capstone project as a part of the requirement.</p>

	Learn to use online resources, and use technology for personal and office use (Information competency, interpersonal skills)	Spring/Fall 2014.  Assessment will be conducted in Fall 2014 after approval from State.	
<b>Program 3: Operating systems and desktop support</b>	Advanced Windows operating systems concepts including installation, maintenance, and support for office environments. (Communication, Computational skills, information, critical thinking)  Advanced support for Office applications. (Communication, critical thinking, computational skills, information competency)	PROGRAM HAS BEEN COMPLETELY UPDATED AND WILL BE SUBMITTED TO STATE FOR REVIEW AND APPROVAL  Individual course assessment and program assessment have been updated and <b>assessment plans</b> will be developed in Spring/Fall 2014.  Assessment will be conducted in Fall 2014 after approval from Sstate.	NA  All courses are assessed using homework, projects, and exams.
Any general education components:			
Any basic skills components:			
Describe assessment methods you are using:			
<p>All courses are <b>assessed using homework, projects, exams, and programming assignments as appropriate.</b> Programming certificates also have <b>capstone projects</b> that are part of the requirements.</p> <p>The FTEF/FTES retention and success rates are listed in the data elements and are comparable to the rest of the college. It should be noted that many students have left the programs in the middle because the courses have not been offered in a timely manner. Or they take courses at other colleges, both within and outside the Peralta District.</p> <p><b>Student support services are critical to student success.</b> As with other disciplines/programs in the college, primary needs include <b>counselors, tutoring, and financial aid.</b> <b>With adequate funding and additional staffing, the accounting program could manage a successful accounting tutoring center that would further increase student success in that area</b></p> <p>Many students have received employment offers based on the course work completed and have not finished their program. There have been requests from employers and job placements companies requesting students from our department. Unfortunately, students seeking immediate employment are not tracked due to limited departments resources</p>			
Describe how assessment of program-level student learning outcomes led to certificate/degree program improvements:			
<p>CIS program has undergone a tremendous reduction in classes since early 2000. 10 years ago,</p>			

the CIS department had three fulltime faculty and three lab classrooms. We currently have only two fulltime faculty and two labs; moreover, a significant part of lab facilities are being used by Multi-media, ART, English, and other departments. We were never able to offer a full schedule of classes because of budget cuts and cancellation of classes as a regular sequence of courses.

Last semester we updated all the CIS programs and created a series of stackable certificates that start from Certificate of Proficiency to AS degrees. All CIS courses have student learning outcomes. All programs have Program Learning Outcomes. None of the programs have been assessed as of now. These programs will be submitted to State in Spring 2014. Given the nature of the courses offered here and the student composition (in and out or a few classes and then transfer or get a job or take classes to fulfill job requirements), we would be wiser to plan the program assessment based on the individual course assessments, as opposed to a portfolio system.

Given the budget cuts and the cancellation of classes, we have structured many of the courses offered by the department to parallel the professional certificate programs offered by the industry. This also facilitates quick employment for the students. For example, CIS 36A and CIS 36B cover the same materials that are needed for the Oracle Certified Java Programmer and Oracle Certified Java Developer. CIS 85 covers the same materials that are needed for the Oracle Certified Web Component Developer. CIS 81 and 82 covers part of the topics required for the Oracle Certified Enterprise Architect. The Office courses parallel the Microsoft MOS certificates and the Windows and operating systems classes parallel the Microsoft MTA certificates.

**Action Plans:**

- Submit program/certificate updates to State in Spring 2014.
- Create 2 or 3 year course sequence and increase budget for courses so that students can complete certificate programs in a timely manner.
- Create a weekend/Summer robotics program for high school students.
- Create and implement plan for assessing all courses every three years.
- Create a Games and Graphics Programming Certificate
- Create courses for programming on the Android platform
- Revive and update CIS 3, CIS 20, CIS 27, CIS 36A and create an AS-T program

**VII. Action Plans**

Please describe your plan for responding based on the preceding data: BI Tool (see II., III., IV. above), program learning outcomes action plans (see VI. above), Berkeley City College (BCC) and Peralta (PCCD) institutional goals (see Appendix II), and/or external evidence (see V. above) if appropriate. Also, please reference any cross district collaboration with the same discipline at other Peralta colleges. Include overall plans/goals and specific action steps. Please add rows as needed.

