



## WORKFORCE INVESTMENT BOARD OF VENTURA COUNTY

### CLEAN/GREEN COMMITTEE MEETING

Friday, November 21, 2014  
8:00 a.m.-9:30 a.m.

Ventura County Community Foundation (VCCF) Nonprofit Center  
4001 Mission Oaks Blvd. (Community Room), Camarillo

### AGENDA

8:00 a.m.	<b>1.0 Call to Order and Agenda Review</b>	Kimberly Nilsson
8:02 a.m.	<b>2.0 Public Comments</b> <u>Procedure:</u> The public is welcome to comment. All comments not related to items on the agenda may be made at the beginning of the meeting only.	Kimberly Nilsson
8:05 a.m.	<b>3.0 Approval of Minutes:</b> September 26, 2014	Kimberly Nilsson
	<b>4.0 Ventura County Regional Strategic Workforce Development Plan</b>	
8:06 a.m.	<ul style="list-style-type: none"><li>Services Workgroup Report: Hospitality Skills Categories</li></ul>	Rebekah Evans, Teresa Johnson, Valeria Makarova
8:20 a.m.	<ul style="list-style-type: none"><li>Water/Wastewater Workgroup Report</li></ul>	Patricia Duffy
8:25 a.m.	<ul style="list-style-type: none"><li>Deputy Sector Navigator Update</li></ul>	Margaret Lau
8:30 a.m.	<ul style="list-style-type: none"><li>Clean/Green Career Pathways Standards: Industry Advisory and Steering Committee Discussion<ul style="list-style-type: none"><li>Building and Construction Trades Pathways</li><li>Agriculture and Natural Resources Pathways</li><li>Hospitality, Tourism, and Recreation Pathways</li></ul></li></ul>	Cheryl Moore
9:25 a.m.	<b>5.0 Committee Member Comments</b>	Committee Members
9:30 a.m.	<b>6.0 Adjournment</b>  <u>Next Meeting</u> January 16, 2015 (8:00 a.m.-9:30 a.m.) Ventura County Community Foundation Nonprofit Center 4001 Mission Oaks Blvd., (Community Room), Camarillo	Kimberly Nilsson

Individuals who require accommodations for their disabilities (including interpreters and alternate formats) are requested to contact the Workforce Investment Board of Ventura County staff at (805) 477-5306, at least five days prior to the meeting. TTY line: 1-800-735-2922.

For information about the Workforce Investment Board of Ventura County go to <http://www.wib.ventura.org>



**WIB Clean/Green Committee Meeting**  
**September 26, 2014**

**MINUTES**

**Meeting Attendees**

Committee

Victor Dollar Chair\*  
Nancy Williams, Vice Chair\*  
Diane de Mailly  
Rebekah Evans  
Dave Fleisch  
Paul Grossgold  
Eric Humel  
Teresa Johnson\*  
Margaret Lau  
Valeria Makarova  
Tiffany Morse  
Kimberly Nilsson\*  
Wayne Pendrey

WIB Staff

Patricia Duffy  
Cheryl Moore  
Theresa Salazar Vital

Guests

Nicole Pacheco (Simi Valley Adult School  
and Career Institute)  
Nancy Ambriz (Community Services  
Department/WIA)

*\*WIB Members*

**1.0 Call to Order**

Victor Dollar called the meeting to order at 8:05 a.m. No changes were made to the agenda.

**2.0 Public Comments**

No comments

**3.0 Approval of Minutes: July 25, 2014**

Motion to approve: Dave Fleisch  
Second: Paul Grossgold  
Abstain: Nancy Williams  
Motion carried

**4.0 Ventura County Regional Strategic Workforce Development Plan**

- Deputy Sector Navigator (DSN) Update: Margaret Lau reported on the recent DSN/WIB presentation at the annual California Workforce Association Meeting of the Minds in Monterey: "Regional Collaboration: Sharing What Matters: A Shared Strategy for a Shared Prosperity." Ms. Lau, John Cordova, Paula Hodge, and Cheryl Moore received positive feedback on their discussion of the model that the Ventura County WIB uses to work collaboratively with Deputy Sector Navigators.
- Ventura College Waste Water Management Program: Margaret Lau introduced a new video on the Ventura College Waste Water Management program. In addition, she presented one of four educational videos on Water/Systems/Science Technology, the production of which was funded in part by a grant from the California Community Colleges Chancellor's Office, Workforce and Economic Development Division.

- Services Work Group: Teresa Johnson discussed a draft of the Work Readiness Hospitality Skills Categories chart and requested Committee feedback and recommendations. A final version of the document should be ready by the meeting in November 2014.
- Career Pathways: Cheryl Moore announced that, in support of the business-related information gathering of the two Career Pathways grants (Ventura County Innovates and Tri-Cities Career College and Career Pathways Consortium), the WIB industry sector committees would provide a neutral forum for periodic discussions with educators and employers on program and curriculum development. The previous work of the committees (e.g., labor market data analyses, employer engagement and input, and identification of entry-level job skills), which had been referenced in both Career Pathways grant applications, would serve as a foundation on which to build. Other employers and educational representatives with related programs (e.g., adult education, community colleges, and universities) also would be welcome to participate in the discussions. Tiffany Morse indicated that the educational community would work together prior to the WIB sector committee meetings, collaborating on an aligned and targeted approach to the feedback sought. Educators and others who attended the meetings as members of the public would be invited to participate in a facilitated discussion with WIB committee members during the agenda item. For the first round of discussions, WIB staff would schedule time on the WIB sector committee meeting agendas in November and December 2014.

Clean/Green Committee members expressed appreciation for the coordinated approach to seeking business input, noting the value of alignment and articulation of educational programs, consistent messaging to engage employers, and avoiding duplication of time and effort.

- Baywork: Patricia Duffy presented information on Baywork, a consortium of water and wastewater utilities in the Bay Area. The group had defined critical job categories needed in water and waste water utilities, which were posted on their website ([www.baywork.org](http://www.baywork.org)). The Committee discussed how the content and approach could apply to Ventura County as a possible model for identifying the workforce needs in the Ventura County water and wastewater industry. Nancy Williams and Eric Humel volunteered to convene a workgroup for further study.
- Industry Certifications Inventory: The Committee discussed the draft Industry Certifications Inventory Chart and the importance of adapting and aligning the content with local business and workforce needs. Dave Fleisch volunteered to explore options and report back.

## 5.0 Committee Member Comments

- Diane de Mailly extended an invitation to The Summit on Water Conservation, scheduled for October 25, 2014 at Ventura City Hall.
- Paul Grossgold announced that the County of Ventura is working on a water/wastewater grant.
- Dave Fleisch commented that the work of the Clean/Green Committee has evolved in a substantial way over the long term and noted how gratifying it is to see the regional collaboration that is connecting so many dots to benefit Ventura County.

## 6.0 Adjournment

The Committee meeting was adjourned at 9:35 a.m.

### Next Meeting

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**CLEAN/GREEN WORK READINESS: HOSPITALITY SKILLS CATEGORIES**  
**Workforce Investment Board of Ventura County**

BASICS OF QUALITY CONTROL	COMPUTER SKILLS	EMPLOYABILITY SKILLS
<ul style="list-style-type: none"><li>• Knowledge of standards and processes, as applicable per job function</li><li>• Basic quality control methodology of each job function</li><li>• Importance of personal responsibility (do it right the first time or ask for clarification first)</li><li>• Specific hotel and hospitality culture and quality control measures</li><li>• Knowledge of system processes</li><li>• Knowledge of “clean-green” (energy, efficiency, sustainability) processes</li><li>• Cost control and purchasing procedures</li></ul>	<ul style="list-style-type: none"><li>• Microsoft Word</li><li>• Microsoft Excel</li><li>• Operating system basics</li><li>• Computer navigation</li><li>• Computer etiquette</li><li>• Computer security</li></ul>	<ul style="list-style-type: none"><li>• Initiative</li><li>• Work ethic</li><li>• Basics of interviewing</li><li>• Job search skills</li><li>• Communication skills</li><li>• Continuous improvement skills (ability to use constructive criticism)</li><li>• Basic company policy understanding</li><li>• Time management</li><li>• Task prioritization</li><li>• Worker, supervisor, and manager etiquette and protocol basics</li><li>• General reading skills</li><li>• Critical thinking skills</li><li>• General math skills</li></ul>
LODGING SKILLS	SALES AND MARKETING	FOOD AND BEVERAGE SERVICE
<ul style="list-style-type: none"><li>• Safety and security practices and procedures</li><li>• Hotel management skills</li><li>• Facilities and grounds management</li><li>• Human resources and employment law</li><li>• Food management and catering</li><li>• Accounting</li><li>• Guest service and guest relationships</li><li>• Front desk operations-reservations, registration, check-out and settlement</li><li>• Housekeeping management</li></ul>	<ul style="list-style-type: none"><li>• Hospitality advertising and marketing via social media, telephone, brochures, local media</li><li>• Catering and meeting room promotions</li><li>• Public relations</li><li>• Hospitality and lodging development and strategic planning</li></ul>	<ul style="list-style-type: none"><li>• Hotel food and beverage service</li><li>• Menus, dining, and beverage service</li><li>• Event planning (bridal, meetings, etc.)</li><li>• Sanitation, health, and safety</li></ul>













**HOSPITALITY Accommodations:** hotels, motels, resorts, hostels, vacation rentals, vacation ownership, bed and breakfast properties, recreational vehicles, camping  
**Food and Beverage:** restaurants, full-service, fine dining, quick service, banquet facilities, lounges  
**Transportation:** airlines, cruise lines, rail, car rentals, tour/coach operators, bus lines, taxis  
**Attractions:** theme parks, zoos, national/state/local parks, natural wonders, heritage sites  
**Tourism /Destination:** convention and visitors bureaus, state travel groups, Chambers of Commerce










