Fall 2014 Program Review:

El Camino College
Construction Technology

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10. <u>Prioritized Recommendations</u>

a. Prioritized recommendations and needs of your program/department
b. Estimates of any probably expenditures

1. Overview of the Program

a) Description of Program

The El Camino College Construction Technology department offers students access to a Career and Technical Education (CTE) program, designed and staffed by highly qualified industry professionals, where they can acquire education, training, and proficiency in residential construction techniques, cabinetry, and fine woodworking. The program provides career opportunities in various aspects of construction, including carpentry, cabinetmaking, furniture making, and a variety of specialty trades, and contracting.

b) Degrees and Certificates Offered

The Construction Technology Department offers two distinct Associate's degrees, an A.S. in Construction Technology and an A.S. in Cabinetry and Fine Woodworking. Two separate Certificates of Achievement are also offered, each with an option in either Cabinetry and Fine Woodworking or Construction Technology. Completion of an Associate in Science degree or Construction Technology certificate requirements qualifies students to receive credit applicable toward the California State Contractor's License Board experience requirement.

c) Alignment with the College's Mission Statement and Strategic Initiative

El Camino College offers quality, comprehensive educational programs and services to ensure the educational success of students from our diverse community. In alignment with Strategic Initiatives B and C, The Construction Technology Department strives to Strengthen quality educational and support services to promote student success and foster a positive learning environment and sense of community and cooperation through an effective process of collaboration and collegial consultation.

Construction Technology students will be able to interpret blueprints, estimate materials, lay out, and construct residential structures in accordance with Uniform Building Code requirements. Students will learn to analyze, evaluate, and provide solutions for a variety of job site situations. Competencies are assessed regularly by student performance in the construction technology laboratory.

d) Status of Previous Recommendations

The status of those recommendations itemized in the Fall 2011 Construction Technology Program Review is as follows:

1. Explore ideas for expanding shop facilities, including the tool room, and creating additional storage areas for student projects and materials. Acquire space for interior framing classes, to be utilized for night classes and in inclement weather. **Recommendations have been made for expansion of the shop and tool room. Discussion continues on acquiring space for interior framing classes. See Plan Builder for additional details.**

2. Install exterior Construction Technology Laboratory lighting. **On hold: pending funding.**

3. Expand evening and weekend class offerings in both the yard and shop-based classes, including short-term, specialized technique classes. **After several years of cuts to the program and the budget, classes have now just begun to be added back to the program.**

4. Continue creating public awareness of the Construction Technology program in our on-going student recruitment efforts. **Marketing programs are being developed for the internet, partnerships with vendors and nonprofit groups. Participation in annual Division Advisory Dinner, presented student show in the library, demonstrated at Rockler Woodworking, conducted community outreach such as tours and workshops for organizations such as the Cub Scouts, El Camino Woodturning Guild, Women in Technology.** Increased enrollment is difficult to directly quantify as a result of participation in these areas, but existing evidence, albeit anecdotal and typical of this industry, supports our efforts. Positive networking is a critical component in this industry.

5. The department continues its on-going efforts to improve the outdoor construction facilities for the benefit of Construction Technology students. Outdoor lighting for evening classes and Photo Voltaic Covered Multidisciplinary Area that would allow for working on rainy days are still on-going projects. **There continues to be strong student interest for evening courses in the yard area. Lights and a covered laboratory are still part of the general plan. Plans for improvements have been suggested by the administration.**

The department continues to strive to remain current with its curriculum and is considering developing new, or expanding existing, courses per the recommendations made by the Construction Technology Advisory Committee. New course offerings regarding "Green Technology" and Environmental Technology are being explored. In response to the advisory committee's recommendation of expanding lab hours, a new cabinet making laboratory class is in the approval process with the curriculum committee.

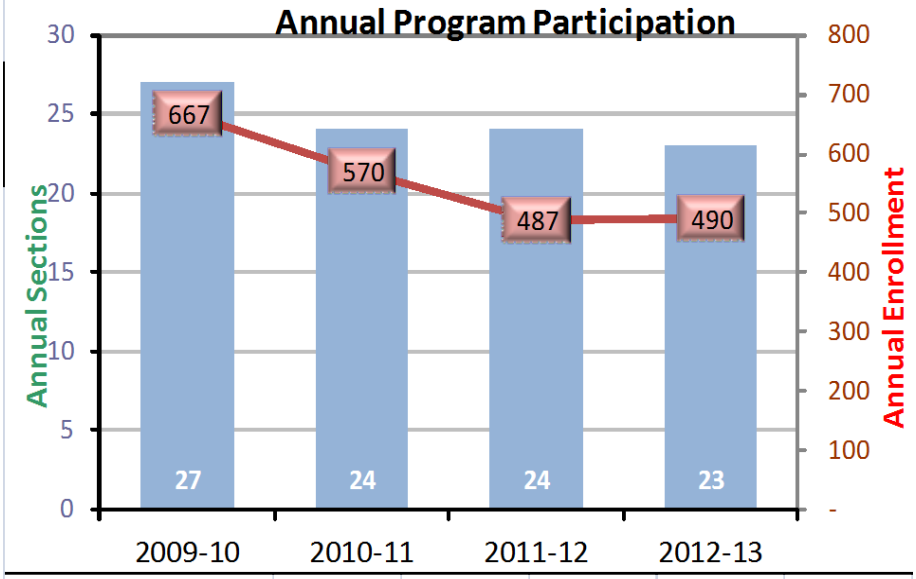
2. Analysis of Institutional Research Data

a) Head Count

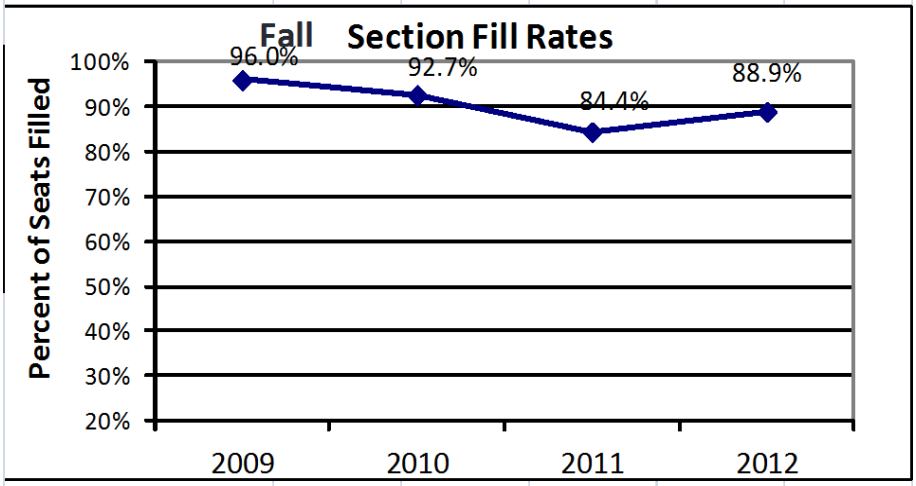
In the following information supplied by the institutional research department the numbers for the program participation over the last 4 years directly mirror the fiscal cuts imposed by the college to the offerings in this department. The percentages of enrollment of night and day classes are skewed by the fact that a majority of the classes in the department are only offered during the day and weekends. Many of the students in the program are already employed and are coming back to school for training in new skills or improving existing skill sets. Working students often have to arrange their work schedules to free up time to attend day time classes. These working students regularly ask for more Construction Technology class to be offered in the late afternoon and evening.