Action Item	Steps/Timeline	Person(s) Responsible	Supporting Data Source (check all that apply)
<b>Action Plan Item 1</b> Hire Part-time faculty to teach CS courses.	Fall and Spring	CIS Faculty	<input type="checkbox"/> P.O. Assessment <input type="checkbox"/> Action Plans <input type="checkbox"/> BI Data <input checked="" type="checkbox"/> BCC Institutional Goals <input checked="" type="checkbox"/> PCCD Institutional Goals <input type="checkbox"/> Other
<b>Action Plan Item 2</b> Update courses to comply with SB 1440 and create an	Fall and Spring	CIS Faculty	<input type="checkbox"/> P.O. Assessment <input type="checkbox"/> Action Plans <input type="checkbox"/> BI Data <input checked="" type="checkbox"/> BCC Institutional

AAT program			Goals <input checked="" type="checkbox"/> PCCD Institutional Goals Other
<b>Action Plan Item 3</b> Explore the possibility of creating an engineering transfer program,	Fall and Spring	CIS Faculty	<input type="checkbox"/> P.O. Assessment Action Plans BI Data <input checked="" type="checkbox"/> BCC Institutional Goals <input checked="" type="checkbox"/> PCCD Institutional Goals Other
<b>Action Plan Item 4</b> Complete game programming certificate in collaboration with Multimedia Department	Fall and Spring	CIS Faculty	<input type="checkbox"/> P.O. Assessment Action Plans BI Data <input checked="" type="checkbox"/> BCC Institutional Goals <input checked="" type="checkbox"/> PCCD Institutional Goals Other
<b>Action Plan Item 5</b> Develop and offer classes in robotics. Create partnership for STEM program with high schools.	Spring	CIS Faculty	<input type="checkbox"/> P.O. Assessment Action Plans BI Data <input checked="" type="checkbox"/> BCC Institutional Goals <input checked="" type="checkbox"/> PCCD Institutional Goals Other
			<input type="checkbox"/> P.O. Assessment Action Plans BI Data <input type="checkbox"/> BCC Institutional Goals <input type="checkbox"/> PCCD Institutional Goals Other

**VIII. Narrative:** For disciplines that support interdisciplinary programs provide additional qualitative data if appropriate.

## **IX. College Strategic Plan Relevance**

Check all that apply

- New program under development
- Program that is integral to your college's overall strategy
- Program that is essential for transfer
- Program that serves a community niche
- Programs where student enrollment or success has been demonstrably affected by extraordinary external factors, such as barriers due to housing, employment, childcare etc.
- Other