## Ventura County Occupational Employment Data Growth Projections CLEAN/GREEN (Infrastructure Subcommittee)

SOC Code*	U.S. D.O.L. Green Jobs in Demand	Occupations	2013 Education and Training Level**	2010 VENTURA COUNTY Median Annual Wages***	2020 CALIFORNIA Employment Growth Projection	CALIFORNIA Average Annual Job Openings****	2020 VENTURA COUNTY Employment Growth Projection	VENTURA COUNTY Average Annual Job Replacement Openings	VENTURA COUNTY Average Annual Job Openings****	2010 CALIFORNIA Average Annual Employment	2010 VENTURA COUNTY Average Annual Employment
53-7064		Packers and Packagers, Hand	Less Than H.S.	\$19,720	15.7	4,140	14.8	54	82	93,500	1,890
51-9198		Helpers--Production Workers	Less Than H.S.	\$21,855	7.9	970	14.3	12	22	39,400	700
45-2091		Agricultural Equipment Operators	Less Than H.S.	\$22,250	2.1	470	32.1	26	53	14,000	840
45-2000		Agricultural Workers	Less Than H.S.	\$24,000	1.7	9,460	21.5	504	864	297,300	16,740
47-3019		Helpers, Construction Trades, All Other	Less Than H.S.	\$24,130	23.8	110	32.5	10	23	2,100	400
53-7062		Laborers and Freight, Stock, and Material Movers, Hand	Less Than H.S.	\$24,943	19.7	12,030	19.5	108	174	232,700	3,380
37-3011		Landscaping and Groundskeeping Workers	Less Than H.S.	\$25,024	21.6	5,440	15.8	77	146	138,500	4,370
47-3014		Helpers--Painters, Paperhangers, Plasterers, and Stucco Masons	Less Than H.S.	\$25,926	23.1	120	N/A	N/A	N/A	2,600	N/A
47-3016		Helpers--Roofers	Less Than H.S.	\$29,219	-7.7	30	N/A	N/A	N/A	1,300	N/A
47-3011		Helpers--Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters	Less Than H.S.	\$30,164	45.7	260	N/A	N/A	N/A	3,500	N/A
47-3012		Helpers--Carpenters	Less Than H.S.	\$30,908	51.6	240	N/A	N/A	N/A	3,100	N/A
53-7051		Industrial Truck and Tractor Operators	Less Than H.S.	\$33,995	15.2	2,570	19.6	40	68	59,100	1,430
47-2061		Construction Laborers	Less Than H.S.	\$38,491	19.5	3,020	24.3	17	69	109,500	2,140
53-7081		Refuse and Recyclable Material Collectors	Less Than H.S.	\$42,486	21.7	780	N/A	N/A	N/A	15,200	N/A
47-2181		Roofers	Less Than H.S.	\$48,253	3.0	400	13.9	7	12	16,800	360
45-4011		Forest and Conservation Workers	H.S. Diploma + OJT	\$21,072	0.0	90	0.0	3	3	3,600	130
49-9098		Helpers--Installation, Maintenance, and Repair Workers	H.S. Diploma + OJT	\$24,772	16.9	820	17.4	10	14	13,000	230
51-2092		Team Assemblers	H.S. Diploma + OJT	\$25,210	8.8	2,180	7.7	41	58	76,400	2,070
51-2099		Assemblers and Fabricators	H.S. Diploma + OJT	\$27,555	11.2	740	12.4	21	33	24,200	1,050
51-2023		Electromechanical Equipment Assemblers	H.S. Diploma + OJT	\$28,493	13.3	170	0.0	2	3	6,000	130
51-9032		Cutting and Slicing Machine Setters, Operators, and Tenders	H.S. Diploma + OJT	\$29,329	-2.0	110	8.3	3	4	5,100	120










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43-5071		Shipping, Receiving, and Traffic Clerks	H.S. Diploma + OJT	\$29,778	5.6	2,790	4.3	53	62	89,900	2,070
51-2022		Electrical and Electronic Equipment Assemblers	H.S. Diploma + OJT	\$29,870	12.2	580	-3.6	20	20	22,200	1,370
47-3015		Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	H.S. Diploma + OJT	\$31,266	36.4	210	N/A	N/A	N/A	3,300	N/A
47-3013		Helpers--Electricians	H.S. Diploma + OJT	\$31,452	21.4	190	27.8	5	10	4,200	180
51-2031		Engine and Other Machine Assemblers	H.S. Diploma + OJT	\$33,638	14.3	50	0.0	1	2	1,400	60
51-9061		Inspectors, Testers, Sorters, Samplers, and Weighers	H.S. Diploma + OJT	\$36,100	13.4	1,690	7.8	33	45	47,900	1,540
43-4051		Customer Service Representatives	H.S. Diploma + OJT	\$36,347	18.6	9,260	22.1	122	217	197,300	4,300
51-4011		Computer-Controlled Machine Tool Operators, Metal and Plastic	H.S. Diploma + OJT	\$36,514	21.1	390	16.7	3	7	9,500	180
51-4121		Welders, Cutters, Solderers, and Brazers	H.S. Diploma + OJT	\$37,621	11.1	820	20.4	13	23	21,700	490
49-9071		Maintenance and Repair Workers, General	H.S. Diploma + OJT	\$38,449	12.7	3,510	11.2	36	58	113,000	1,960
53-6099		Transportation Workers, All Other	H.S. Diploma + OJT	\$40,194	16.0	230	18.2	7	11	5,000	220
51-4041		Machinists	H.S. Diploma + OJT	\$40,242	13.1	950	10.0	15	23	30,500	800
47-4041		Hazardous Materials Removal Workers	H.S. Diploma + OJT	\$40,284	18.6	190	0.0	2	3	4,300	60
49-9043		Maintenance Workers, Machinery	H.S. Diploma + OJT	\$40,578	4.9	140	12.5	3	5	6,100	160
53-3021		Bus Drivers, Transit and Intercity	H.S. Diploma + OJT	\$41,747	14.3	890	6.3	9	11	26,600	480
51-9011		Chemical Equipment Operators and Tenders	H.S. Diploma + OJT	\$44,949	8.0	60	N/A	N/A	N/A	2,500	N/A
43-5061		Production, Planning, and Expediting Clerks	H.S. Diploma + OJT	\$48,503	9.6	1,390	4.5	17	21	38,600	660
13-1022		Wholesale and Retail Buyers, Farm Products	H.S. Diploma + OJT	\$51,604	17.0	680	18.5	7	13	15,900	270
47-2152		Plumbers, Pipefitters, and Steamfitters	H.S. Diploma + OJT	\$53,543	17.2	1,670	26.7	17	33	36,100	600
47-2111		Electricians	H.S. Diploma + OJT	\$60,216	15.7	2,010	22.1	18	33	47,200	680
51-8021		Stationary Engineers and Boiler Operators	H.S. Diploma + OJT	\$64,384	5.9	100	0.0	1	1	3,400	60






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47-2073		Operating Engineers and Other Construction Equipment Operators	H.S. Diploma + OJT	\$65,711	23.1	1,020	28.1	13	29	22,100	570
13-1199		Business Operations Specialists, All Other	H.S. Diploma + OJT	\$67,213	13.6	4,560	14.6	60	106	139,100	3,150
47-4011		Construction and Building Inspectors	H.S. Diploma + OJT	\$72,234	18.6	470	13.6	6	9	9,700	220
47-1011		First-Line Supervisors of Construction Trades and Extraction Workers	H.S. Diploma + OJT	\$73,957	21.7	2,060	26.4	1	43	46,000	870
11-3071		Transportation, Storage, and Distribution Managers	H.S. Diploma + OJT	\$84,677	14.0	460	14.3	5	9	12,100	210
51-8013		Power Plant Operators	H.S. Diploma + OJT	\$84,797	12.1	160	0.0	2	2	3,300	50
11-9199		Managers, All Other	H.S. Diploma + OJT	\$119,786	11.7	2,980	14.0	52	84	87,900	2,360
49-2092		Electric Motor, Power Tool, and Related Repairers	Vocational / OJT	\$41,903	7.7	20	N/A	N/A	N/A	1,300	N/A
49-9021		Heating, Air Conditioning, and Refrigeration Mechanics and Installers	Vocational / OJT	\$51,356	27.1	920	27.5	9	23	20,700	510
49-2094		Electrical and Electronics Repairers, Commercial and Industrial Equipment	Vocational / OJT	\$59,680	10.6	230	0.0	3	3	6,600	140
49-2095		Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	Vocational / OJT	\$83,825	25.0	60	N/A	N/A	N/A	1,200	N/A
19-4011		Agricultural and Food Science Technicians	Associate's Degree	\$31,656	6.7	130	12.5	3	4	3,000	80
19-4093		Forest and Conservation Technicians	Associate's Degree	\$36,126	-2.7	310	-7.1	6	6	7,400	140
19-4031		Chemical Technicians	Associate's Degree	\$44,018	14.5	180	N/A	N/A	N/A	6,200	N/A
19-4091		Environmental Science and Protection Technicians, Including Health	Associate's Degree	\$50,108	26.5	230	37.5	3	6	3,400	80
17-3026		Industrial Engineering Technicians	Associate's Degree	\$51,790	15.6	160	N/A	N/A	N/A	4,500	
17-3024		Electro-Mechanical Technicians	Associate's Degree	\$52,618	13.9	120	N/A	N/A	N/A	3,600	
17-3011		Architectural and Civil Drafters	Associate's Degree	\$54,227	-0.8	250	0.0	3	3	12,700	170
17-3013		Mechanical Drafters	Associate's Degree	\$54,580	10.4	140	13.3	3	5	4,800	150
17-3012		Electrical and Electronics Drafters	Associate's Degree	\$55,771	10.0	120	0.0	2	3	4,000	120
17-3027		Mechanical Engineering Technicians	Associate's Degree	\$56,163	10.0	110	6.7	3	4	4,000	150

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17-3023		Electrical and Electronics Engineering Technicians	Associate's Degree	\$61,504	8.3	570	-1.2	16	16	20,400	810
17-3025		Environmental Engineering Technicians	Associate's Degree	\$61,522	18.5	100	30.8	2	6	2,700	130
17-3022		Civil Engineering Technicians	Associate's Degree	\$61,693	8.5	200	7.1	3	5	7,100	140
17-3029		Engineering Technicians, Except Drafters, All Other	Associate's Degree	\$64,283	9.7	270	0.0	7	7	9,300	350
11-9021		Construction Managers	Associate's Degree	\$102,300	14.1	1,220	15.0	6	22	59,600	1,000
45-2011		Agricultural Inspectors	Bachelor's Degree	\$45,509	4.3	80	N/A	N/A	N/A	2,300	N/A
27-1021		Commercial and Industrial Designers	Bachelor's Degree	\$63,105	22.5	210	26.7	5	9	4,000	150
13-2099		Financial Specialists, All Other	Bachelor's Degree	\$63,406	13.2	810	30.1	22	54	23,500	1,030
27-3031		Public Relations Specialists	Bachelor's Degree	\$63,441	21.1	1,130	14.7	9	14	23,700	340
13-1151		Training and Development Specialists	Bachelor's Degree	\$64,471	31.9	910	32.5	7	20	18,800	400
19-1013		Soil and Plant Scientists	Bachelor's Degree	\$69,582	26.3	120	N/A	N/A	N/A	1,900	N/A
41-3031		Securities, Commodities, and Financial Services Sales Agents	Bachelor's Degree	\$71,314	17.4	1,710	38.0	20	46	38,000	710
19-2041		Environmental Scientists and Specialists, Including Health	Bachelor's Degree	\$74,978	23.1	680	22.5	12	21	13,000	400
17-1012		Landscape Architects	Bachelor's Degree	\$76,000	12.5	110	N/A	N/A	N/A	3,200	N/A
19-2031		Chemists	Bachelor's Degree	\$76,659	11.0	480	0.0	8	8	10,900	250
13-1081		Logisticians	Bachelor's Degree	\$78,861	33.8	720	11.5	12	19	13,600	610
29-9011		Occupational Health and Safety Specialists	Bachelor's Degree	\$80,890	14.3	310	7.7	5	6	6,300	130
13-1111		Management Analysts	Bachelor's Degree	\$84,448	22.5	3,220	16.0	28	55	82,800	1,690
17-1022		Surveyors	Bachelor's Degree	\$85,245	15.7	190	20.0	2	4	5,100	100
17-2081		Environmental Engineers	Bachelor's Degree	\$86,165	25.0	280	20.0	4	8	6,000	200
19-2042		Geoscientists, Except Hydrologists and Geographers	Bachelor's Degree	\$87,326	25.5	260	25.0	4	8	4,700	120
13-2051		Financial Analysts	Bachelor's Degree	\$88,146	24.3	1,370	28.3	10	22	30,000	460
17-2141		Mechanical Engineers	Bachelor's Degree	\$90,973	9.8	940	6.4	25	30	22,500	780
17-2112		Industrial Engineers	Bachelor's Degree	\$92,771	11.1	630	3.1	7	8	19,000	320