Program Participation (4-year Trend)
Construction Technology
Years: 2009-10 to 2012-13

	2009-10	2010-11	2011-12	2012-13	Yr Average
Annual Enrollment	667	570	487	490	554



	2009-10	2010-11	2011-12	2012-13
Students	349	319	306	274
Enrollments/Student	1.91	1.79	1.59	1.79



Enrollment by Time of Day

Fall Term	2009	2010	2011	2012
Day	34.0%	45.3%	31.7%	40.3%
Night	37.9%	37.7%	40.3%	28.3%
Weekend/Unknown	28.1%	17.0%	28.0%	31.3%

b) Course grade distribution

Distribution of grades is relatively stable across the years (Course Totals). Even with the dropping enrollment rates at the college the programs have maintained a high student achievement rate and consistent grade patterns.

c) Success Rates

Success Rate (84.1% in 2012) in the Construction Technology Department is higher than the latest institutional rate of 63% and the Industry and Technology division rate 74.8% 2013 is also much higher than the institutional average. We think this rate of success is achievable and would like to set a goal rate of 75% as a success standard.

d) Retention Rate

Retention Rate (87.6% in 2012) in the Construction Technology Department, is higher than the latest institutional rate of 84% and the Industry and Technology division rate 87% in 2013 is also much higher than the institutional average.

e) Comparison of Success and Retention Rates in Face-to-Face Classes with Distance Ed Classes

At this moment there are no distance ed. Classes to compare, though we do have an instructor in the process of training to teach Distance Ed classes.

f) Enrollment Statistics

Enrollment in fall 2010 and 2011 did dip slightly but began a recovery the next fall 2012. Much of the loss of enrollment was due to cutting of sections in the department as well as the division and the college.

g) Scheduling of Courses

All but one of the Cabinetry and Fine Woodworking classes are offered in the evenings and generally fill quickly. The program is still working out the kinks after a Curriculum change regarding repeatable classes and the ensuing student and counselor confusion has not settled down yet.

i) Additional data compiled by faculty

The following data and charts show that the demographics for this program follow the demographics of the school regarding ethnicity and for nontraditional field of study there is a higher than expected representative group of female students.

Grade Distribution, Success, and Retention																
Construction Technology																
Fall																
Program	Construction Technology					Preliminary Success Standard 77.9%										
Term	Fall					5 year Success Average 79.5%										
						5 year Success Minimum 76.3										
				Grade Dist												
Year	COURSE	Method	Weeks	'A'	'B'	'C'	'D'	'F'	'DR'	'W'	Total	Successful	Retained	Succ.	Reten.
2009	CTEC-100	Lecture	16	6	6	3	6	1	1	7	30	15	22	50.0%	73.3%
	CTEC-107ABCD	Lecture	16	47	12	3	-	-	1	15	78	62	62	79.5%	79.5%
	CTEC-108ABCD	Laboratory	16	19	1	-	-	-	-	4	24	20	20	83.3%	83.3%
	CTEC-109ABCD	Lecture	16	17	-	-	-	-	2	1	20	17	17	85.0%	85.0%
	CTEC-110	Lecture	16	7	5	3	1	3	1	5	25	15	19	60.0%	76.0%
	CTEC-131	Lecture	16	12	6	5	-	2	-	3	28	23	25	82.1%	89.3%
	CTEC-132	Lecture	16	7	3	3	-	1	-	-	14	13	14	92.9%	100.0%
	CTEC-150	Lecture	16	6	11	5	1	2	3	5	33	22	25	66.7%	75.8%
	CTEC-172	Lecture	16	12	16	2	-	-	1	-	31	30	30	96.8%	96.8%
	CTEC-99ABC	Independent Study	16	2	-	-	-	-	-	-	2	2	2	100.0%	100.0%
2009 Total				135	60	24	8	9	9	40	285	219	236	76.8%	82.8%
2010	CTEC-100	Lecture	16	6	8	1	1	1	1	6	24	15	17	62.5%	70.8%
	CTEC-107ABCD	Lecture	16	35	12	3	3	-	5	16	74	50	53	67.6%	71.6%
	CTEC-108ABCD	Laboratory	16	17	3	-	-	-	-	3	23	20	20	87.0%	87.0%
	CTEC-109ABCD	Lecture	16	16	2	-	-	-	-	2	20	18	18	90.0%	90.0%
	CTEC-110	Lecture	16	4	5	3	-	1	2	4	19	12	13	63.2%	68.4%
	CTEC-121	Lecture	16	8	6	6	1	-	2	2	25	20	21	80.0%	84.0%
	CTEC-122	Lecture	16	7	6	6	1	2	-	2	24	19	22	79.2%	91.7%
	CTEC-150	Lecture	16	3	5	8	2	2	1	2	28	16	25	57.1%	89.3%
	CTEC-172	Lecture	14	10	12	3	-	-	-	3	28	25	25	89.3%	89.3%
2010 Total				106	59	30	8	11	11	40	265	195	214	73.6%	80.8%
2011	CTEC-100	Lecture	16	4	6	6	1	1	-	5	23	16	18	69.6%	78.3%
	CTEC-107ABCD	Lecture	16	49	5	6	1	-	1	16	78	60	61	76.9%	78.2%
	CTEC-108ABCD	Laboratory	16	19	-	-	-	-	-	4	23	19	19	82.6%	82.6%
	CTEC-109ABCD	Lecture	16	17	-	-	-	-	-	3	20	17	17	85.0%	85.0%
	CTEC-110	Lecture	16	4	3	5	-	1	2	5	20	12	13	60.0%	65.0%
	CTEC-141	Lecture	16	11	3	-	-	-	2	1	17	14	14	82.4%	82.4%
	CTEC-142	Lecture	16	5	6	3	1	-	1	1	17	14	15	82.4%	88.2%
	CTEC-150	Lecture	16	5	4	1	-	1	1	10	22	10	11	45.5%	50.0%
	CTEC-172	Lecture	14	8	5	4	1	1	3	-	22	17	19	77.3%	86.4%
	CTEC-99ABC	Laboratory	16	1							1	1	1	100.0%	100.0%
2011 Total				123	32	25	4	4	10	45	243	180	188	74.1%	77.4%
2012	CTEC-100	Lecture	16	9	9	3	1	1		4	27	21	23	77.8%	85.2%
	CTEC-107ABCD	Lecture	14	13	1	5				3	22	19	19	86.4%	86.4%
			16	30	7	5				5	47	42	42	89.4%	89.4%
	CTEC-108ABCD	Laboratory	16	18						1	19	18	18	94.7%	94.7%
	CTEC-109ABCD	Lecture	16	16	3	-	-	-	-	2	21	19	19	90.5%	90.5%
	CTEC-110	Lecture	16	14	5	3	-	1	-	5	28	22	23	78.6%	82.1%
	CTEC-131	Lecture	16	16	2	-	-	-	-	2	20	18	18	90.0%	90.0%
	CTEC-132	Lecture	16	5	6	5	1	2	-	-	19	16	19	84.2%	100.0%
	CTEC-172	Lecture	16	6	10	4	2	-	-	6	28	20	22	71.4%	78.6%
	CTEC-99ABC	Laboratory	16	1	-	-	-	-	-	1	2	1	1	50.0%	50.0%
2012 Total				128	43	25	4	4	-	29	233	196	204	84.1%	87.6%