<b>X. Resource Needs:</b> Please use the Excel template to estimate the cost of your needs, which will be used to support budget planning efforts.	<b>Link to Action Plans (Refer to # of item in section VI)</b>	<b>Estimated Cost:</b> Please use Excel template to estimate costs.
<p>Please describe and prioritize any <b>faculty, classified, and student assistant</b> needs.</p> <ul style="list-style-type: none"> <li>• Need to increase FTEF to be able offer courses in a timely manner so that students can complete certificate programs in a timely manner. <b>Need PT faculty who can teach CS courses.</b></li> <li>• Need <b>student assistants</b> to support <b>concurrent classes.</b></li> <li>• Need <b>student assistants</b> for <b>lab classes.</b></li> <li>• Need <b>tutors</b> to help students outside of class.</li> <li>• Need financial assistance/release time to update courses outlines, certificate programs, develop online courses, etc described in action plan (see Section VI).</li> </ul>	<p>These are needed to support action plans in section VIII.</p> <p>Additional faculty and student support will be needed to expand the CS/CIS courses and program.</p> <p>CS Faculty will need <b>release time</b> to update courses, create additional programs and certificates, and create a working partnership with the high schools for a STEM program.</p>	<p>Fulltime Instructor (CIS): \$97,812</p> <p>Clerical Assistant/ Release time: \$27,150</p> <p>Instructional Assistants (2): \$22,656</p> <p>Teacher Aide: \$26,000</p>
<p>Please describe and prioritize any <b>equipment, material, and supply</b> needs.</p> <ul style="list-style-type: none"> <li>• <b>Monitors in lab 312</b> need to be upgraded to meet course needs. These should be updated to <b>meet Windows 8 touch-screen requirements.</b></li> <li>• Upgrade memory on all computers in room 312 and 323 to 16 GB.</li> <li>• CIS faculty computers - Need Computers that can run both MAC OX and WINDOWS</li> <li>• Printers in rooms 312, 323, and 556 must be updated. The lab printers are heavily used and have not been updated since they were first installed.</li> <li>• The projectors in room 312 and 323 must be updated urgently.</li> </ul>	<p>These are needed to support action plans in section VI.</p> <p>All courses need upgraded labs to support course work.</p> <p style="text-align: center;">9</p>	<p>Computers (2): \$4,360</p> <p>Printers (3); \$10,000 (Estimated)</p> <p>Projectors (2): \$10,000 (Estimated)</p> <p>Memory (86): 10,000 (Estimated)</p>
<p>Please describe and prioritize any <b>facilities</b> needs.</p> <ul style="list-style-type: none"> <li>• At least <b>one additional multipurpose lab</b> is needed to support the programs that were developed and updated last semester. The lab should be able support office applications, computer programming applications, operating systems, and network.</li> </ul>	<p>These are needed to support action plans in section VIII.</p>	<p>Cost estimate not available.</p>

## Appendix I: BCC Institutional Learning Outcomes (ILOs)

### Berkeley City College Institutional Learning Outcomes

Berkeley City College's Institutional Learning Outcomes, as described below, are the skills and knowledge that students are expected to attain as a result of completing an instructional program at BCC. Students completing an A.A. or A.S. at BCC will be able to demonstrate all of the BCC Institutional Learning Outcomes. All BCC courses and certificates are designed to teach some or all of the ILO's. In addition, students achieve these ILO's throughout their experiences at BCC, for example, with student services and student clubs.

#### Communication

Students show that they communicate well when they

- *Critically read, write, and communicate interpersonally, with audience awareness; and*
- *analyze communications for meaning, purpose, effectiveness, and logic.*

#### Critical Thinking

Students demonstrate critical thinking skills when they

- *identify problems or arguments and isolate facts related to arguments;*
- *use evidence and sound reasoning to justify well-informed positions; and*
- *generate multiple solutions to problems and predict consequences.*

#### Computational Skills (Quantitative Reasoning\*)

Students demonstrate computational skills when they

- *master computational concepts and apply them to concrete problems; and*
- *demonstrate algorithmic competence.*

#### Ethics and Personal Responsibility

Students show the ability to behave ethically and assume personal responsibility when they

- *analyze the consequences of their actions and the impact of these actions on society and the self; and*
- *demonstrate collaborative involvement in community interests.*

#### Global Awareness & Valuing Diversity (Intercultural Competency\*)

Students demonstrate global awareness and show that they value diversity when they

- *identify and explain diverse customs, beliefs, and lifestyles; and*
- *analyze how cultural, historical, and geographical issues shape perceptions.*

#### Information Competency

Students demonstrate information competency when they

- *find, evaluate, use, and communicate information in all its various formats;*
- *use library and online resources and research methodology effectively; and*
- *use technology effectively.*