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19-2032		Materials Scientists	Bachelor's Degree	\$92,999	15.4	60	N/A	N/A	N/A	1,300	N/A
17-2051		Civil Engineers	Bachelor's Degree	\$93,988	12.6	1,230	20.4	11	22	37,200	540
11-3051		Industrial Production Managers	Bachelor's Degree	\$94,671	10.1	590	11.8	16	23	17,800	680
17-2131		Materials Engineers	Bachelor's Degree	\$98,576	17.2	140	N/A	N/A	N/A	2,900	N/A
17-2071		Electrical Engineers	Bachelor's Degree	\$102,201	10.5	740	1.9	13	15	21,000	530
17-2072		Electronics Engineers, Except Computer	Bachelor's Degree	\$106,211	12.9	1,170	-7.8	37	37	31,800	1,530
11-3131		Training and Development Managers	Bachelor's Degree	\$107,568	18.5	110	16.7	1	2	2,700	60
17-2011		Aerospace Engineers	Bachelor's Degree	\$112,911	13.3	720	0.0	2	2	20,300	100
11-3031		Financial Managers	Bachelor's Degree	\$121,491	13.5	2,210	18.7	25	51	69,600	1,390
11-2021		Marketing Managers	Bachelor's Degree	\$135,742	18.6	1,540	16.2	11	17	32,200	370
11-9121		Natural Sciences Managers	Bachelor's Degree	\$143,098	17.0	680	7.0	26	29	8,800	430
11-9041		Architectural and Engineering Managers	Bachelor's Degree	\$144,681	13.9	1,010	9.6	10	15	30,200	520
19-3051		Urban and Regional Planners	Master's Degree	\$78,710	23.6	450	13.3	16	6	8,900	150
25-1032		Engineering Teachers, Postsecondary	Doctoral Degree	\$109,773	12.9	90	N/A	N/A	N/A	3,100	N/A

\*2010 Standard Occupational Classifications and Occupational Information Network provided by the Department of Labor

\*\*Occupational training and education classifications were developed by the Bureau of Labor Statistics (BLS).

\*\*\*Median 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 2010-1st quarter and do not include self-employed or unpaid family workers.

\*\*\*\*Average Annual Job Openings includes new jobs and replacement needs.

Data Source: State of California Employment Development Department - Labor Market Info

Ventura County Occupational Employment Data Growth Projections  
CLEAN/GREEN (Infrastructure Subcommittee)

	U.S. D.O.L. Green Jobs in Demand		2013 Education and Training Level**	2010 VENTURA COUNTY Median Annual Wages***	2020 CALIFORNIA Employment Growth Projection	CALIFORNIA Average Annual Job Openings****	2020 VENTURA COUNTY Employment Growth Projection	VENTURA COUNTY Average Annual Job Replacement Openings	VENTURA COUNTY Average Annual Job Openings****	2010 CALIFORNIA Average Annual Employment	2010 VENTURA COUNTY Average Annual Employment
SOC Code*		Occupations									

Additional Information:

Living Wage in Ventura County as of December 2013 (California Budget Project)	
\$34,109.00	Single Adult
\$79,549.00	Single-Parent Family*
\$64,203.00	Two-Parent Family* (one working)
\$85,713.00	Two-Working-Parent Family*

\*All family types are assumed to have two children.

Current Employment Data
2020 Growth Projection Data
Priority Occupations Identified by Living Wages & Employment Growth
WIA Placement and Training Data





## **CLEAN/GREEN WORK READINESS: INFRASTRUCTURE SKILLS CATEGORIES**

### **Workforce Investment Board of Ventura County**

SAFETY	MATH CONCEPTS	MEASUREMENTS	HAND AND POWER TOOLS
<ul style="list-style-type: none"> <li>• General workplace safety</li> <li>• Electrical safety including Lock-out/Tag-out procedures</li> <li>• Worker safety</li> <li>• Equipment safety</li> <li>• Climbing/ladder safety</li> <li>• Power tool safety</li> <li>• Safety data sheets</li> <li>• OSHA10</li> <li>• First aid/CPR/AED</li> </ul>	<ul style="list-style-type: none"> <li>• Multiplication, division, addition and subtraction of fractions</li> <li>• Combined operations of fractions and mixed numbers</li> <li>• Algebraic operations of addition, subtraction and multiplication</li> <li>• Ratios and proportions</li> <li>• Table of decimal equivalents and combined operations of decimals</li> <li>• Degree of precision, tolerance and clearances</li> </ul>	<ul style="list-style-type: none"> <li>• Standards</li> <li>• Units of measurement</li> <li>• Tape measure use</li> <li>• Measuring for cutting materials</li> <li>• Basic layout (surveying)</li> <li>• Mass and weight measurement</li> <li>• Measuring fluids</li> <li>• Measuring solid materials (sand, cement, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Tape measures, squares and levels</li> <li>• Basic hand tools – saws, hammers, screw drivers, wrenches</li> <li>• Power tools – saws, drills, screwdrivers</li> <li>• Pneumatic drills and nail guns</li> <li>• Powder actuated tools</li> <li>• Laser equipment</li> </ul>
SUSTAINABILITY AND QUALITY	BLUEPRINT CONCEPTS	EMPLOYABILITY SKILLS	COMPUTER SKILLS
<ul style="list-style-type: none"> <li>• Sustainable work processes:               <ul style="list-style-type: none"> <li>○ Conservation</li> <li>○ Reuse</li> <li>○ Recycle</li> <li>○ Repurpose</li> <li>○ Reduce</li> <li>○ Economy of use/right-sizing</li> </ul> </li> <li>• Importance of individual – do it right the first time</li> <li>• Continuous process improvement for green purposes</li> </ul>	<ul style="list-style-type: none"> <li>• Introduction basic construction drawings</li> <li>• Basic blueprint reading</li> <li>• Understanding different drawing types:               <ul style="list-style-type: none"> <li>○ Civil</li> <li>○ Electrical</li> <li>○ Mechanical</li> <li>○ Repair/renovation</li> <li>○ New construction</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Basics of interviewing</li> <li>• Work ethic</li> <li>• Oral communication</li> <li>• Written communication</li> <li>• Time management</li> <li>• Task prioritization</li> <li>• Worker, supervisor, manager etiquette and protocol basics</li> <li>• Basic company policy understanding</li> </ul>	<ul style="list-style-type: none"> <li>• Excel</li> <li>• Word</li> <li>• OS basics</li> <li>• Computer navigation</li> <li>• Computer security</li> <li>• Computer etiquette</li> <li>• Viewer basics, PDF, CAD, jpg, png, bmp, TIFF, Solid Works, etc.</li> <li>• File extension basics</li> </ul>



## **CLEAN/GREEN WORK READINESS: ESSENTIAL SKILLS CATEGORIES**

### **Workforce Investment Board of Ventura County**

<b>BASICS OF QUALITY CONTROL</b>	<b>EMPLOYABILTY SKILLS</b>	<b>COMPUTER SKILLS</b>
<ul style="list-style-type: none"><li>• Know processes, as applicable, per business</li><li>• Basic quality methodology and inspection techniques</li><li>• Importance of individual responsibility – to do it right the first time</li><li>• Manufacturing theory and quality control</li><li>• Lean manufacturing and quality control</li><li>• Knowledge of regulations and systems processes</li><li>• Knowledge of waste management – waste reduction advantages</li><li>• Certification and best practices</li></ul>	<ul style="list-style-type: none"><li>• Initiative</li><li>• Basics of interviewing</li><li>• Work ethic</li><li>• Communication skills</li><li>• Continuous improvement skills</li><li>• Basic company policy understanding</li><li>• Time management</li><li>• Task prioritization</li><li>• Worker, supervisor, manager etiquette and protocol basics</li><li>• Opportunities for work experience – applications of skills in work settings</li><li>• Apprenticeships- knowledge sustainable career pathways and paid training opportunities</li></ul>	<ul style="list-style-type: none"><li>• Microsoft Excel</li><li>• Microsoft Word</li><li>• Microsoft Access</li><li>• Operating System basics</li><li>• Computer navigation</li><li>• Computer security</li><li>• Computer etiquette</li><li>• ERP basics</li><li>• Viewer basics like PDF, CAD, jpg, png, bmp, TIFF, Solid Works, etc.</li><li>• File extension basics</li><li>• Basic programming</li></ul>





## BUILDING AND CONSTRUCTION TRADES PATHWAY STANDARDS

### A. Cabinetry, Millwork, and Woodworking Pathway

The Cabinetry, Millwork, and Woodworking pathway provides learning opportunities for students interested in preparing for careers in cabinet construction, millwork, finish carpentry, and furniture making for both production and custom products.

Please rate the standards below.

	<b>Community College</b>	<b>Adult Education</b>	<b>K-12</b>	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>A1.0</b> Demonstrate competence in planning, design, layout, and technical drawing interpretation for practical use in cabinetmaking and millworking.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<b>Community College</b>	<b>Adult Education</b>	<b>K-12</b>	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>A2.0</b> Differentiate between the various furniture and cabinet styles used in the cabinet and furniture industry.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<b>Community College</b>	<b>Adult Education</b>	<b>K-12</b>	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>A3.0</b> Interpret and apply information to develop a bill of materials, estimate the cost of materials, and develop a plan of procedures to complete a project.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	



## BUILDING AND CONSTRUCTION TRADES PATHWAY STANDARDS

	<b>Community College</b>	<b>Adult Education</b>	<b>K-12</b>	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>A4.0</b> Demonstrate proper selection and use of woodworking tools.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<b>Community College</b>	<b>Adult Education</b>	<b>K-12</b>	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>A5.0</b> Identify wood products and materials used in the furniture and cabinetmaking industry and describe their characteristics and uses.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<b>Community College</b>	<b>Adult Education</b>	<b>K-12</b>	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>A6.0</b> Compare and contrast the advantages and disadvantages of using laminates verses using veneers.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<b>Community College</b>	<b>Adult Education</b>	<b>K-12</b>	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>A7.0</b> Demonstrate competence in various construction processes in the cabinetmaking, furniture making, and millworking industries.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	



## BUILDING AND CONSTRUCTION TRADES PATHWAY STANDARDS

	Community College	Adult Education	K-12	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>A8.0</b> Utilize appropriate abrasives to prepare a project for a specific finish.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Community College	Adult Education	K-12	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>A9.0</b> Understand finishes and when to apply paint, stains, sealers, varnishes, and catalyzed finishes, including water- and oil-based finishes.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Community College	Adult Education	K-12	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>A10.0</b> Demonstrate proper techniques for cabinet installation.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Community College	Adult Education	K-12	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>A11.0</b> Identify the advantages and disadvantages for various countertop materials.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	



### **A. Cabinetry, Millwork, and Woodworking Pathway**

The Cabinetry, Millwork, and Woodworking pathway provides learning opportunities for students interested in preparing for careers in cabinet construction, millwork, finish carpentry, and furniture making for both production and custom products.