Demographic and Enrollment Characteristics
Construction Technology
Fall

Will show 0.0% if you did not select Program *AND* Term on the Academics Tab

Fall						ECC Student Population	District Boundary Population
		Term					
		2009	2010	2011	2012	Fall 2012	2010 Census
Term Headcount		209	189	195	180	*23,409*	*556,400*
Gender	F	14.8%	24.3%	20.5%	16.7%	*52.5%*	*51.0%*
	M	85.2%	75.7%	79.5%	83.3%	*47.5%*	*49.0%*
Ethnicity	African-Ar	11.5%	15.9%	10.3%	12.2%	*17.0%*	*15.1%*
	Amer. Ind	0.0%	0.5%	1.5%	0.6%	*0.2%*	*0.2%*
	Asian	10.5%	8.5%	8.7%	13.9%	*16.1%*	*13.6%*
	Latino	29.7%	30.7%	26.2%	33.3%	*44.7%*	*34.5%*
	Pacific Isla	1.9%	2.1%	0.5%	0.6%	*0.5%*	*0.5%*
	White	30.1%	33.9%	41.5%	31.7%	*15.6%*	*32.8%*
	Two or Mo	1.0%	0.0%	3.6%	2.2%	*3.8%*	*2.9%*
	Unknown	15.3%	8.5%	7.7%	5.6%	*2.0%*	*0.4%*
Age/ Age Group	<17	0.5%	0.0%	0.5%	0.6%	*0.8%*	*24.2%*
	17	0.5%	0.5%	0.0%	0.6%	*2.0%*	
	18	2.4%	1.1%	3.1%	2.8%	*11.6%*	*2.5%*
	19	6.2%	7.4%	5.1%	11.1%	*14.7%*	
	20	5.3%	3.2%	6.2%	3.9%	*13.1%*	*1.2%*
	21	6.2%	4.2%	4.6%	3.3%	*9.5%*	*1.2%*
	22	2.4%	6.9%	2.6%	4.4%	*7.3%*	*3.9%*
	23	2.4%	3.7%	3.6%	3.9%	*5.6%*	
	24	1.9%	2.1%	2.1%	1.7%	*4.6%*	
	25-29	13.4%	12.2%	14.4%	10.6%	*12.7%*	*7.4%*
	30-39	18.7%	21.2%	20.5%	15.6%	*9.0%*	*14.9%*
	40-49	17.2%	14.8%	13.8%	17.8%	*4.7%*	*15.9%*
	50-64	17.2%	19.0%	17.9%	21.1%	*3.5%*	*18.1%*
	65+	5.7%	3.7%	5.6%	2.8%	*0.8%*	*10.6%*
Class Load	Full-time	23.0%	22.8%	16.4%	23.3%	*29.8%*	
	Part-time	77.0%	77.2%	83.1%	76.1%	*69.2%*	
Academic Level	College de	35.4%	36.0%	45.6%	42.8%	*12.3%*	
	HS Grad	56.5%	60.8%	51.8%	50.6%	*83.2%*	
	Not a HS G	5.3%	2.1%	0.5%	1.1%	*1.4%*	
	K-12 Speci	0.0%	0.0%	0.5%	0.6%	*1.1%*	
	Unknown	2.9%	1.1%	1.5%	5.0%	*1.9%*	
Educational Goal	Intend to	15.3%	22.2%	12.3%	17.2%	*31.4%*	
	Degree/C	5.7%	5.3%	4.6%	6.1%	*3.9%*	
	Retrain/re	14.4%	9.5%	11.3%	10.6%	*3.8%*	
	Basic Skill	4.8%	3.2%	6.7%	6.7%	*5.3%*	
	Enrichmer	8.6%	6.9%	6.7%	6.1%	*4.1%*	
	Undecide	17.2%	18.0%	9.7%	12.8%	*16.7%*	
	Unstated	34.0%	34.9%	48.7%	40.6%	*35.0%*	

Demographic Success Characteristics
Construction Technology
Fall: 2009 to 2012

	Fall 2009		Fall 2010		Fall 2011		Fall 2012	
Ethnicity	Success	N	Success	N	Success	N	Success	N
African-American	74.4%	43	65.9%	41	69.2%	26	69.2%	26
Amer. Ind. or Alask. Native	0.0%	X	100.0%	X	66.7%	X	100.0%	X
Asian	92.0%	25	93.8%	16	72.2%	18	80.0%	30
Latino	70.7%	82	69.6%	92	71.6%	67	81.0%	84
Pacific Islander	88.9%	X	85.7%	X	100.0%	X	0.0%	X
Two or More	100.0%	X	0.0%	X	62.5%	X	75.0%	X
Unknown or Decline	81.4%	43	90.5%	21	61.9%	21	100.0%	12
White	84.5%	71	82.9%	76	89.9%	89	93.3%	75
Gender								
M	78.7%	235	76.7%	206	77.1%	192	83.2%	197
F	82.9%	41	77.1%	48	78.0%	41	88.9%	36
X	0.0%	X	0.0%	X	0.0%	X	0.0%	X
Age Groups								
19 or less	74.1%	27	58.3%	24	60.0%	15	80.6%	31
20 to 24	66.0%	53	67.2%	64	69.1%	55	81.1%	53
25 to 49	81.9%	144	80.5%	113	76.6%	111	81.5%	92
Over 49	88.5%	52	88.7%	53	92.3%	52	93.0%	57

X: Counts are suppressed for groups with less than 10 students.

Shaded regions indicate groups achieving at a rate less than 80% of the reference group, respectively.

3. Curriculum

a) Curriculum Course review Timeline

CONSTRUCTION TECHNOLOGY CURRICULUM – 2011 – 2016					
COURSE	**2011-2012**	**2012-2013**	**2013-2014**	**2014-2015**	**2015-2016**
Construction Technology 100		**Content Review**			**2 YEAR CTE REVIEW**
Construction Technology 105				**INACTIVATED**	
Construction Technology 107abcd	**INACTIVATED**				
Construction Technology 108abcd	**INACTIVATED**				
Construction Technology 109abcd	**INACTIVATED**				
Construction Technology 110		**Content Review**			**2 YEAR CTE REVIEW**
Construction Technology 121					**Content Review**
Construction Technology 122					**Content Review**
Construction Technology 131					**Content Review**
Construction Technology 132					**Content Review**
Construction Technology 141					**Content Review**
Construction Technology 142					**Content Review**
Construction Technology 150				**Content Review**	
Construction Technology 160				**Content Review**	**Distance Ed Option**
Construction Technology 172					**Content Review**
Construction Technology 180				**Content Review**	
Construction Technology 50					
Construction Technology 95abcd					
Construction Technology 99abc					

Construction Technology 200		**NEW - APPROVED**		**2 Year CTE Review**	
Construction Technology 201		**NEW - APPROVED**		**2 Year CTE Review**	
Construction Technology 202		**NEW - APPROVED**		**2 Year CTE Review**	
Construction Technology 203		**NEW - APPROVED**		**2 Year CTE Review**	
Construction Technology 210		**NEW - APPROVED**		**2 Year CTE Review**	
Construction Technology 211		**NEW - APPROVED**		**2 Year CTE Review**	
Construction Technology 212		**NEW - APPROVED**		**2 Year CTE Review**	
Construction Technology 213		**NEW - APPROVED**		**2 Year CTE Review**	
Construction Technology 220		**NEW - APPROVED**		**2 Year CTE Review**	
Construction Technology 221		**NEW - APPROVED**		**2 Year CTE Review**	
Construction Technology 222					**NEW – In Progress**
Construction Technology 230				**NEW - APPROVED**	
ASSOCIATE IN SCIENCE DEGREES AND CERTIFICATES	**2011-2012**	**2012-2013**	**2013-2014**	**2014-2015**	**2015-2016**
Associate in Science Degree *Cabinet and Fine Woodworking* *Adding new course sequence*		**APPROVED**			
Associate in Science Degree *Cabinet and Fine Woodworking* *Adding to Recommended Electives:* *CTech 230 and Arch 119*				**APPROVED**	
Associate in Science Degree Construction Technology *Removing CTech 107abcd* *Adding CTech 200*					
Associate in Science Degree *Construction Technology* *Adding to 16 units from:* *Removing CTech 105,* *Adding ACR 21, ET 102, Welding 15* *Adding to Recommended Electives:* *Arch 119*				**APPROVED**	
Certificate of Achievement - Cabinet and Fine Woodworking *Adding new course sequence*		**APPROVED**			
Certificate of Achievement Construction Technology *Removing CTech 107abcd* *Adding CTech 200*		**APPROVED**			