#### Self-Awareness & Interpersonal Skills

Students demonstrate self-awareness and interpersonal skills when they

- *analyze their own actions and the perspectives of other persons; and*
- *work effectively with others in groups.*

## Appendix II: Goals

### Berkeley City College Institutional Goals 2013 - 2014

1. Increase certificate/degree completion and transfers to 4-year colleges or universities by inspiring and supporting students
2. Improve career and college preparation progress and success rate (successfully transition from basic skills to college-level, CTE to career)
3. Ensure BCC programs and services reach sustainable, continuous improvement level
4. Collaborate to ensure Fiscal Stability
5. Meet BCC resident FTES target (3,691) by preserving and nourishing resources

### Peralta Community College District Strategic Goals 2013 - 2014

- A. Advance Student Access, Equity, and Success
- B. Engage and Leverage Partners
- C. Build Programs of Distinction
- D. Create a Culture of Innovation and Collaboration
- E. Develop and Manage Resources to Advance Our Mission

BCC Goals	Alignment with PCCD Goals Below
1. Increase certificate/degree completion and transfers to 4-year colleges or universities by inspiring and supporting students	A. Advance Student Access, Equity, and Success B. Engage and Leverage Partners C. Build Programs of Distinction
2. Improve career and college preparation progress and success rate (successfully transition from basic skills to college-level, CTE to career)	A. Advance Student Access, Equity, and Success C. Build Programs of Distinction
3. Ensure BCC programs and services reach sustainable, continuous improvement level	B. Engage and Leverage Partners C. Build Programs of Distinction D. Create a Culture of Innovation and Collaboration
4. Collaborate to ensure Fiscal Stability	D. Create a Culture of Innovation and Collaboration E. Develop and Manage Resources to Advance Our Mission
5. Meet BCC resident FTES target (3,691) by preserving and nourishing resources	E. Develop and Manage Resources to Advance Our Mission