Sample occupations associated with this pathway:

-  Cabinetmaker
-  Cabinet Installer
-  Woodworking Machinery Operator
-  Custom Millwork Project Estimator
-  Woodworking Engineer/Drafter (CAD)

- A1.0 Demonstrate competence in planning, design, layout, and technical drawing interpretation for practical use in cabinetmaking and millworking.
  - A1.1 Identify common sizes in relation to furniture and cabinets.
  - A1.2 Describe the relationship between the function and form of a cabinet.
  - A1.3 Calculate board, square, and linear feet.
  - A1.4 Estimate material costs.
  - A1.5 Apply design elements: shapes, textures, lines, and colors to create functional and attractive cabinets, furniture, and millwork.
  - A1.6 Apply principles of design, harmony, repetitions, balance, and proportion to create functional and attractive cabinets, furniture, and millwork.
  - A1.7 Read and interpret technical drawings.
  - A1.8 Sketch a project using manual drawing techniques.
  - A1.9 Use drafting tools to create a pictorial and working drawing for a basic cabinet.
- A2.0 Differentiate between the various furniture and cabinet styles used in the cabinet and furniture industry.
  - A2.1 Identify various cabinet styles and list characteristics of traditional, provincial, and contemporary designs.
  - A2.2 Identify various kitchen, bath, and utility cabinet components.
  - A2.3 Explain the progress of cabinetry and furniture styles from the seventeenth century to today.
- A3.0 Interpret and apply information to develop a bill of materials, estimate the cost of materials, and develop a plan of procedures to complete a project.
  - A3.1 List the sequence of cutting procedures, assembly, and finishing steps.
  - A3.2 Evaluate an existing bill of materials for accuracy.



- A3.3 Determine the cost of materials needed for a cabinet or furniture project.
- A3.4 Optimize available materials from a cutting diagram.
- A3.5 Compare and contrast the cost of a specific project using different materials.
- A3.6 Develop a materials list, cut list, and cost estimate from a working drawing for a specific cabinet project.
- A4.0 Demonstrate proper selection and use of woodworking tools.
  - A4.1 Demonstrate the accurate use of common measuring and layout tools.
  - A4.2 Select the proper layout tools for specific tasks.
  - A4.3 Select the proper cutting tools for specific operations (e.g., straight cuts, curves, drilling holes).
  - A4.4 Select the most appropriate blade for a given operation.
  - A4.5 Select the proper boring tools for specific operations.
  - A4.6 Select the proper hand-shaping tools for specific operations.
  - A4.7 Select proper clamping tools for specific operations.
- A5.0 Identify wood products and materials used in the furniture and cabinetmaking industry and describe their characteristics and uses.
  - A5.1 Define the difference between a hardwood and softwood.
  - A5.2 Identify several different species of hardwood and their characteristics that are common to the cabinetmaking and millwork industry.
  - A5.3 Identify several different species of softwood and their characteristics that are common to the cabinetmaking and millwork industry.
  - A5.4 Identify common defects found in wood and list possible solutions.
  - A5.5 Identify and be able to differentiate panel products and their uses in the cabinetmaking industry.
  - A5.6 Describe the cutting and handling techniques used for sheet goods.
  - A5.7 Compare and contrast the advantages and disadvantages of sheet goods versus solid wood stock.
  - A5.8 Identify standard sizes and grades of various laminates.
  - A5.9 Describe how the expansion and contraction of solid wood affects the design of joinery used in furniture and cabinet construction.
  - A5.10 Identify the proper adhesive required for applying laminate.
  - A5.11 Identify standard sizes and grades of various veneers.
  - A5.12 Identify the proper adhesive(s) required for applying veneers.
  - A5.13 Identify the different types of pattern matching in veneers.





- A6.0 Compare and contrast the advantages and disadvantages of using laminates versus using veneers.
  - A6.1 Demonstrate a working knowledge of joinery, fasteners, and adhesives.
  - A6.2 Define the purposes for metallic fasteners in furniture and cabinetmaking.
  - A6.3 Select the proper metallic fasteners for specific applications.
  - A6.4 Demonstrate the proper use of metallic fasteners for specific applications.
  - A6.5 Compare and contrast joints commonly used in the cabinetmaking and millworking industries (i.e., strength, appearance, and ease of construction).
  - A6.6 Determine the appropriate application of a variety of joinery techniques, including dowels, biscuits, pocket holes, and mortise and tenon
  - A6.7 Identify characteristics of adhesives that affect the assembly time, cure time, and strength of the product.
  - A6.8 Select the proper adhesive(s) to construct wood joints used in furniture or cabinets.
  - A6.9 Demonstrate initial assembly and dry clamping procedures.
  - A6.10 Demonstrate the proper use and application of adhesives.
  - A6.11 Demonstrate the proper cleanup procedures for specific adhesives.
  - A6.12 Select the correct type of wood joint used for a specific application and material.
  - A6.13 Demonstrate the ability to construct a variety of wood joints (i.e. butt, miter, compound miter, half lap, mortise and tenon).
- A7.0 Demonstrate competence in various construction processes in the cabinetmaking, furniture making, and millworking industries.
  - A7.1 Square and surface a board to a specific size.
  - A7.2 Demonstrate common case construction.
  - A7.3 Demonstrate common frame and panel construction.
  - A7.4 Construct a case with a face frame using appropriate construction techniques.
  - A7.5 Construct a frameless case using appropriate construction techniques.
  - A7.6 Construct a cabinet drawer using appropriate construction techniques.
  - A7.7 Construct a cabinet door using appropriate construction techniques.
  - A7.8 Demonstrate the use of a jig, template, or fixture in a production project.
  - A7.9 Use appropriate methods and tools to check the accuracy of a project.
  - A7.10 Demonstrate the use of a mass production technique (i.e., parts duplication and assembly processes).
  - A7.11 Lay out, install, and adjust the appropriate drawer hardware to include drawer slides and pulls.
  - A7.12 Lay out, install, and adjust the appropriate door hardware to include European and standard hinges.



- A7.13 Apply a plastic laminate to a surface using appropriate adhesive and trim to fit.
- A7.14 Use the appropriate adhesives and fasteners to install different types of trim, moldings, or other edge treatments.
- A8.0 Utilize appropriate abrasives to prepare a project for a specific finish.
  - A8.1 Select the proper abrasive for shaping and smoothing materials.
  - A8.2 Select the proper grit sizes and sequences for shaping and smoothing operations.
  - A8.3 Demonstrate proper selection, application, and cleaning methods for various types of filler materials.
  - A8.4 Properly prepare a surface for finishing.
- A9.0 Understand finishes and when to apply paint, stains, sealers, varnishes, and catalyzed finishes, including water- and oil-based finishes.
  - A9.1 Demonstrate proper selection and application methods of different types of stains for a specific application.
  - A9.2 Demonstrate cleaning procedure for various types of stains.
  - A9.3 Select the proper type of sealer and finish coat for a specific application.
  - A9.4 Demonstrate proper application methods for different types of sealers and finish coats.
  - A9.5 Demonstrate cleaning procedures for various types of sealer and finish coats.
  - A9.6 Apply a suitable finish to a specific cabinet or millwork project.
- A10.0 Demonstrate proper techniques for cabinet installation.
  - A10.1 Transport a project from one location to another without damage.
  - A10.2 Lay out a cabinet installation according to a floor plan.
  - A10.3 Create and adjust a layout to plumb, square, and level.
  - A10.4 Install a base and upper cabinet.
  - A10.5 Scribe a cabinet to fit a corner or against an irregular wall surface.
- A11.0 Identify the advantages and disadvantages for various countertop materials.
  - A11.1 Identify a variety of materials used for kitchen and bath countertops and list their advantages and disadvantages.
  - A11.2 Describe the methods for attaching different countertops to a cabinet.
  - A11.3 Install of a variety of countertop materials using appropriate fastening methods.
  - A11.4 Use a cut-in template for the installation of sink, faucets, cooktop, and other fixtures.



## BUILDING AND CONSTRUCTION TRADES PATHWAY STANDARDS

### D. Residential and Commercial Construction Pathway

The Residential and Commercial Construction pathway provides learning opportunities for students interested in preparing for careers in construction and building design, performance, and sustainability. The standards focus on the manner in which residential and commercial structures are designed and built. The pathway includes instruction in the way in which these structures are built (Class B California License).

Please rate the standards below.

	Community College	Adult Education	K-12	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>D1.0</b> Recognize the impact of financial, technical, environmental, and labor trends on the past and future of the construction industry.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Community College	Adult Education	K-12	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>D2.0</b> Apply the appropriate mathematical calculations used in the construction trades.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Community College	Adult Education	K-12	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>D3.0</b> Interpret and apply information from technical drawings, schedules, and specifications used in the construction trades.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	





## BUILDING AND CONSTRUCTION TRADES PATHWAY STANDARDS

	Community College	Adult Education	K-12	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	D4.0 Demonstrate techniques for proper site preparation.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Community College	Adult Education	K-12	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	D5.0 Demonstrate foundation layout techniques to include setting forms, placing reinforcements, and placing concrete according to construction drawings, specifications, and building codes.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Community College	Adult Education	K-12	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	D6.0 Demonstrate carpentry techniques for the construction of a single-family residence.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Community College	Adult Education	K-12	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	D7.0 Demonstrate proper installation techniques of interior finish materials and protective finishes.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	



## BUILDING AND CONSTRUCTION TRADES PATHWAY STANDARDS

	<b>Community College</b>	<b>Adult Education</b>	<b>K-12</b>	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>D8.0</b> Demonstrate the application of exterior finish materials and protective finishes in building construction.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<b>Community College</b>	<b>Adult Education</b>	<b>K-12</b>	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>D9.0</b> Understand, integrate, and employ sustainable construction practices in the building trades.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<b>Community College</b>	<b>Adult Education</b>	<b>K-12</b>	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>D10.0</b> Demonstrate skills necessary to complete a plumbing system in a single-family residence in accordance with accepted industry standards.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<b>Community College</b>	<b>Adult Education</b>	<b>K-12</b>	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>D11.0</b> Demonstrate skills necessary to complete an electrical system in a single-family residence in accordance with accepted industry standards.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	



### **D. Residential and Commercial Construction Pathway**

The Residential and Commercial Construction pathway provides learning opportunities for students interested in preparing for careers in construction and building design, performance, and sustainability. The standards focus on the manner in which residential and commercial structures are designed and built. The pathway includes instruction in the way in which these structures are built (Class B California License).