Certificate of Achievement Construction Technology *Adding 16 units from:* *Removing CTech 105,* *Adding ACR 21, ET 102, Welding 15* *Adding to Recommended Electives:* *Arch 119*				**APPROVED**	
Certificate of Accomplishment Cabinet and Fine Woodworking *Cabinet Making and Millwork*	**To CCC – in progress**				
Certificate of Accomplishment Cabinet and Fine Woodworking *Furniture Design and Fabrication*	**To CCC – in progress**				
Certificate of Accomplishment Cabinet and Fine Woodworking *Euro Hardware*	**To CCC – in progress**				

b) Additions to Course Offerings

In addition to the adjustments to the Cabinetry and Fine woodworking class offerings which were necessitated by the changes to repeatable classes, a new Cabinetry Laboratory course is being proposed. The issues created by the mandated removal of repeatable classes were wide spread in the Cabinetry and Fine woodworking program. All of the classes had to be redesigned with separate designations for each section. Students need time, instruction and a facility to master the key concepts or procedures in this program. The removal of repeatable classes created a tremendous amount of work for the faculty and staff of the department, division, and the institution.

c) Course Deletions or Inactivatons

CTEC 105 Steel Stud Framing is going to be inactivated due to the low demand for residential light steel framing.

d) No Distance Education Classes Offered at This Time

A distance education class in Construction Technology is going to be offered in the Spring semester of 2016.

e) Degrees and Certificates Meeting Students' transfer of Career Needs

1. All classes are set up on a three semester rotation, so students are able to take the necessary classes within a 2 year window of opportunity. Because all of the department offerings aren't available every semester, this rotation allows for the availability of every class within a 2 year window of opportunity. A student will have the ability to take every class needed to graduate, transfer, or enter the work force with a new set of skills.
2. The number of students earning a degree or certificate is rising but the difficulty in the Construction area is keeping students in school long enough to finish, versus going out into the job market and getting a job in the industry.
3. There is a licensure exam for the Construction trades but students are not eligible to take the exam until they meet the requirements of 4 years of field experience. The California Contractors State License Board will award up to 2 years of field experience toward the total of 4 years but students still need to leave school and finish with on the job training before being allowed to take the licensure exam. The advisory committee has strongly recommended the need for more laboratory time in the Cabinetry and Fine woodworking area and a need for updated and expanded facilities throughout the department.

4. Due to attrition rates in the program, a goal of 10 – 12 degrees of certificates per year is a number to work towards.

4. Assessment and Student and Program Learning Outcomes (SLOs & PLOs)

a) Alignment grid with course, program, and institutional learning outcomes aligned

Construction Technology PLO's

a. PLO #1 Safely Operating Industry Tools - Upon successful completion of the courses in this program, students will be able to identify and safely operate tools commonly used in the construction and/or cabinetmaking industry.

b. PLO #2 Project Estimating – Upon successful completion of the Construction Technology program, students will be able to reference a set of plans and produce a complete materials list.

c. PLO #3Upon successful completion of the Construction Technology program, students will be able to participate in the layout and construction of a residential structure.

INDUSTRY AND TECHNOLOGY
Institutional (ILO), Program (PLO), and Course (SLO) Alignment

Program: **Construction Technology**	**Number of Courses:** 22	**Date Updated:** 09.18.2014	**Submitted by:** SueEllen Warren, ext. 4519 Renee Newell, ext. 3308

ILOs	**1. Critical Thinking** *Students apply critical, creative and analytical skills to identify and solve problems, analyze information, synthesize and evaluate ideas, and transform existing ideas into new forms.*	**2. Communication** *Students effectively communicate with and respond to varied audiences in written, spoken or signed, and artistic forms.*	**3. Community and Personal Development** *Students are productive and engaged members of society, demonstrating personal responsibility, and community and social awareness through their engagement in campus programs and services.*	**4. Information Literacy** *Students determine an information need and use various media and formats to develop a research strategy and locate, evaluate, document, and use information to accomplish a specific purpose. Students demonstrate an understanding of the legal, social, and ethical aspects related to information use.*

SLO-PLO-ILO ALIGNMENT NOTES:

Mark boxes with an 'X' if: SLO/PLO is a major focus or an important part of the course/program; direct instruction or some direct instruction is provided; students are evaluated multiple times (and possibly in various ways) throughout the course or are evaluated on the concepts once or twice within the course.

DO NOT mark with an 'X' if: SLO/PLO is a minor focus of the course/program and some instruction is given in the area but students are not formally evaluated on the concepts; or if the SLO/PLO is minimally or not at all part of the course/program.

PLOs	**PLO to ILO Alignment** *(Mark with an X)*			
	1	2	3	4
PLO #1 Safely Operating Industry Tools Upon successful completion of the courses in this program, students will be able to identify and safely operate tools commonly used in the construction and/or cabinetmaking industry.	X			
PLO #2 Project Estimating Upon successful completion of the Construction Technology program, students will be able to reference a set of plans and produce a complete materials list.	X			
PLO #3 Project Layout and Construction Upon successful completion of the Construction Technology program, students will be able to participate in the layout and construction of a residential structure.	X			

SLOs	SLO to PLO Alignment (Mark with an X)			COURSE to ILO Alignment (Mark with an X)			
	P1	P2	P3	1	2	3	4
CTEC 100 Building Fundamentals: SLO #1 Materials and Methods Students will be able to demonstrate a basic application of materials and methods commonly used in residential construction.	X						
CTEC 100 Building Fundamentals: SLO #2 Header Material Students will be able to calculate and cut to length of header material.	X			X			
CTEC 100 Building Fundamentals: SLO #3 Rafter Dimensions Students will be able to calculate the dimensions of common rafters.		X					
CTEC 110 Additions and Remodeling: SLO #1 Residential Construction Materials Students will be able to demonstrate a basic application of materials and methods commonly used in residential construction.	X						
CTEC 110 Additions and Remodeling: SLO #2 Residential Form Ties Students will be able to correctly install residential form ties.			X	X			
CTEC 110 Additions and Remodeling: SLO #3 Under Floor Ventilation Students will be able to calculate the correct ratio of ventilation to under floor area.		X					
CTEC 121 Concrete and Formwork: SLO #1 Concrete and Formwork Materials and Methods Students will be able to demonstrate a basic application of materials and methods commonly used in residential construction.	X						
CTEC 121 Concrete and Formwork: SLO #2 Volume of Concrete Students will be able to calculate the volume of concrete in "yards."		X		X			
CTEC 121 Concrete and Formwork: SLO #3 Auto Level Students will be able to set up an auto level for use in the laboratory.			X				
CTEC 122 Rough Framing: SLO #1 Rough Framing Materials and Methods Students will be able to demonstrate a basic application of materials and methods commonly used in residential construction.	X						
CTEC 122 Rough Framing: SLO #2 Hold-Down Alignment Students will be able to align a "hold-down" for use in a sheer wall assembly.			X	X			
CTEC 122 Rough Framing: SLO #3 Framing Lumber Students be able to crown and mark framing lumber.			X				