**Fastest growing Jobs in Oakland – Fremont – Hayward Metropolitan Areas**  
**Source: EDD (2012)**

SOC Code	Occupational Title	Annual Average Employment		Employment Change	2012 First Quarter Wages [1]	
		2010	2020	Percent	Median Hourly	Median Annual
15-1132	Software Developers, Applications	7,180	9,560	33.1	\$49.15	\$102,242
17-2081	Environmental Engineers	640	830	29.7	\$49.20	\$102,341
47-2161	Plasterers and Stucco Masons	520	670	28.8	\$29.05	\$60,423
19-3051	Urban and Regional Planners	1,000	1,280	28.0	\$40.77	\$84,813
15-1133	Software Developers, Systems	3,940	5,040	27.9	\$52.03	\$108,211
19-4091	Environmental Science and Protection Technicians, Including Health	400	510	27.5	\$25.82	\$53,700
27-1026	Merchandise Displayers and Window	1,300	1,650	26.9	\$12.79	\$26,604
11-9051	Food Service Managers	3,370	4,270	26.7	\$24.57	\$51,087
19-2041	Environmental Scientists and	1,130	1,430	26.5	\$37.39	\$77,782
51-9081	Dental Laboratory Technicians	490	620	26.5	\$18.95	\$39,433
47-2211	Sheet Metal Workers	1,210	1,520	25.6	\$28.67	\$59,624
15-1131	Computer Programmers	3,710	4,660	25.6	\$43.65	\$90,801
47-2221	Structural Iron and Steel Workers	560	700	25.0	\$33.79	\$70,295
47-4041	Hazardous Materials Removal	960	1,200	25.0	\$20.45	\$42,549
13-1111	Management Analysts	5,510	6,850	24.3	\$45.18	\$93,965
29-9011	Occupational Health and Safety	580	720	24.1	\$46.61	\$96,947
47-2152	Plumbers, Pipefitters, and	2,460	3,050	24.0	\$29.31	\$60,976
13-1161	Market Research Analysts and	4,280	5,300	23.8	\$38.35	\$79,777
47-2073	Operating Engineers and Other Construction Equipment Operators	2,290	2,830	23.6	\$34.60	\$71,977
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	3,810	4,690	23.1	\$39.88	\$82,945
47-2051	Cement Masons and Concrete	650	800	23.1	\$28.52	\$59,314
47-4011	Construction and Building Inspectors	910	1,120	23.1	\$36.99	\$76,933
17-3011	Architectural and Civil Drafters	1,090	1,340	22.9	\$30.22	\$62,853
35-2011	Cooks, Fast Food	5,080	6,240	22.8	\$9.10	\$18,934
51-3092	Food Batchmakers	570	700	22.8	\$13.58	\$28,255
53-3022	Bus Drivers, School or Special Client	1,230	1,510	22.8	\$15.28	\$31,800
35-3031	Waiters and Waitresses	13,010	15,960	22.7	\$9.03	\$18,786
35-2014	Cooks, Restaurant	6,300	7,720	22.5	\$12.16	\$25,286
35-9031	Hosts and Hostesses, Restaurant,	2,530	3,100	22.5	\$9.09	\$18,916
27-3042	Technical Writers	400	490	22.5	\$39.91	\$83,020
35-9021	Dishwashers	4,890	5,990	22.5	\$9.29	\$19,315
47-2111	Electricians	3,260	3,990	22.4	\$36.59	\$76,112
35-3011	Bartenders	2,680	3,280	22.4	\$10.05	\$20,922
35-9011	Dining Room and Cafeteria	3,180	3,890	22.3	\$9.00	\$18,735
43-4081	Hotel, Motel, and Resort Desk Clerks	1,080	1,320	22.2	\$11.08	\$23,053
13-2053	Insurance Underwriters	500	610	22.0	\$35.63	\$74,105
47-2081	Drywall and Ceiling Tile Installers	1,730	2,110	22.0	\$30.84	\$64,151
51-2023	Electromechanical Equipment	410	500	22.0	\$17.14	\$35,652

SOC Code	Occupational Title	Annual Average Employment		2012 First Quarter Wages [1]		
		2010	2020	Percent	Median Hourly	Median Annual
35-3021	Combined Food Preparation and Serving Workers, Including Fast Food	16,740	20,410	21.9	\$9.39	\$19,535
41-3021	Insurance Sales Agents	1,800	2,190	21.7	\$34.77	\$72,314
11-3021	Computer and Information Systems	2,960	3,600	21.6	\$66.70	\$138,739
51-3021	Butchers and Meat Cutters	1,250	1,520	21.6	\$18.04	\$37,531
35-2015	Cooks, Short Order	1,900	2,310	21.6	\$11.52	\$23,971
29-1131	Veterinarians	510	620	21.6	\$51.96	\$108,067
49-3093	Tire Repairers and Changers	560	680	21.4	\$14.79	\$30,773
35-1012	First-Line Supervisors of Food	5,280	6,400	21.2	\$13.89	\$28,900
53-7081	Refuse and Recyclable Material	900	1,090	21.1	\$26.72	\$55,580
35-1011	Chefs and Head Cooks	570	690	21.1	\$22.72	\$47,255
53-7064	Packers and Packagers, Hand	4,710	5,700	21.0	\$10.41	\$21,651
15-1121	Computer Systems Analysts	5,720	6,920	21.0	\$45.43	\$94,495

Occupational employment projections include self-employed, unpaid family workers, private household workers, farm, and nonfarm employment. N/A - Information is not available.

Occupations with employment below 400 in 2010 are excluded. Excludes "All Other" categories.

Data sources: U.S. Bureau of Labor Statistics' Current Employment Statistics and Quarterly Census of Employment and Wages industry employment, and Occupational Employment Statistics data.

The use of occupational employment projections as a time series is not encouraged due to changes in the occupational, industrial, and geographical classification systems; changes in the way data are collected; and changes in the OES survey reference period.