Sample occupations associated with this pathway:

-  Plumber
-  Electrician
-  Building Inspector
-  Estimator
-  Carpenter

- D1.0 Recognize the impact of financial, technical, environmental, and labor trends on the past and future of the construction industry.
  - D1.1 Understand significant historical trends in the construction industry.
  - D1.2 Understand the environmental regulations that influence residential and commercial design.
  - D1.3 Demonstrate knowledge of the California Environmental Quality Act (CEQA) and Environmental Impact Review (EIRs) impacts on residential and commercial construction.
- D2.0 Apply the appropriate mathematical calculations used in the construction trades.
  - D2.1 Apply formulas to determine area, volume, lineal, board, and square feet.
  - D2.2 Apply the Pythagorean Theorem to calculate pipe offsets, roof slope, and check for square.
  - D2.3 Estimate the materials needed to complete a specific task.
  - D2.4 Determine the total developed length of the water supply piping system.
  - D2.5 Calculate the residual pressure at the highest outlet per the requirements of the Plumbing Code.
  - D2.6 Calculate the total fixture unit demand from the fixtures indicated on the construction drawings using the tables of the plumbing code.
  - D2.7 Calculate the proper slope for drain, waste and vent (DWV) piping.
  - D2.8 Apply Ohm's Law to calculate resistance, current flow, and voltage in series, parallel, and combination circuits.
  - D2.9 Calculate the load on an electrical system from general lighting and small and large appliances.



- D3.0 Interpret and apply information from technical drawings, schedules, and specifications used in the construction trades.
  - D3.1 Identify the elements used in technical drawings, including types of lines, symbols, details, and views.
  - D3.2 Identify and interpret the elements of technical drawings, including plan, elevation, section, and detail views.
  - D3.3 Interpret technical drawings specifications.
  - D3.4 Identify plumbing, electrical, and mechanical symbols and other abbreviations used in construction drawings.
  - D3.5 Interpret and scale dimensions from a set of plans using an architect's scale.
  - D3.6 Interpret sectional and detail drawings to determine construction details such as corners, rough openings, stairs, and roof systems.
  - D3.7 Understand the sequencing and phases of residential and commercial construction projects.
- D4.0 Demonstrate techniques for proper site preparation.
  - D4.1 Use leveling devices to check for elevation, level, and plumb.
  - D4.2 Demonstrate how to establish grades using survey instruments.
  - D4.3 Install batter boards.
  - D4.4 Check site layout for square using the diagonal method.
  - D4.5 Describe excavation and backfill methods.
  - D4.6 Identify different methods and equipment used for compaction.
  - D4.7 Identify types of backfill materials and how they are used.
- D5.0 Demonstrate foundation layout techniques to include setting forms, placing reinforcements, and placing concrete according to construction drawings, specifications, and building codes.
  - D5.1 Describe the sequencing procedures for placing large and small slabs.
  - D5.2 Demonstrate how to establish elevations for concrete structures.
  - D5.3 Lay out location and elevation of concrete/masonry structures based on construction drawings.
  - D5.4 Develop a material take-off in accordance with construction drawings and specifications.
  - D5.5 Lay out location for reinforcements, expansion joints, openings, and embedded items based on construction drawings, specifications, and building codes.
  - D5.6 Construct, place, and brace forms for concrete as detailed in construction drawings for footings, slab, and raised floors.
  - D5.7 Place and secure reinforcement as detailed by construction drawings, building codes, and industry standards.





- D5.8 Place secure embedded hardware as detailed on construction drawings.
- D5.9 Demonstrate proper removal and care of concrete forms.
- D5.10 Use appropriate tools and techniques for placing, compacting, screeding, and finishing consolidating concrete in slabs and footings.
- D6.0 Demonstrate carpentry techniques for the construction of a single-family residence.
  - D6.1 Properly place a moisture barrier and pest control guard on a foundation.
  - D6.2 Attach a sill plate at top of concrete foundation.
  - D6.3 Lay out, cut, and install joist supports, rim joists, and floor joists as specified on construction plans.
  - D6.4 Install a subfloor.
  - D6.5 Demonstrate wall and plate layout, including rough openings.
  - D6.6 Measure, cut, and assemble wall components using appropriate tools and fasteners.
  - D6.7 Demonstrate the ability to square wall systems and install wall bracing and shear panels according to code.
  - D6.8 Stand, square, plumb, and brace walls.
  - D6.9 Describe the applications and uses of metal stud framing.
  - D6.10 Lay out, cut, and install ceiling joists and common and jack rafters.
  - D6.11 Frame and erect shed and gable roof systems.
  - D6.12 Lay out and install trusses "on-center" with specified hardware.
  - D6.13 Install appropriate blocking, bracing, lookouts, fascia, and drip edge.
  - D6.14 Frame for roof penetrations and attic access.
  - D6.15 Apply roof sheathing and install appropriate flashings.
  - D6.16 Understand different roofing materials and methods of application.
- D7.0 Demonstrate proper installation techniques of interior finish materials and protective finishes.
  - D7.1 Identify types and uses of wall finishing materials.
  - D7.2 Cut, fit, and install gypsum wallboard onto a framed wall using appropriate fasteners.
  - D7.3 Describe the finishes and textures for gypsum wallboard.
  - D7.4 Properly prepare walls to receive protective finishes.
  - D7.5 Apply finishes according to specifications and industry standards.
  - D7.6 Identify types and application of finish flooring materials.
  - D7.7 Install pre-hung interior doors.
  - D7.8 Install interior trim and case work.



- D8.0 Demonstrate the application of exterior finish materials and protective finishes in building construction.
  - D8.1 Describe the installation procedures and techniques of masonry siding materials.
  - D8.3 Install wood, vinyl, and/or manufactured siding.
  - D8.4 Demonstrate preparation techniques for applying exterior paint and stain.
  - D8.5 Apply exterior paint and stain according to specifications.
  - D8.6 Describe various types and uses of doors and windows used in building construction.
  - D8.7 Install pre-hung windows and doors using appropriate flashing and trim.
  - D8.8 Caulk and seal joints to prevent air and moisture infiltration and increase energy efficiency.
  - D8.9 Install vents for efficient attic and crawl space ventilation.
  - D8.10 Install various types of floor, wall, and ceiling thermal insulation.
  - D8.11 Describe mold-prevention techniques.
- D9.0 Understand, integrate, and employ sustainable construction practices in the building trades.
  - D9.1 Identify design and energy solutions for improving building energy efficiency.
  - D9.2 Identify materials used in building construction to increase energy efficiency and sustainability.
  - D9.3 Calculate energy requirements and loads for buildings and structures.
  - D9.4 Demonstrate the application of constructing materials intended to improve building efficiency and sustainability.
  - D9.5 Analyze and evaluate buildings for energy efficiency and performance.
  - D9.6 Develop solutions to improve building energy performance and efficiency.
- D10.0 Demonstrate skills necessary to complete a plumbing system in a single-family residence in accordance with accepted industry standards.
  - D10.1 Demonstrate techniques for cutting, deburring, and joining metallic and nonmetallic water piping.
  - D10.2 Lay out and install hot and cold water piping to fixture locations as indicated on the construction documents.
  - D10.3 Perform pressure test of an installed piping system.
  - D10.4 Install fastened in-place fixture valves and shut-off valves as indicated on construction drawings.
  - D10.5 Install and secure proper drainage piping to fixture locations.
  - D10.6 Determine the proper slope for DWV piping using hand levels, laser levels, and transits.
  - D10.7 Install traps and vents as indicated by construction drawings, specifications, and government codes.





- D10.8 Install angle stops at water supply stub outs.
- D10.9 Install plumbing fixtures.
- D10.10 Connect the water supply to faucets and water closets.
- D10.11 Connect fixture tailpieces to fixtures and to traps.
- D10.12 Check for the proper functioning of fixtures.
- D11.0 Demonstrate skills necessary to complete an electrical system in a single-family residence in accordance with accepted industry standards.
  - D11.1 Determine whether or not an electrical circuit is "live."
  - D11.2 Prepare rough framing for the installation of electrical cables and conduit.
  - D11.3 Lay out components to the tolerances indicated on the construction drawings, specifications, and government codes.
  - D11.4 Install typical devices, junction boxes, and panels.
  - D11.5 Install lighting and ceiling fan support boxes according to the National Electrical Code (NEC).
  - D11.6 Install conduit typical of residential construction and pull conductors through conduit as required by the NEC.
  - D11.7 Splice and tap conductors for the installation of fixtures and devices.
  - D11.8 Install low voltage control and communication cables.
  - D11.9 Demonstrate grounding techniques for all electrical boxes, cabinets, and enclosures.
  - D11.10 Terminate electrical connections to receptacles, switches, lighting fixtures, large appliances, and other devices.
  - D11.11 Select receptacles and switches based on load requirements.
  - D11.12 Terminate equipment grounding and neutral conductor at the electrical service.
  - D11.13 Terminate communication and control wiring.



## AGRICULTURE AND NATURAL RESOURCES PATHWAY STANDARDS

### A. Agricultural Business Pathway

In the Agricultural Business pathway, students learn about agricultural business operation and management. Topics include accounting, finance, economics, business organization, marketing, and sales.

**Please rate the following standards.**

				<b>A1.0</b> Demonstrate an understanding of decision-making processes within the American free-enterprise system.
	<b>Community College</b>	<b>Adult Education</b>	<b>K-12</b>	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
				<b>A2.0</b> Explain the fundamental economic principles of agribusiness and agricultural production
	<b>Community College</b>	<b>Adult Education</b>	<b>K-12</b>	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
				<b>A3.0</b> Explore the role of credit in agribusiness and agricultural production.
	<b>Community College</b>	<b>Adult Education</b>	<b>K-12</b>	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	





## AGRICULTURE AND NATURAL RESOURCES PATHWAY STANDARDS

	Community College	Adult Education	K-12	A4.0    Use proper accounting principles and procedures to accomplish fiscal management and tax planning.
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Community College	Adult Education	K-12	A5.0    Manage risk and uncertainty
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Community College	Adult Education	K-12	A6.0    Evaluate the role and value of agricultural organizations.
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Community College	Adult Education	K-12	A7.0    Understand agricultural marketing systems
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	



## AGRICULTURE AND NATURAL RESOURCES PATHWAY STANDARDS

	Community College	Adult Education	K-12	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>A8.0</b> Understand the sales of agricultural products and services.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Community College	Adult Education	K-12	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>A9.0</b> Differentiate among local, national, and international agricultural markets and communicate how trade affects the economy.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

# Agriculture and Natural Resources

## Pathway Standards



### A. Agricultural Business Pathway

In the Agricultural Business pathway, students learn about agricultural business operation and management. Topics include accounting, finance, economics, business organization, marketing, and sales.