SLOs	SLO to PLO Alignment (Mark with an X)			COURSE to ILO Alignment (Mark with an X)			
	P1	P2	P3	1	2	3	4
CTEC 131 Roof Framing: SLO #1 Roof Framing Materials and Method Students will be able to demonstrate a basic application of materials and methods commonly used in residential construction.	X						
CTEC 131 Roof Framing: SLO #2 Roof Slope Students will be able to calculate roof slope.		X		X			
CTEC 131 Roof Framing: SLO #3 Stair Framing Materials and Methods Students will be able to calculate the dimensions of a valley rafter.			X				
CTEC 132 Stair Framing: SLO #1 Roof Framing Materials and Method Students will be able to demonstrate a basic application of materials and methods commonly used in residential construction.	X						
CTEC 132 Stair Framing: SLO #2 Open Stair Stringers Students will be able to prepare a set of open stair stringers.			X	X			
CTEC 132 Stair Framing: SLO #3 Rise to Run Ratio Students will be able to calculate the appropriate ratio of "rise to run" for a legal staircase.			X				
CTEC 141 Interior Subcrafts: SLO #1 Interior Subcrafts Materials and Methods Students will be able to demonstrate a basic application of materials and methods commonly used in residential construction.	X						
CTEC 141 Interior Subcrafts: SLO #2 Door Swing Students will be able to correctly identify the "swing" of a door.		X		X			
CTEC 141 Interior Subcrafts: SLO #3 Drywall Installation Students will be able to install drywall in accordance with the International Residential Code guidelines.			X				
CTEC 142 Exterior Subcrafts: SLO #1 Exterior Subcrafts Materials and Methods Students will be able to demonstrate a basic application of materials and methods commonly used in residential construction.	X						
CTEC 142 Exterior Subcrafts: SLO #2 Window Opening Flash Students will be able "flash" a window opening according residential code specifications.			X	X			
CTEC 142 Exterior Subcrafts: SLO #3 Mortar Scratch Coat Students will be able to apply a "scratch coat" of mortar over lath.			X				
CTEC 150 Contract Estimating: SLO #1 Residential Construction Estimating Students will be able to demonstrate a basic knowledge of residential construction estimating.	X						
CTEC 150 Contract Estimating: SLO #2 Window Estimate Students will be able to prepare a window estimate from information found on a set of residential blueprints.			X	X			
CTEC 150 Contract Estimating: SLO #3 Building Estimate Profit Students will be able to calculate profit for a building estimate.		X					

SLOs	SLO to PLO Alignment (Mark with an X)			COURSE to ILO Alignment (Mark with an X)			
	P1	P2	P3	1	2	3	4
CTEC 160 Business and Legal Aspects of Contracting: SLO #1 Legal Aspects Students will be able to demonstrate a basic knowledge of the California Contractor License Law.			X	X			
CTEC 160 Business and Legal Aspects of Contracting: SLO #2 Mechanics Lien Students will be able create a Mechanics Lien.		X					
CTEC 160 Business and Legal Aspects of Contracting: SLO #3 Payroll Deductions Students will be able to calculate payroll deductions.		X					
CTEC 172 Residential Electrical Wiring: SLO #1 Electrical Wiring Materials and Methods Students will be able to demonstrate a basic application of materials and methods commonly used in residential construction.	X			X			
CTEC 172 Residential Electrical Wiring: SLO #2 Duplex Receptacle Wiring Students will be able to wire a duplex receptacle.			X				
CTEC 172 Residential Electrical Wiring: SLO #3 Hole Boring in Framing Materials Students will be able to bore holes in framing materials to accommodate non-metallic sheathed cables.			X				
CTEC 180 Residential Plumbing: SLO #1 Plumbing Materials and Methods Students will be able to demonstrate a basic application of materials and methods commonly used in residential construction.	X			X			
CTEC 180 Residential Plumbing: SLO #2 Watertight Copper Joint Students will be able to assemble a watertight copper joint.			X				
CTEC 180 Residential Plumbing: SLO #3 Lavatory P-Trap Students will be able to assemble a P-trap under a lavatory.			X				
CTEC 200 General Cabinet Making: SLO #1 Cross-Cut Plywood Using the panel saw, student will cross-cut plywood to specified dimensions.			X	X			
CTEC 200 General Cabinet Making: SLO #2 Rip Cut Lumber Using the table saw, student will rip lumber to predetermined widths.			X				
CTEC 200 General Cabinet Making: SLO #3 Edge Glue Lumber Students will edge-glue lumber to increase overall width.			X				
CTEC 201 Upper Residential Cabinets: SLO #1 Face Frame Doweling Students will lay out dowel hole boring locations for a face frame.		X		X			
CTEC 201 Upper Residential Cabinets: SLO #2 Dowel Hole Boring Using the horizontal boring machine, student will bore dowel holes.			X				
CTEC 201 Upper Residential Cabinets: SLO #3 Diagonal Technique Face Frame Student will assemble face frame utilizing diagonal comparative technique to square.		X					

SLOs	SLO to PLO Alignment (Mark with an X)			COURSE to ILO Alignment (Mark with an X)			
	P1	P2	P3	1	2	3	4
CTEC 202 Base-Residential Cabinets: SLO #1 Hardwood Milling Student will mill hardwood lumber and lay it out for biscuit joints.			X	X			
CTEC 202 Base-Residential Cabinets: SLO #2 Plate Jointer Setup Student will set up plate jointer for ¾" material thickness.	X						
CTEC 202 Base-Residential Cabinets: SLO #3 Biscuit Joint Machining Using the plate jointer, student will machine for biscuit joints.			X				
CTEC 203 Dedicated Use Cabinets: SLO #1 S4S Stock Squaring Presented with a piece of rough stock, student will utilize correct squaring procedure to produce stock in S4S condition.			X	X			
CTEC 203 Dedicated Use Cabinets: SLO #2 Radial Arm Saw Cross Cut Using the radial arm saw, student will cross cut stock to specified lengths.			X				
CTEC 203 Dedicated Use Cabinets: SLO #3 Cooktop Cutout Calculation Referencing the manufacturer's specifications, student will calculate cutout for standard cooktop.		X					
CTEC 210 Furniture Making Lab Interpreting Commercial Plans: SLO #1 Bill of Materials Provided with a set of plans, student will create a bill of materials.		X		X			
CTEC 210 Furniture Making Lab Interpreting Commercial Plans: SLO #2 Cost of Materials Referencing a bill of materials, student will calculate cost.		X					
CTEC 210 Furniture Making Lab Interpreting Commercial Plans: SLO #3 Construction Hours Estimate Using selected plans, student will estimate construction hours.		X					
CTEC 211 Furniture Making Lab Plan Modification: SLO #1 Seat Back Angle Student will modify angle of seat back from dining to recline.		X		X			
CTEC 211 Furniture Making Lab Plan Modification: SLO #2 Chair Height Conversion Student will convert chair height from dining to bar height.		X					
CTEC 211 Furniture Making Lab Plan Modification: SLO #3 Dining Table Length Conversion Student will modify length of rectangular dining table from four place settings to six.		X					
CTEC 212 Furniture Making Lab Developing Original Plans: SLO #1 Plan of Procedure Working from an original set of plans, student will complete a plan of procedure.		X		X			
CTEC 212 Furniture Making Lab Developing Original Plans: SLO #2 Plan Dimensioning Student will dimension original set of plans.		X					
CTEC 212 Furniture Making Lab Developing Original Plans: SLO #3 Final Product Critique Student will critique final product.			X				