\* Most occupations are published according to the 2010 Standard Occupational Classification (SOC) system. Occupations denoted with an asterisk may have the same title as a 2010 SOC code, but not the same content; these occupations are assigned a temporary code for OES data collection.

[1] Median hourly and annual wages are the estimated 50th percentile of the distribution of wages; 50 percent of workers in an occupation earn wages below, and 50 percent earn wages above the median wage. The wages are from 2012 first quarter and do not include self-employed or unpaid family workers.

[2] The Bureau of Labor Statistics develops and assigns education and training categories to each occupation. For more information on these categories, please see [http://www.bls.gov/emp/ep\\_education\\_training\\_system.htm](http://www.bls.gov/emp/ep_education_training_system.htm)

Entry Level Education
1- Doctoral or professional degree
2- Master's degree
3- Bachelor's degree
4- Associate's degree
5- Postsecondary non-degree award
6- Some college, no degree
7- High school diploma or equivalent
8- Less than high school

Work Experience in a	
>5 years	More than 5 years experience
1-5 years	Between 1 and 5 years experience
<1 year	Less than 1 year experience in a
None	No work experience is

On-the-Job Training	
I/R	Internship/Residency
APP	Apprenticeship
LT OJT	Long-term on-the-job
MT OJT	Moderate-term on-the-job
ST OJT	Short-term on-the-job
None	None

## 2010-2020 Industry Employment Projections

### Oakland-Fremont-Hayward Metropolitan Division

#### (Alameda and Contra Costa Counties)

Employment  
Development  
Department  
Labor Market  
Information  
Division  
August 27,  
2012

NAICS Code	Industry Title	Annual Average Employment		Employment Change	
		2010	2020	Numerical	Percent
	<b>Total Employment</b>	<b>1,047,600</b>	<b>1,206,200</b>	<b>158,600</b>	<b>15.1</b>
	<b>Self Employment (A)</b>	<b>78,600</b>	<b>85,100</b>	<b>6,500</b>	<b>8.3</b>
	<b>Unpaid Family Workers (B)</b>	<b>700</b>	<b>700</b>	<b>0</b>	<b>0.0</b>
	<b>Private Household Workers (C)</b>	<b>18,600</b>	<b>21,000</b>	<b>2,400</b>	<b>12.9</b>
	<b>Total Farm</b>	<b>1,400</b>	<b>1,600</b>	<b>200</b>	<b>14.3</b>
	<b>Total Nonfarm</b>	<b>948,300</b>	<b>1,097,800</b>	<b>149,500</b>	<b>15.8</b>
<b>1133,21</b>	<b>Mining and Logging</b>	<b>1,200</b>	<b>1,300</b>	<b>100</b>	<b>8.3</b>
<b>23</b>	<b>Construction</b>	<b>47,400</b>	<b>61,100</b>	<b>13,700</b>	<b>28.9</b>
236	Construction of Buildings	11,400	14,900	3,500	30.7
2361	Residential Building Construction	7,100	9,400	2,300	32.4
237	Heavy and Civil Engineering Construction	5,900	7,700	1,800	30.5
238	Specialty Trade Contractors	30,200	38,500	8,300	27.5
2381	Foundation, Structure, and Building Exterior Contractors	6,400	7,900	1,500	23.4
2382	Building Equipment Contractors	12,500	16,000	3,500	28.0
<b>31-33</b>	<b>Manufacturing</b>	<b>79,700</b>	<b>83,400</b>	<b>3,700</b>	<b>4.6</b>
	<b>Durable Goods Manufacturing (321,327,331-339)</b>	<b>47,700</b>	<b>53,100</b>	<b>5,400</b>	<b>11.3</b>
334	Computer and Electronic Product Manufacturing	17,800	20,000	2,200	12.4
336	Transportation Equipment Manufacturing	3,300	2,400	-900	-27.3
	<b>Nondurable Goods Manufacturing (311-316,322-326)</b>	<b>32,000</b>	<b>30,300</b>	<b>-1,700</b>	<b>-5.3</b>