Sample occupations associated with this pathway:

-  Agriculture Inspector
-  Farm and Ranch Manager
-  Sales Representative
-  Business Controller
-  Agricultural Credit Manager

- A1.0 Demonstrate an understanding of decision-making processes within the American free-enterprise system.
  - A1.1 Differentiate among the components of the American free-enterprise system and other forms of economic systems.
  - A1.2 Distinguish among the main characteristics of individual proprietorships, partnerships, corporations, franchises, and cooperatives.
  - A1.3 Compare the advantages and disadvantages of the types of business ownership.
  - A1.4 Analyze appropriate decision-making tools and financial records to make key management decisions.
  - A1.5 Analyze physical production relationships to determine optimum use levels.
  - A1.6 Calculate the fixed and variable costs associated with the production of agricultural products and determine the output level that will yield maximum profit.
- A2.0 Explain the fundamental economic principles of agribusiness and agricultural production.
  - A2.1 Identify basic economic factors affecting agricultural production and agribusiness management decisions.
  - A2.2 Communicate basic agricultural economic terminology.
  - A2.3 Apply the law of supply and demand and evaluate its effect on price determination.
  - A2.4 Assess how agriculture uses scarce resources to meet the needs and demands of its consumers.
  - A2.5 Differentiate between elastic and inelastic supply and demand.
  - A2.6 Predict how the law of diminishing returns impacts agricultural production.
- A3.0 Explore the role of credit in agribusiness and agricultural production.
  - A3.1 Analyze the factors that determine the cost of credit in order to select optimum credit sources (e.g., the advantages and disadvantages of borrowing from the various types of credit providers and sources for short-term, intermediate-term, and long-term credit).



- A3.2 Research and discuss the criteria lenders use to evaluate repayment capacity.
- A3.3 Evaluate balance sheets and cash-flow statements to determine the ability to repay loans.
- A4.0 Use proper accounting principles and procedures to accomplish fiscal management and tax planning.
  - A4.1 Compare and contrast cash and accrual accounting systems.
  - A4.2 Demonstrate the use and describe the importance of budgets, income statements, balance sheets, and financial statements.
  - A4.3 Interpret the basis of taxation within the tax system and its impact on the economy, including the role of taxes in agribusiness.
  - A4.4 Analyze the role of depreciation and purchasing in tax planning and liability.
  - A4.5 Determine property values and complete a depreciation schedule.
  - A4.6 Formulate the tax obligations for an agribusiness.
- A5.0 Manage risk and uncertainty.
  - A5.1 Explore environmental issues that impact agribusiness.
  - A5.2 Determine the meaning and importance of risk and uncertainty.
  - A5.3 Describe alternative approaches to reducing risk, including the use of insurance for product liability, property, production or income loss, and for personnel life and health.
  - A5.4 Maintain appropriate evidence (e.g., Point of Origin, pick/pack dates, production records) to support and defend risk management.
  - A5.5 Identify best practices and include in farm planning to reduce risk.
  - A5.6 Prepare a comprehensive risk management and contingency plan.
- A6.0 Evaluate the role and value of agricultural organizations.
  - A6.1 Distinguish the benefits of private, public, and governmental organizations, including the value and impact of cooperatives.
  - A6.2 Understand how participation in organizations would be beneficial in supporting various agricultural operations.
  - A6.3 Identify, and electronically access, public and private agricultural organizations.
- A7.0 Understand agricultural marketing systems.
  - A7.1 Explain how marketing functions in a free-market society.
  - A7.2 Compare the advantages and disadvantages of the various marketing options for agricultural products and services.
  - A7.3 Analyze how the law of comparative advantage affects agricultural production.
  - A7.4 Explore the impact of advertising, promotion, and data analysis on the marketing of agricultural products and services.





- A7.5 Assess how promotion trends for agricultural products influence individuals.
- A7.6 Develop a marketing plan for an agricultural product or service.
- A8.0 Understand the sales of agricultural products and services.
  - A8.1 Determine the most effective methods for assessing customer needs and wants.
  - A8.2 Describe the stages in making a successful sale and the various techniques used to approach potential customers and overcome their objections.
  - A8.3 Examine the physiological and psychological factors that influence motivation to purchase, including the fundamental steps in making a purchase.
- A9.0 Differentiate among local, national, and international agricultural markets and communicate how trade affects the economy.
  - A9.1 Describe how the importance of agricultural imports and exports affects state and national economies.
  - A9.2 Summarize how governmental, economic, and cultural factors affect international trade.
  - A9.3 Compare and contrast United States trade policies with those of other important trading partners.
  - A9.4 Research how biotechnology affects trade and global economies.
  - A9.5 Evaluate how different cultural values affect agricultural production and marketing.
  - A9.6 Explain how negotiations and bargaining agreements affect trade agreements.
  - A9.7 Analyze agricultural marketing strategies in other parts of the world.



## AGRICULTURE AND NATURAL RESOURCES PATHWAY STANDARDS

### C. Agriscience Pathway

The Agriscience pathway helps students acquire a broad understanding of a variety of agricultural areas, develop an awareness of the many career opportunities in agriculture, participate in occupationally relevant experiences, and work cooperatively with a group to develop and expand leadership abilities. Students study California agriculture, agricultural business, agricultural technologies, natural resources, and animal, plant, and soil sciences.

**Please rate the standards below.**

	Community College	Adult Education	K-12	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>C1.0</b> Evaluate the role of agriculture in the California economy
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Community College	Adult Education	K-12	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>C2.0</b> Examine the interrelationship between agriculture and the environment.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	



## AGRICULTURE AND NATURAL RESOURCES PATHWAY STANDARDS

	Community College	Adult Education	K-12	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>C3.0</b> Analyze the effects of technology on agriculture
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Community College	Adult Education	K-12	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>C4.0</b> Determine the importance of animals, the domestication of animals, and the role of animals in modern society.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Community College	Adult Education	K-12	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>C5.0</b> Compare the structure and function of plants, animals, bacteria, and viruses.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Community College	Adult Education	K-12	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>C6.0</b> Explore animal anatomy and systems.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	



## AGRICULTURE AND NATURAL RESOURCES PATHWAY STANDARDS

	Community College	Adult Education	K-12	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>C7.0</b> Comprehend basic animal genetics.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

	Community College	Adult Education	K-12	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>C8.0</b> Understand fundamental animal nutrition and feeding.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

	Community College	Adult Education	K-12	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>C9.0</b> Evaluate basic animal health.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

	Community College	Adult Education	K-12	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>C10.0</b> Explain soil science principles.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	





## AGRICULTURE AND NATURAL RESOURCES PATHWAY STANDARDS

	Community College	Adult Education	K-12	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>C11.0</b> Analyze plant growth and development
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

	Community College	Adult Education	K-12	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>C12.0</b> Understand fundamental pest management
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

	Community College	Adult Education	K-12	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>C13.0</b> Design agricultural experiments using the scientific method.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	



## Agriculture and Natural Resources Pathway Standards

### C. Agriscience Pathway

The Agriscience pathway helps students acquire a broad understanding of a variety of agricultural areas, develop an awareness of the many career opportunities in agriculture, participate in occupationally relevant experiences, and work cooperatively with a group to develop and expand leadership abilities. Students study California agriculture, agricultural business, agricultural technologies, natural resources, and animal, plant, and soil sciences.

Sample occupations associated with this pathway:

-  Research Assistant/Associate
-  Water Quality Specialist
-  Plant Scientist
-  Agriscience Teacher
-  Entomologist

- C1.0 Evaluate the role of agriculture in the California economy.
  - C1.1 Understand the history of the agricultural industry in California.
  - C1.2 Describe how California agriculture affects the quality of life.
  - C1.3 Analyze the interrelationship of California agriculture and society at the local, state, national, and international levels.
  - C1.4 Research the economic impact of leading California agricultural commodities.
  - C1.5 Assess the economic impact of major natural resources in California.
  - C1.6 Distinguish between the economic importance of major agricultural exports and imports.
  - C1.7 Explore factors that affect food safety and producers' responsibilities to consumers.
- C2.0 Examine the interrelationship between agriculture and the environment.
  - C2.1 Identify important agricultural environmental impacts on soil, water, and air.
  - C2.2 Explain current environmental challenges related to agriculture.
  - C2.3 Summarize how natural resources are used in agriculture.
  - C2.4 Compare and contrast practices for conserving renewable and nonrenewable resources.
  - C2.5 Research how new energy sources are developed from agricultural products (e.g., gas-cogeneration and ethanol).
- C3.0 Analyze the effects of technology on agriculture.
  - C3.1 Describe how technology affects the logistics of moving an agricultural commodity from producer to consumer.
  - C3.2 Understand how technology influences factors such as labor, efficiency, diversity, availability, mechanization, and communication.



- C3.3 Communicate public concern for technological advancements in agriculture, such as genetically modified organisms.
- C3.4 Research the laws and regulations concerning biotechnology.
- C3.5 Integrate the use of technology when collecting and analyzing data.
- C4.0 Determine the importance of animals, the domestication of animals, and the role of animals in modern society.
  - C4.1 Understand the evolution and roles of domesticated animals in society.
  - C4.2 Differentiate between domestication and natural selection.
  - C4.3 Compile the modern-day uses of animals and animal by-products.
  - C4.4 Defend various points of view regarding the use of animals.
  - C4.5 Research unique and alternative uses of animals (e.g., therapeutic riding programs and companion animals).
- C5.0 Compare the structure and function of plants, animals, bacteria, and viruses.
  - C5.1 Identify the function of cells.
  - C5.2 Analyze the anatomy and physiology of cells.
  - C5.3 Understand various cell actions, such as osmosis and cell division.
  - C5.4 Compare and contrast plant and animal cells, bacteria, and viruses.
- C6.0 Explore animal anatomy and systems.
  - C6.1 State the names, and find the locations, of the external anatomy of animals.
  - C6.2 Explain the anatomy and major functions of vertebrate systems, including digestive, reproductive, circulatory, nervous, muscular, skeletal, respiratory, and endocrine systems.
- C7.0 Comprehend basic animal genetics.
  - C7.1 Differentiate between genotype and phenotype and describe how dominant and recessive genes function.
  - C7.2 Compare genetic characteristics among cattle, sheep, swine, and horse breeds.
  - C7.3 Predict phenotype and genotype ratios by using a Punnett Square.
  - C7.4 Explain the fertilization process.
  - C7.5 Distinguish between the purpose and processes of mitosis and meiosis.
- C8.0 Understand fundamental animal nutrition and feeding.
  - C8.1 Identify types of nutrients required by farm animals (e.g., proteins, minerals, vitamins, carbohydrates, fats/oils, water).
  - C8.2 Analyze suitable common feed ingredients, including forages, roughages, concentrates, and supplements for ruminant, monogastric, equine, and avian digestive systems.
  - C8.3 Understand basic animal feeding guidelines and evaluate sample feeding programs for various species, including space requirements and economic considerations.





C9.0 Evaluate basic animal health.

- C9.1 Assess the appearance and behavior of a normal, healthy animal.
- C9.2 Explain the ways in which housing, sanitation, and nutrition influence animal health and behavior.
- C9.3 Analyze the causes and controls of common animal diseases.
- C9.4 Summarize effective techniques for controlling parasites and explain why controlling parasites is important.
- C9.5 Research the legal requirements for the procurement, storage, methods of application, and withdrawal times of animal medications, and know proper equipment handling and disposal techniques.

C10.0 Explain soil science principles.

- C10.1 Recognize the major soil components and types.
- C10.2 Summarize how soil texture, structure, pH, and salinity affect plant growth.
- C10.3 Assess water delivery and irrigation system options.
- C10.4 Differentiate among the types, uses, and applications of amendments and fertilizers.

C11.0 Analyze plant growth and development.