SLOs	SLO to PLO Alignment (Mark with an X)			COURSE to ILO Alignment (Mark with an X)			
	P1	P2	P3	1	2	3	4
CTEC 213 Furniture Making Lab Building Without Plans: SLO #1 Project Option Thumbnails Student will create three thumbnail sketches of project options.		X		X			
CTEC 213 Furniture Making Lab Building Without Plans: SLO #2 Full Size Drawing from Thumbnail Student will expand selected thumbnail sketch to full size drawing.		X					
CTEC 213 Furniture Making Lab Building Without Plans: SLO #3 Coloring Techniques Student will enhance details of full size drawing using coloring techniques.		X					
CTEC 220 Hinging Systems and Doors: SLO #1 Ecopress Hinge Mortising Student will set up Ecopress for hinge mortising.	X			X			
CTEC 220 Hinging Systems and Doors: SLO #2 Cabinet Door Hinge Student will mortise and insert hinge in a cabinet door.			X				
CTEC 220 Hinging Systems and Doors: SLO #3 Hinge Plate Student will install ½" overlap hinge plate face frame application.			X				
CTEC 221 Drawer Systems: SLO #1 Blum 230 Drawer Slides Using manufacturer's installation jig, student will install Blum 230 drawer slides.		X		X			
CTEC 221 Drawer Systems: SLO #2 Ecopress Line Boring Student will set up Ecopress in line boring mode.	X						
CTEC 221 Drawer Systems: SLO #3 Blum Soft-Close Drawer Slides Student will install and adjust Blum motion soft-close drawer slides.			X				

Time lines for SLOs for each course in the curriculum

1. **CTEC 100 – Building Fundamentals**
    a. SLO #1 Materials and Methods -Students will be able to demonstrate a basic application of materials and methods commonly used in residential construction.
        i. Course SLO Assessment Cycle:2014-15 (Spring 2015)
        ii. Input Date:11/29/2013
        iii. Course SLO Status: Active
    b. SLO #2 Header Material - Students will be able to calculate and cut to length of header material
        i. Course SLO Assessment Cycle:2015-16 (Summer 2016)
        ii. Input Date: 11/29/2013
        iii. Course SLO Status: Active
    c. SLO #3 Rafter Dimensions -Students will be able to calculate the dimensions of common rafters.
        i. Course SLO Assessment Cycle:2017-18 (Fall 2017)
        ii. Input Date:11/29/2013
        iii. Course SLO Status: Active
2. **CTEC 110 - Additions and Remodeling**
    a. SLO #1 Residential Construction Materials - Students will be able to demonstrate a basic application of materials and methods commonly used in residential construction.
        i. Course SLO Assessment Cycle:2014-15 (Fall 2014)
        ii. Input Date:11/29/2013
        iii. Course SLO Status: Active
    b. SLO #2 Residential Form Ties - Students will be able to correctly install residential form ties.
        i. Course SLO Assessment Cycle:2015-16 (Fall 2015)
        ii. Input Date:11/29/2013
        iii. Course SLO Status: Active
    c. SLO #3 Under Floor Ventilation -Students will be able to calculate the correct ratio of ventilation to under floor area
        i. Course SLO Assessment Cycle:2016-17 (Fall 2016)
        ii. Input Date:11/29/2013
        iii. Course SLO Status: Active
3. **CTEC 121 - Concrete and Formwork**
    a. SLO #1 Concrete and Formwork Materials and Methods - Students will be able to demonstrate a basic application of materials and methods commonly used in residential construction
        i. Course SLO Assessment Cycle:2014-15 (Spring 2015)
        ii. Input Date:11/29/2013
        iii. Course SLO Status: Active
    b. SLO #2 Volume of Concrete - Students will be able to calculate the volume of concrete in "yards."
        i. Course SLO Assessment Cycle:2015-16 (Fall 2015)
        ii. Input Date:11/29/2013
        iii. Course SLO Status: Active

    c. SLO #3 Auto Level - Students will be able to set up an auto level for use in the laboratory
        i. Course SLO Assessment Cycle: 2016-17 (Spring 2017)
        ii. Input Date:11/29/2013
        iii. Course SLO Status: Active
        iv. Semester and Year Assessment Conducted: 2013-14 (Fall 2013)
4. **CTEC 122 - Rough Framing**
    a. SLO #1 Rough Framing Materials and Methods- Students will be able to demonstrate a basic application of materials and methods commonly used in residential construction.
        i. Course SLO Assessment Cycle:2013-14 (Spring 2014)
        ii. Input Date:11/29/2013
        iii. Course SLO Status: Active

iv. Semester and Year Assessment Conducted:2013-14 (Fall 2013)

b. SLO #2 Hold-Down Alignment - Students will be able to align a "hold-down" for use in a sheer wall assembly.
   i. Course SLO Assessment Cycle:2015-16 (Fall 2015)
   ii. Input Date:11/29/2013
   iii. Course SLO Status: Active

c. SLO #3 Framing Lumber – Students will be able to crown and mark framing lumber.
   i. Course SLO Assessment Cycle:2016-17 (Spring 2017)
   ii. Input Date:11/29/2013
   iii. Course SLO Status: Active

5. CTEC 131 - Roof Framing

a. SLO #1 Roof Framing Materials and Methods - Students will be able to demonstrate a basic application of materials and methods commonly used in residential construction.
   i. Course SLO Assessment Cycle: 2013-14 (Spring 2014)
   ii. Input Date: 11/29/2013
   iii. Course SLO Status: Active
   iv. Semester and Year Assessment Conducted: 2013-14 (Spring 2014)

b. SLO #2 Roof Slope - Students will be able to calculate roof slope.
   i. Course SLO Assessment Cycle:2015-16 (Fall 2015)
   ii. Input Date:11/29/2013
   iii. Course SLO Status: Active

c. SLO #3 Valley Rafter Dimensions - Students will be able to calculate the dimensions of a valley rafter.
   i. Course SLO Assessment Cycle:2016-17 (Spring 2017)
   ii. Input Date:11/29/2013

6. CTEC 132 - Stair Framing

a. SLO #1 Stair Framing Materials and Methods - Students will be able to demonstrate a basic application of materials and methods commonly used in residential construction.
   i. Course SLO Assessment Cycle:2015-16 (Fall 2015)
   ii. Input Date:11/29/2013
   iii. Course SLO Status: Active

b. SLO #2 Open Stair Stringers - Students will be able to prepare a set of open stair stringers.
   i. Course SLO Assessment Cycle:2015-16 (Fall 2015)
   ii. Input Date:11/29/2013
   iii. Course SLO Status: Active

c. SLO #3 Rise to Run Ratio - Students will be able to calculate the appropriate ratio of "rise to run" for a legal staircase.
   i. Course SLO Assessment Cycle:2016-17 (Spring 2017)
   ii. Input Date:11/29/2013
   iii. Course SLO Status: Active