324	Petroleum and Coal Products Manufacturing	7,800	7,000	-800	-10.3
325	Chemical Manufacturing	5,800	5,100	-700	-12.1
<b>22,42-49</b>	<b>Trade, Transportation, and Utilities</b>	<b>173,600</b>	<b>198,900</b>	<b>25,300</b>	<b>14.6</b>
<b>42</b>	<b>Wholesale Trade</b>	<b>41,800</b>	<b>45,300</b>	<b>3,500</b>	<b>8.4</b>
423	Merchant Wholesalers, Durable Goods	20,400	19,300	-1,100	-5.4
424	Merchant Wholesalers, Nondurable Goods	16,600	20,100	3,500	21.1
<b>44-45</b>	<b>Retail Trade</b>	<b>100,300</b>	<b>116,900</b>	<b>16,600</b>	<b>16.6</b>
441	Motor Vehicle and Parts Dealers	10,000	12,500	2,500	25.0
445	Food and Beverage Stores	22,900	27,300	4,400	19.2
446	Health and Personal Care Stores	6,900	7,800	900	13.0
448	Clothing and Clothing Accessories Stores	8,400	10,700	2,300	27.4
451	Sporting Goods, Hobby, Book, and Music Stores	5,100	4,400	-700	-13.7
452	General Merchandise Stores	19,400	23,500	4,100	21.1
<b>22,48-49</b>	<b>Transportation, Warehousing, and Utilities</b>	<b>31,500</b>	<b>36,700</b>	<b>5,200</b>	<b>16.5</b>
<b>48-49</b>	<b>Transportation and Warehousing</b>	<b>27,800</b>	<b>32,700</b>	<b>4,900</b>	<b>17.6</b>
484	Truck Transportation	6,000	7,300	1,300	21.7
492	Couriers and Messengers	6,300	7,000	700	11.1
493	Warehousing and Storage	3,900	4,400	500	12.8
<b>51</b>	<b>Information</b>	<b>23,600</b>	<b>24,300</b>	<b>700</b>	<b>3.0</b>
511	Publishing Industries (except Internet)	5,300	5,600	300	5.7
517	Telecommunications	10,100	9,000	-1,100	-10.9
<b>52-53</b>	<b>Financial Activities</b>	<b>48,200</b>	<b>56,300</b>	<b>8,100</b>	<b>16.8</b>
<b>52</b>	<b>Finance and Insurance</b>	<b>33,000</b>	<b>39,700</b>	<b>6,700</b>	<b>20.3</b>
522	Credit Intermediation and Related Activities	17,500	21,200	3,700	21.1
524	Insurance Carriers and Related Activities	11,300	13,700	2,400	21.2
<b>53</b>	<b>Real Estate and Rental and Leasing</b>	<b>15,200</b>	<b>16,600</b>	<b>1,400</b>	<b>9.2</b>
531	Real Estate	10,900	12,300	1,400	12.8
<b>54-56</b>	<b>Professional and Business Services</b>	<b>152,100</b>	<b>192,000</b>	<b>39,900</b>	<b>26.2</b>