- C11.1 Understand the anatomy and functions of plant systems and structures.
- C11.2 Identify plant growth requirements.
- C11.3 Discern between annual, biennial, and perennial life cycles.
- C11.4 Examine sexual and asexual reproduction in plants.
- C11.5 Understand photosynthesis and the roles of the sun, chlorophyll, sugar, oxygen, carbon dioxide, and water in the process.
- C11.6 Summarize the respiration process in the breakdown of food and organic matter.

C12.0 Understand fundamental pest management.

- C12.1 Classify agricultural pests (e.g., insects, weeds, disease, and vertebrates).
- C12.2 Compare chemical, mechanical, cultural, and biological methods of plant pest control.
- C12.3 Analyze the major principles, advantages, and disadvantages of integrated pest management.

C13.0 Design agricultural experiments using the scientific method.

- C13.1 State the steps of the scientific method.
- C13.2 Analyze an agricultural problem and devise a solution based on the scientific method.



### C. Hospitality, Tourism, and Recreation Pathway

The Hospitality, Tourism, and Recreation pathway integrates various facets of the hospitality industry: lodging, travel, and tourism; event planning; theme parks, attractions, and exhibitions; and recreation. Students engaged in this pathway have broad experiences related to the specific industry segments, including: industry awareness; organizational management; customer service; sales and marketing; facilities management; lodging; travel destinations; and reservations, ticketing, and itineraries.

Please rank the following standards.

	Community College	Adult Education	K-12	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>C1.0</b> Demonstrate an understanding of the major aspects of the hospitality, tourism, and recreation industry (i.e. lodging, travel, and tourism; event planning; theme parks, attractions, and exhibitions; and recreation) and the industry's role in local, state, national, and global economies.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Community College	Adult Education	K-12	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>C2.0</b> Analyze the basic elements of workforce and organizational management, including the roles and responsibilities of effective management and employees in the industry.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	



## HOSPITALITY, TOURISM, AND RECREATION PATHWAY STANDARDS

				<b>C3.0</b> Apply the knowledge and skills essential for effective guest services in the hospitality, tourism, and recreation industry sector.
	<b>Community College</b>	<b>Adult Education</b>	<b>K-12</b>	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
				<b>C4.0</b> Describe the fundamentals of successful sales and marketing methods.
	<b>Community College</b>	<b>Adult Education</b>	<b>K-12</b>	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
				<b>C5.0</b> Demonstrate an understanding of the basics of systems operations and the importance of maintaining facilities, equipment, tools, and supplies.
	<b>Community College</b>	<b>Adult Education</b>	<b>K-12</b>	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
				<b>C6.0</b> Implement procedures for common types of financial transactions.
	<b>Community College</b>	<b>Adult Education</b>	<b>K-12</b>	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	



## HOSPITALITY, TOURISM, AND RECREATION PATHWAY STANDARDS

<p>Beginning</p> <p>Intermediate</p> <p>Advanced</p>	<p><b>Community College</b></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p>	<p><b>Adult Education</b></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p>	<p><b>K-12</b></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p>	<p><b>C7.0</b> Demonstrate an understanding of the essential aspects of the lodging industry.</p>
<p>Beginning</p> <p>Intermediate</p> <p>Advanced</p>	<p><b>Community College</b></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p>	<p><b>Adult Education</b></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p>	<p><b>K-12</b></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p>	<p><b>C8.0</b> Interpret the basics of global and domestic physical and cultural geography in relation to the hospitality, tourism, and recreation industry.</p>
<p>Beginning</p> <p>Intermediate</p> <p>Advanced</p>	<p><b>Community College</b></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p>	<p><b>Adult Education</b></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p>	<p><b>K-12</b></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p>	<p><b>C9.0</b> Apply the basic processes of making reservations, ticketing, and developing travel itineraries.</p>
<p>Beginning</p> <p>Intermediate</p> <p>Advanced</p>	<p><b>Community College</b></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p>	<p><b>Adult Education</b></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p>	<p><b>K-12</b></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p>	<p><b>C10.0</b> Explain the fundamental purpose and basic organizational structure of a variety of theme parks, attractions, and exhibitions.</p>





## HOSPITALITY, TOURISM, AND RECREATION PATHWAY STANDARDS

	Community College	Adult Education	K-12	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>C11.0</b> Illustrate the fundamentals of planning events for a diverse clientele.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Community College	Adult Education	K-12	
Beginning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>C12.0</b> Demonstrate an understanding of the value of recreation and the fundamentals of recreational facilities and services.
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	



### C. Hospitality, Tourism, and Recreation Pathway

The Hospitality, Tourism, and Recreation pathway integrates various facets of the hospitality industry: lodging, travel, and tourism; event planning; theme parks, attractions, and exhibitions; and recreation. Students engaged in this pathway have broad experiences related to the specific industry segments, including: industry awareness; organizational management; customer service; sales and marketing; facilities management; lodging; travel destinations; and reservations, ticketing, and itineraries.

Sample occupations associated with this pathway:



Guest Services Agent



Director of Conference Services



Certified Meeting/Event Planner



Theme Park Director

- C1.0 Demonstrate an understanding of the major aspects of the hospitality, tourism, and recreation industry (i.e. lodging, travel, and tourism; event planning; theme parks, attractions, and exhibitions; and recreation) and the industry's role in local, state, national, and global economies.
  - C1.1 Define and compare core elements of the hospitality, tourism, and recreation industry from those of various supporting industries.
  - C1.2 Analyze the working conditions of various careers in the hospitality, tourism, and recreation industry.
  - C1.3 Analyze the impact and contributions of various segments of the industry on local, state, national, and international economies and cultures, and the environment.
  - C1.4 Compare and contrast the relationship between industry trends and local, state, national, and international economic trends.
- C2.0 Analyze the basic elements of workforce and organizational management, including the roles and responsibilities of effective management and employees in the industry.
  - C2.1 Interpret how the mission and goals of a business affect operations in the hospitality, tourism, and recreation industry.
  - C2.2 Understand the importance of specific human resource practices and procedures that address workplace diversity, harassment, personal safety, and discrimination.
  - C2.3 Explain common safety, security, and emergency policies and procedures used in the hospitality, tourism, and recreation industry to protect guests, visitors, and employees, such as safe work practices and conditions, confidentiality of customer information, control of keys, infectious disease control, first aid procedures, and emergency training.
  - C2.4 Analyze the relationship of management techniques and appropriate business procedures, such as spreadsheets for payroll and inventories, tools for budgeting, recordkeeping, and corresponding to key outcomes: profitability, productivity, positive work environment, consumer and client satisfaction, business growth, business plans, corporate social responsibility, and environmental stewardship.



- C2.5 Create a product which explains the impact of main laws and regulations that affect accommodations and practices, including the requirements of the California Occupational Safety and Health Administration and the Americans with Disabilities Act, wage and hour laws, tenant status, and accommodation of minors.
- C3.0 Apply the knowledge and skills essential for effective guest services in the hospitality, tourism, and recreation industry sector.
  - C3.1 Analyze the importance of guest services to the success of the industry.
  - C3.2 Demonstrate the concept of exceptional guest service.
  - C3.3 Anticipate the needs, desires, and interests of guests in order to exceed their expectations by implementing total quality management practices (TQM).
  - C3.4 Recognize common guest complaints and the service solutions for preventing or resolving them.
  - C3.5 Understand the roles of management and employees in effectively meeting the needs of culturally and generationally diverse guests and special needs customers.
  - C3.6 Interact with guests in a positive, responsive, and professional manner.
- C4.0 Describe the fundamentals of successful sales and marketing methods.
  - C4.1 Recognize ways of developing and maintaining long-term guest relationships.
  - C4.2 Identify the major market segments of the hospitality, tourism, and recreation industry.
  - C4.3 Understand basic marketing principles for maximizing revenue based on supply and demand and competition.
  - C4.4 Understand the value of advertising, public relations, social networking, and community involvement.
  - C4.5 Analyze marketing strategies, including promotional selling and upgrading, and their effect on profits.
  - C4.6 Analyze the way in which basic marketing principles and procedures can be applied to targeting an audience, including: branding, bench marking, and promotional selling and upgrading and their effect on profits.
- C5.0 Demonstrate an understanding of the basics of systems operations and the importance of maintaining facilities, equipment, tools, and supplies.
  - C5.1 Apply the procedures for cleaning, maintaining, and repairing facilities and equipment and the importance of preventive maintenance.
  - C5.2 Recognize the types of materials and supplies used in the maintenance of facilities, including the identification of the hazardous properties of chemicals and the use of Material Safety Data Sheets (MSDS).
  - C5.3 Practice procedures for maintaining inventories, requisitioning equipment and tools, and storing and restocking supplies.





- C5.4 Understand the relationship between facilities management and profit and loss, including the costs of resource consumption, breakage, theft, supplies use, and decisions for repairs or replacement.
- C5.5 Analyze work to be completed, prioritize tasks, and prepare a schedule to meet facility and personnel needs within an allotted budget.
- C5.6 Understand how essential departments in a hospitality, tourism, and recreation business contribute to economic success.
- C6.0 Implement procedures for common types of financial transactions.
  - C6.1 Apply procedures for handling cash transactions, such as balancing cash, handling cash control, converting currency, and identifying counterfeit currency.
  - C6.2 Apply the procedures for handling noncash transactions: credit cards, debit cards, ATM cards, money orders, personal checks, coupons, discounts, and online transactions.
  - C6.3 Conduct all financial transactions in an accurate, professional, and ethical manner.
  - C6.4 Produce a product that identifies and explains the impact of identity theft on the hospitality, tourism, and recreation industry.
- C7.0 Demonstrate an understanding of the essential aspects of the lodging industry.
  - C7.1 Distinguish between the segments of the lodging industry, such as motels, limited service, full service resorts, all suites, extended-stay hotels, convention hotels, boutique hotels, and bed and breakfast facilities.
  - C7.2 Differentiate the required duties of various positions, including those of front desk and other service providers in relation to the functions of the business: checking guests in and out, greeting, assessing needs, delivering services, and closing the transaction.
  - C7.3 Understand the internal hierarchy and departmental interrelationships of lodging establishments.
  - C7.4 Compare the types of food service offered at various lodging facilities.
- C8.0 Interpret the basics of global and domestic physical and cultural geography in relation to the hospitality, tourism, and recreation industry.
  - C8.1 Understand fundamental ways in which physical geography, culture, and politics, affect local economies and world travel and tourism.
  - C8.2 Create a product using types of basic information that international travelers need, including physical geography, time zones, International Date Line, rights and responsibilities, laws, insurance, emergency services, and customs.
- C9.0 Apply the basic processes of making reservations, ticketing, and developing travel itineraries.
  - C9.1 Interpret the costs and other travel considerations involved in creating itineraries to meet client needs, including types of travel, types of fares, basic fare codes, costs, penalty charges, and types of accommodations.