7. CTEC 141 – Interior Sub-crafts

a. SLO #1 Interior Sub-crafts Materials and Methods - Students will be able to demonstrate a basic application of materials and methods commonly used in residential construction.
   i. Course SLO Assessment Cycle:2014-15 (Fall 2014)
   ii. Input Date:11/29/2013
   iii. Course SLO Status: Active

b. SLO #2 Door Swing - Students will be able to correctly identify the "swing" of a door.
   i. Course SLO Assessment Cycle:2015-16 (Spring 2016)
   ii. Input Date:11/29/2013
   iii. Course SLO Status: Active

c. SLO #3 Drywall Installation -Students will be able to install drywall in accordance with the International Residential Code guidelines
   i. Course SLO Assessment Cycle:2017-18 (Fall 2017)
   ii. Input Date:11/29/2013
   iii. Course SLO Status: Active

8. **CTEC 142 – Exterior Sub-crafts**
    a. SLO #1 Exterior Sub-crafts Materials and Methods - Students will be able to demonstrate a basic application of materials and methods commonly used in residential construction
        i. Course SLO Assessment Cycle:2014-15 (Fall 2014)
        ii. Input Date:11/29/2013
        iii. Course SLO Status: Active
    b. SLO #2 Window Opening Flash - Students will be able "flash" a window opening according residential code specifications.
        i. Course SLO Assessment Cycle:2015-16 (Spring 2016)
        ii. Input Date:11/29/2013
        iii. Course SLO Status: Active
    c. SLO #3 Mortar Scratch Coat - Students will be able to apply a "scratch coat" of mortar over lath.
        i. Course SLO Assessment Cycle:2017-18 (Fall 2017)
        ii. Input Date:11/29/2013
        iii. Course SLO Status: Active
9. **CTEC 150 – Contract Estimating**
    a. SLO #1 Residential Construction Estimating - Students will be able to demonstrate a basic knowledge of residential construction estimating.
        i. Course SLO Assessment Cycle:2014-15 (Fall 2014)
        ii. Input Date:11/29/2013
        iii. Course SLO Status: Active
    b. SLO #2 Window Estimate -Students will be able to prepare a window estimate from information found on a set of residential blueprints.
        i. Course SLO Assessment Cycle:2015-16 (Fall 2015)
        ii. Input Date:11/29/2013
        iii. Course SLO Status: Active
    c. SLO #3 Building Estimate Profit - Students will be able to calculate profit for a building estimate
        i. Course SLO Assessment Cycle:2016-17 (Fall 2016)
        ii. Input Date:11/29/2013
        iii. Course SLO Status: Active
10. **CTEC 160 - Business and Legal Aspects of Contracting**
    a. SLO #1 Legal Aspects - Students will be able to demonstrate a basic knowledge of the California Contractor License Law
        i. Course SLO Assessment Cycle:2014-15 (Fall 2014)
        ii. Input Date:07/01/2013
        iii. Course SLO Status: Active
    b. SLO #2 Mechanics Lien - Students will be able create a Mechanics Lien.
        i. Course SLO Assessment Cycle:2014-15 (Spring 2015)
        ii. Input Date:11/29/2013
        iii. Course SLO Status: Active
    c. SLO #3 Payroll Deductions - Students will be able to calculate payroll deductions.
        i. Course SLO Assessment Cycle:2015-16 (Spring 2016)
        ii. Input Date:11/29/2013
        iii. Course SLO Status: Active
11. **CTEC 172 – Residential Electrical Wiring**
    a. SLO #1 Electrical Wiring Materials and Methods - Students will be able to demonstrate a basic application of materials and methods commonly used in residential construction.
        i. Course SLO Assessment Cycle:2014-15 (Fall 2014)
        ii. Input Date:11/29/2013
        iii. Course SLO Status: Active
    b. SLO #2 Duplex Receptacle Wiring - Students will be able to wire a duplex receptacle.
        i. Course SLO Assessment Cycle:2015-16 (Fall 2015)
        ii. Input Date:11/29/2013
        iii. Course SLO Status: Active

c. SLO #3 Hole Boring in Framing Materials - Students will be able to bore holes in framing materials to accommodate non- metallic sheathed cables
    i. Course SLO Assessment Cycle:2016-17 (Fall 2016)
    ii. Input Date:11/29/2013
    iii. Course SLO Status: Active

12. CTEC 180 – Residential Plumbing

a. SLO #1 Plumbing Materials and Methods - Students will be able to demonstrate a basic application of materials and methods commonly used in residential construction.
    i. Course SLO Assessment Cycle:2014-15 (Spring 2015)
    ii. Input Date:11/29/2013
    iii. Course SLO Status: Active
b. SLO #2 Watertight Copper Joint - Students will be able to assemble a watertight copper joint.
    i. Course SLO Assessment Cycle:2015-16 (Spring 2016)
    ii. Input Date:11/29/2013
    iii. Course SLO Status: Active
c. SLO #3 Lavatory P-Trap – Students will be able to assemble a P-trap under a lavatory.
    i. Course SLO Assessment Cycle:2016-17 (Spring 2017)
    ii. Input Date:11/29/2013
    iii. Course SLO Status: Active

13. CTEC 200 - General Cabinet Making

a. SLO #1 Cross-Cut Plywood – Using the panel saw, student will cross-cut plywood to specified dimensions.
    i. Course SLO Assessment Cycle:2015-16 (Fall 2015)
    ii. Input Date:11/29/2013
    iii. Course SLO Status: Active
b. SLO #2 Rip Cut Lumber - Using the table saw, student will rip lumber to predetermined widths.
    i. Course SLO Assessment Cycle:2015-16 (Fall 2015)
    ii. Input Date:11/29/2013
    iii. Course SLO Status: Active
c. SLO #3 Edge Glue Lumber – Student will edge-glue lumber to increase overall width.
    i. Course SLO Assessment Cycle:2015-16 (Fall 2015)
    ii. Input Date:11/29/2013
    iii. Course SLO Status: Active

14. CTEC 201 – Upper Residential Cabinets

a. SLO #1 Face Frame Doweling - Student will lay out dowel hole boring locations for a face frame.
    i. Course SLO Assessment Cycle:2016-17 (Fall 2016)
    ii. Input Date:11/29/2013
    iii. Course SLO Status: Active
b. SLO #2 Dowel Hole Boring - Using the horizontal boring machine, student will bore dowel holes.
    i. Course SLO Assessment Cycle:2016-17 (Fall 2016)
    ii. Input Date:11/29/2013
    iii. Course SLO Status: Active
c. SLO #3 Diagonal Technique Face Frame - Student will assemble face frame utilizing diagonal comparative technique to square.
    i. Course SLO Assessment Cycle:2016-17 (Fall 2016)
    ii. Input Date:11/29/2013
    iii. Course SLO Status: Active

15. CTEC 202 - Base-Residential Cabinets

a. SLO #1 Hardwood Milling – Student will mill hardwood lumber and lay it out for biscuit joints.
    i. Course SLO Assessment Cycle:2016-17 (Fall 2016)
    ii. Input Date:11/29/2013
    iii. Course SLO Status: Active
b. SLO #2 Plate Jointer Setup – Student will set up plate jointer for ¾" material thickness.

i. Course SLO Assessment Cycle: 2016-17 (Fall 2016)
ii. Input Date:11/29/2013
iii. Course SLO Status: Active

c. SLO #3 Biscuit Joint Machining - Using the plate jointer, student will machine for biscuit joints
i. Course SLO Assessment Cycle:2016-17 (Fall 2016)
ii. Input Date:11/29/2013
iii. Course SLO Status: Active