<b>54</b>	<b>Professional, Scientific, and Technical Services</b>	<b>80,100</b>	<b>105,600</b>	<b>25,500</b>	<b>31.8</b>
5413	Architectural, Engineering, and Related Services	14,800	18,100	3,300	22.3
<b>5415</b>	<b>Computer Systems Design and Related Services</b>	<b>18,700</b>	<b>27,200</b>	<b>8,500</b>	<b>45.5</b>
<b>55</b>	<b>Management of Companies and Enterprises</b>	<b>25,000</b>	<b>28,200</b>	<b>3,200</b>	<b>12.8</b>
<b>56</b>	<b>Administrative and Support and Waste Management and Remediation Services</b>	<b>47,000</b>	<b>58,200</b>	<b>11,200</b>	<b>23.8</b>
561	Administrative and Support Services	42,100	52,200	10,100	24.0
5613	Employment Services	15,100	20,400	5,300	35.1
5616	Investigation and Security Services	7,700	9,200	1,500	19.5
5617	Services to Buildings and Dwellings	11,300	13,500	2,200	19.5
<b>61-62</b>	<b>Educational Services, Health Care and Social Assistance</b>	<b>136,400</b>	<b>159,000</b>	<b>22,600</b>	<b>16.6</b>
<b>61</b>	<b>Educational Services (Private)</b>	<b>20,200</b>	<b>25,800</b>	<b>5,600</b>	<b>27.7</b>
<b>62</b>	<b>Health Care and Social Assistance</b>	<b>116,200</b>	<b>133,200</b>	<b>17,000</b>	<b>14.6</b>
621	Ambulatory Health Care Services	52,200	58,800	6,600	12.6
622	Hospitals (Private)	27,400	30,900	3,500	12.8
623	Nursing and Residential Care Facilities	19,400	22,600	3,200	16.5
624	Social Assistance	17,300	20,900	3,600	20.8
<b>71-72</b>	<b>Leisure and Hospitality Arts, Entertainment, and Recreation</b>	<b>85,800</b>	<b>104,400</b>	<b>18,600</b>	<b>21.7</b>
<b>71</b>	<b>Arts, Entertainment, and Recreation</b>	<b>14,500</b>	<b>16,900</b>	<b>2,400</b>	<b>16.6</b>
<b>72</b>	<b>Accommodation and Food Services</b>	<b>71,300</b>	<b>87,500</b>	<b>16,200</b>	<b>22.7</b>
721	Accommodation	6,600	8,100	1,500	22.7
722	Food Services and Drinking Places	64,700	79,400	14,700	22.7
<b>81</b>	<b>Other Services (excludes 814-Private Household Workers)</b>	<b>35,000</b>	<b>38,900</b>	<b>3,900</b>	<b>11.1</b>
811	Repair and Maintenance	10,300	10,900	600	5.8
812	Personal and Laundry Services	8,900	10,400	1,500	16.9
	<b>Government</b>	<b>165,300</b>	<b>178,200</b>	<b>12,900</b>	<b>7.8</b>



	<b>Federal Government (D)</b>	<b>15,700</b>	<b>13,800</b>	<b>-1,900</b>	<b>-12.1</b>
	<b>State and Local Government</b>	<b>149,600</b>	<b>164,400</b>	<b>14,800</b>	<b>9.9</b>
	<b>State Government</b>	<b>38,100</b>	<b>41,000</b>	<b>2,900</b>	<b>7.6</b>
	State Government Education	25,500	28,700	3,200	12.5
	Other State Government	12,600	12,300	-300	-2.4
	<b>Local Government</b>	<b>111,500</b>	<b>123,400</b>	<b>11,900</b>	<b>10.7</b>
	Local Government Education	54,900	61,400	6,500	11.8
	Other Local Government	56,600	62,000	5,400	9.5

Data sources: U.S. Bureau of Labor Statistics' Current Employment Statistics (CES) March 2011 benchmark and Quarterly Census of Employment and Wages (QCEW) industry employment.

Industry detail may not add up to totals due to independent rounding.

- (A) Self-Employed persons work for profit or fees in their own business, profession, trade, or farm. Only the unincorporated self-employed are included in this category. The estimated and projected employment numbers include all workers who are primarily self-employed and wage and salary workers who hold a secondary job as a self-employed worker.
- (B) Unpaid family workers are those persons who work without pay for 15 or more hours per week on a farm or in a business operated by a member of the household to whom they are related by birth or marriage.
- (C) Private Household Workers are employed as domestic workers whose primary activities are to maintain the household. Industry employment is based on QCEW.
- (D) Temporary U.S. Census workers are included in the base and projected year employment numbers.