- C9.2 Evaluate important travel information, including insurance needs, vehicle rentals, passports, visas, and health documents, as well as how to plan specialty tour packages to fit client needs.
- C9.3 Classify the characteristics and configurations of common air and rail carriers, cruise ships, and attractions, including the most frequently used codes and terminology for ports of travel.
- C9.4 Understand the basic purpose, function, and operation of various travel systems and authorities, including the Airline Reporting Corporation, the Federal Aviation Administration, the major centralized reservation systems, and the Computerized Reservation System.
- C9.5 Research the role and importance of online reservation services to marketing and profitability.
- C10.0 Explain the fundamental purpose and basic organizational structure of a variety of theme parks, attractions, and exhibitions.
  - C10.1 Understand how the various internal departments of theme parks, attractions, or exhibitions interrelate and support each other.
  - C10.2 Understand the internal hierarchy and departmental relationships of theme parks, attractions, or exhibitions.
  - C10.3 Analyze the ways in which the purposes of various industries; entertainment, education, and community relations affect their financial structure.
  - C10.4 Compare the purposes, implications, and strategies of special promotions, such as season passes, multiple-day visits, retail items, and discount coupons.
- C11.0 Illustrate the fundamentals of planning events for a diverse clientele.
  - C11.1 Explain the purposes and target audiences of various venues.
  - C11.2 Demonstrate the essential procedures for planning, promoting, publicizing, coordinating, and evaluating a program or event.
  - C11.3 Understand how to establish business relationships with a variety of locations, food suppliers, and other vendors.
  - C11.4 Demonstrate procedures for setting up facilities, equipment, and supplies.
  - C11.5 Develop schedules, registration tools, event materials, and programs.
  - C11.6 Plan special events (e.g., meetings, trade shows, fairs, conferences) based on specific themes, budgets, agendas, space and security needs, and itineraries.
- C12.0 Demonstrate an understanding of the value of recreation and the fundamentals of recreational facilities and services.
  - C12.1 Recognize the variety of parklands, wilderness areas, and waterways available for recreation.
  - C12.2 Explain the outdoor recreational opportunities that promote physical and mental health.





- C12.3 Understand how the needs of various clients may be met through appropriate outdoor recreational activities, outdoor experiences, special tours, and environmentally responsible education.
- C12.4 Evaluate the requirements of outdoor recreational businesses, including benefits, risks, required skills, and costs.
- C12.5 Explore the departments, functions, and restrictions of public and private parks and recreational facilities and the outdoor recreational programs they offer.
- C12.6 Create a product describing the types of insurance, licenses, and permits needed for the operation and management of various popular outdoor activities.



## Hospitality, Tourism, and Recreation Pathway Standards

### B. Food Service and Hospitality Pathway

The Food Service and Hospitality pathway focuses on the key aspects of the industry. Students pursuing this career pathway have in-depth, hands-on experiences that emphasize industry awareness; sanitation and safe food handling; food and beverage production; nutrition; food service management; and customer service.

Sample occupations associated with this pathway:

-  Food Expeditor
-  Restaurant Manager
-  Banquet and Catering Director
-  Research Chef
-  Executive Chef

- B1.0 Demonstrate an understanding of major aspects of the food service and hospitality industry and the role of the industry in local, state, national, and global economies.
  - B1.1 Define and compare core elements of the food service and hospitality industry from various supporting industries.
  - B1.2 Understand how the various segments of the industry contribute to, and impact, local, state, national, and international economies, cultures, and the environment.
  - B1.3 Explain the relationship between industry trends and local, state, national, and international economic trends.
  - B1.4 Research the advantages and disadvantages of the working conditions of various careers in the food service and hospitality industry.
- B2.0 Demonstrate the basics of safe work habits, security, and emergency procedures required in food service and hospitality establishments.
  - B2.1 Identify the causes, prevention, and treatment of common accidents and the reporting procedures involved.
  - B2.2 Practice the basic procedures for the safety of employees and guests, including the procedures for emergency situations.
  - B2.3 Understand the role of the California Occupational Safety and Health Administration, the Environmental Protection Agency, and other agencies in regulating practices in the food service and hospitality industry.
  - B2.4 Understand the source and purpose of information in the Material Safety Data Sheets (MSDS) and know the proper use of personal protective equipment (PPE).
- B3.0 Interpret the basic principles of sanitation and safe food handling.
  - B3.1 Employ the standards of personal grooming and hygiene required by local, state, and federal health and safety codes.





- B3.2 Understand basic local, state, and federal sanitation regulations as they pertain to food production and service.
- B3.3 Explain the types of food contamination, the potential causes, including cross-contamination, and methods of prevention.
- B3.4 Practice safe and sanitary procedures in all food handling, including food receiving, storage, production, service, and cleanup.
- B3.5 Understand the essential principles of Hazard Analysis Critical Control Points, including the use of flowcharts.
- B3.6 Understand the purpose and process of required industry certification (e.g., ServSafe, California Food Handlers Card).
- B4.0 Analyze the basics of food service and hospitality management.
  - B4.1 Understand the responsibilities of management, such as ensuring safe work practices and conditions and complying with important laws and regulations that affect employment, such as wage and hour laws, tenant status, and accommodation of minors.
  - B4.2 Understand the importance of specific human resource practices and procedures that address workplace diversity, harassment, personal safety, and discrimination.
  - B4.3 Interpret the differences in goals and organizational management of various food service businesses.
  - B4.4 Understand the relationship of effective management and business procedures to important outcomes, such as profitability, productivity, workplace atmosphere, consumer and guest satisfaction, and business growth.
  - B4.5 Design and interpret business plans including: the mission, vision, target market, location, financing, and the community and ecological context of the business.
- B5.0 Demonstrate an understanding of the basics of systems operations and the importance of maintaining facilities, equipment, tools, and supplies.
  - B5.1 Apply the procedures for cleaning and maintaining facilities and equipment and the importance of preventive maintenance and the use of nontoxic and less toxic materials.
  - B5.2 Recognize the types of materials and supplies used in the maintenance of facilities, including the identification of the hazardous environmental and physical properties of chemicals and the use of Material Safety Data Sheets (MSDS).
  - B5.3 Practice the procedures for maintaining inventories: ordering food, equipment, and supplies; and storing and restocking supplies.
  - B5.4 Understand the relationship between facilities management and profit and loss, including the costs of resource consumption, breakage, theft, supplies use, and decisions for repairs or replacement.
  - B5.5 Understand how various departments in a food service facility contribute to the economic success of a business.
  - B5.6 Prioritize tasks and plan work schedules based on budget and personnel.



- B6.0 Illustrate and apply the basics of food preparation and safety and sanitation in professional and institutional kitchens.
  - B6.1 Use, maintain, and store the tools, utensils, equipment, and appliances safely and appropriately for preparing a variety of food items.
  - B6.2 Apply the principle of *mise en place*, including the placement and order of use of ingredients, equipment, tools, and supplies.
  - B6.3 Prepare food by using the correct terminology, food safety, techniques, and procedures specified in recipes and formulas.
  - B6.4 Plan and follow a food production schedule, including timing and prioritizing of tasks and activities.
  - B6.5 Evaluate the qualities and properties of food items and ingredients used in food preparation.
  - B6.6 Design plating techniques, including accurate portioning and aesthetic presentation skills.
  - B6.7 Develop a food preparation plan using forecasting and cross-utilization of products to maximize profit and eliminate waste.
- B7.0 Illustrate and apply the basics of baking, pastry, and dessert preparation and safety and sanitation in professional and institutional kitchens.
  - B7.1 Use, maintain, and store the tools, utensils, equipment, and appliances safely and appropriately for preparing, serving, and storing baked goods, pastries, and desserts.
  - B7.2 Apply the principle of *mise en place*, including the placement and order of use of the ingredients, equipment, tools, and supplies unique to baking and pastry production.
  - B7.3 Produce baked goods, pastries, and desserts by using the correct terminology, food safety, techniques, procedures, and various finishing techniques.
  - B7.4 Evaluate the qualities and properties of food items and ingredients used for baked goods, pastries, and desserts.
  - B7.5 Understand packaging and merchandising techniques to feature seasonal and standard bakery products.
  - B7.6 Develop a plan using forecasting and cross-utilization of products to maximize profit and eliminate waste.
- B8.0 Apply the knowledge and skills essential for effective customer service.
  - B8.1 Analyze the importance of customer service to the success of the food service establishment.
  - B8.2 Demonstrate the concept of exceptional customer service and know ways of anticipating the needs and desires of customers to exceed their expectations.
  - B8.3 Recognize common customer complaints and the service solutions for preventing or resolving complaints.





- B8.4 Understand the roles of management and employees in effectively meeting the needs of culturally, generationally diverse, special needs customers.
- B8.5 Interact with customers in a positive, responsive, and professional manner.
- B9.0 Apply the basic procedures and skills needed for food and beverage service.
  - B9.1 Differentiate the required duties of various positions, including those of the host/hostess, wait staff, bus person, and others related to opening, closing, change-of-shift, and preparatory work.
  - B9.2 Apply the concept of *mise en place* in relation to food and beverage service.
  - B9.3 Practice safe, efficient, and proper procedures for setting, serving, maintaining, and busing tables.
  - B9.4 Practice proper techniques for customer service, including greeting, seating, presenting and explaining menu items, and taking customer orders.
  - B9.5 Integrate appropriate, effective, and efficient techniques for writing food and beverage orders, relaying orders to the kitchen, coordinating and assembling food orders, and preparing and presenting checks to customers.
  - B9.6 Apply procedures for handling cash transactions, converting currency, and identifying counterfeit currency.
  - B9.7 Apply the procedures for handling noncash transactions including: credit cards, debit cards, ATM cards, money orders, personal checks, coupons, discounts, and online transactions.
  - B9.8 Conduct all financial transactions in an accurate, professional, and ethical manner, including gratuities.
  - B9.9 Produce a product that identifies and explains the impact of theft on the food service and hospitality industry.
- B10.0 Demonstrate and apply basic nutritional concepts in meal planning and food preparation.
  - B10.1 Apply basic nutritional principles and know how to use food preparation techniques that conserve nutrients.
  - B10.2 Interpret nutritional or ingredient information from food labels and fact sheets and analyze menu items to meet the dietary needs of individuals.
  - B10.3 Create nutritious, creative, and profitable menus in accord with availability and demand.
- B11.0 Demonstrate an understanding of the basic processes of costing and cost analysis in food and beverage production and service.
  - B11.1 Understand the customer's perception of value and its relationship to profit and loss.
  - B11.2 Understand the components of a profit and loss statement emphasizing food and labor costs.
  - B11.3 Utilize the practices of reduce, reuse, and recycle to maximize profits.





- B11.4 Understand the importance and structure of standardized systems, such as the Uniform System of Accounts for Restaurants.
- B11.5 Evaluate the importance of the menu as the primary source of revenue generation and cost control.
- B11.6 Calculate recipe costs and pricing per portion and compare the cost per cover to the theoretical cost.
- B12.0 Describe the fundamentals of successful sales and marketing methods.
  - B12.1 Recognize methods to develop and maintain long-term customer relations.
  - B12.2 Identify the major market segments of the industry and understand how marketing principles and procedures can be applied to target audiences.
  - B12.3 Understand basic marketing principles for maximizing revenue based on supply and demand and competition.
  - B12.4 Understand the value of advertising, public relations, social networking, and community involvement.
  - B12.5 Research the various types of entrepreneurial opportunities in the food service industry.
  - B12.6 Design marketing strategies, including branding, benchmarking, and promotional selling and upgrading and their effect on profits.

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