16. CTEC 203 - Dedicated Use Cabinets

a. SLO #1 S4S Stock Squaring - Presented with a piece of rough stock, student will utilize correct squaring procedure to produce stock in S4S condition
i. Course SLO Assessment Cycle:2015-16 (Fall 2015)
ii. Input Date:11/29/2013
iii. Course SLO Status: Active

b. SLO #2 Radial Arm Saw Cross Cut - Using the radial arm saw, student will cross cut stock to specified lengths.
i. Course SLO Assessment Cycle:2015-16 (Fall 2015)
ii. Input Date:11/29/2013
iii. Course SLO Status: Active

c. SLO #3 Cook- top Cutout Calculation - Referencing the manufacturer's specifications, student will calculate cutout for standard cook-top.
i. Course SLO Assessment Cycle:2015-16 (Fall 2015)
ii. Input Date:11/29/2013
iii. Course SLO Status: Active

17. CTEC 210 – Furniture Making Lab Interpreting Commercial Plans

a. SLO #1 Bill of Materials - Provided with a set of plans, student will create a bill of materials.
i. Course SLO Assessment Cycle:2015-16 (Fall 2015)
ii. Input Date:11/29/2013
iii. Course SLO Status: Active

b. SLO #2 Cost of Materials - Referencing a bill of materials, student will calculate cost.
i. Course SLO Assessment Cycle:2015-16 (Fall 2015)
ii. Input Date:11/29/2013
iii. Course SLO Status: Active

c. SLO #3 Construction Hours Estimate – Using selected plans, student will estimate construction hours.
i. Course SLO Assessment Cycle:2015-16 (Fall 2015)
ii. Input Date:11/29/2013
iii. Course SLO Status: Active

18. CTEC 211 – Furniture Making Lab Plan Modification

a. SLO #1 Seat Back Angle - Student will modify angle of seat back from dining to recline.
i. Course SLO Assessment Cycle:2015-16 (Spring 2016)
ii. Input Date:11/29/2013
iii. Course SLO Status: Active

b. SLO #2 Chair Height Conversion - Student will convert chair height from dining to bar height.
i. Course SLO Assessment Cycle:2015-16 (Spring 2016)
ii. Input Date:11/29/2013
iii. Course SLO Status: Active

c. SLO #3 Dining Table Length Conversion - Student will modify length of rectangular dining table from four place settings to six.
i. Course SLO Assessment Cycle:2015-16 (Spring 2016)
ii. Input Date: 11/29/2013
iii. Course SLO Status: Active

19. CTEC 212 – Furniture Making Lab Developing Original Plans

a. SLO #1Plan of Procedure - Working from an original set of plans, student will complete a plan of procedure.
i. Course SLO Assessment Cycle:2016-17 (Fall 2016)

ii. Input Date:11/29/2013
iii. Course SLO Status: Active

b. SLO #2 Plan Dimensioning - Student will dimension original set of plans.
i. Course SLO Assessment Cycle:2016-17 (Fall 2016)
ii. Input Date:11/29/2013
iii. Course SLO Status: Active

c. SLO #3 Final Product Critique - Student will critique final product.
i. Course SLO Assessment Cycle:2016-17 (Fall 2016)
ii. Input Date:11/29/2013
iii. Course SLO Status: Active

20. CTEC 213 – Furniture Making Lab Building Without Plans

a. SLO #1Project Option Thumbnails - Student will create three thumbnail sketches of project options.
i. Course SLO Assessment Cycle:2016-17 (Spring 2017)
ii. Input Date:11/29/2013
iii. Course SLO Status: Active

b. SLO #2Full Size Drawing from Thumbnail - Student will expand selected thumbnail sketch to full size drawing.
i. Course SLO Assessment Cycle:2016-17 (Spring 2017)
ii. Input Date:11/29/2013
iii. Course SLO Status: Active

c. SLO #3 Coloring Techniques - Student will enhance details of full size drawing using coloring techniques.
i. Course SLO Assessment Cycle:2016-17 (Spring 2017)
ii. Input Date:11/29/2013
iii. Course SLO Status: Active

21. CTEC 220 – Hinging Systems and Doors

a. SLO #1 Ecopress Hinge Mortising - Student will set up Ecopress for hinge mortising.
i. Course SLO Assessment Cycle:2015-16 (Fall 2015)
ii. Input Date:11/29/2013
iii. Course SLO Status: Active

b. SLO #2 Cabinet Door Hinge - Student will mortise and insert hinge in a cabinet door.
i. Course SLO Assessment Cycle:2015-16 (Fall 2015)
ii. Input Date:11/29/2013
iii. Course SLO Status: Active

c. SLO #3 Hinge Plate - Student will install ½" overlap hinge plate face frame application.
i. `Course SLO Assessment Cycle:2015-16 (Fall 2015)
ii. Input Date:11/29/2013
iii. Course SLO Status: Active

22. CTEC 221 - Drawer Systems

a. SLO #1 Blum 230 Drawer Slides – Using manufacturer's installation jig, student will install Blum 230 drawer slides.
i. Course SLO Assessment Cycle:2016-17 (Fall 2016)
ii. Input Date:11/29/2013
iii. Course SLO Status: Active

b. SLO #2 Ecopress Line Boring - Student will set up Ecopress in line boring mode.
i. Course SLO Assessment Cycle:2016-17 (Fall 2016)
ii. Input Date:11/29/2013
iii. Course SLO Status: Active

c. SLO #3 Blum Soft-Close Drawer Slides - Student will install and adjust Blum motion soft-close drawer slides.
i. Course SLO Assessment Cycle:2016-17 (Fall 2016)
ii. Input Date:11/29/2013
iii. Course SLO Status: Active

c) The results of the assessments over the last four years are positive; the assessments of student learning offer the instructors in Construction Technology a measure of how effectively we are fulfilling the college's mission. At the time of this writing all SLO assessments are up to date (100%).

d) The faculty has used assessment results to make decisions on future curriculum changes, planning and budgets, for example: the addition of a need for a Cabinetry lab class and the inactivation of the steel stud framing class, the need for updated and expanded facilities. Students need to be exposed to and trained on an expanded selection of tools and industry materials. Dedicated areas for students and faculty to set up projects, assignments and demonstrations and leave them undisturbed between class meetings would help with the continuity of classroom instruction.

e) Based on the ACCJC rubric, and with the addition of 2 extra SLO's for each course in the program and the elimination of repeatable courses, the Construction Technology program's level of SLO implementation is in the Proficiency stage and moving towards sustainability and continued improvement.

f) The faculty of the Construction Technology department meets regularly to discuss the curriculum and the state of the department; SLO's and the SLO process are discussed. We are still working on streamlining the assessment process for full-time professors and part-time instructors.

5. Analysis of Student Feedback

a) All of the student feedback for this department is from contact with the students in the classroom, laboratory hours and office hours. Students want evening classes for the exterior trades, they want more lab time for the cabinetry and fine woodworking classes.
b) No formal surveys to analyze.

6. Facilities and Equipment

a) Facilities and equipment used by the program/department

The Construction Technology facility is a decades old area of the campus, which has fallen into disrepair. The landscaping has not been addressed in years and the building looks abandoned from the outside. The interior walls and ceiling of the Cabinetry and Fine woodworking laboratory area are covered in a thick layer of dust due to the approximately 6 year process of replacing the original dust collector after it stopped working and could not be repaired. The dust is a health and safety risk that no one outside of the department seems to take seriously.

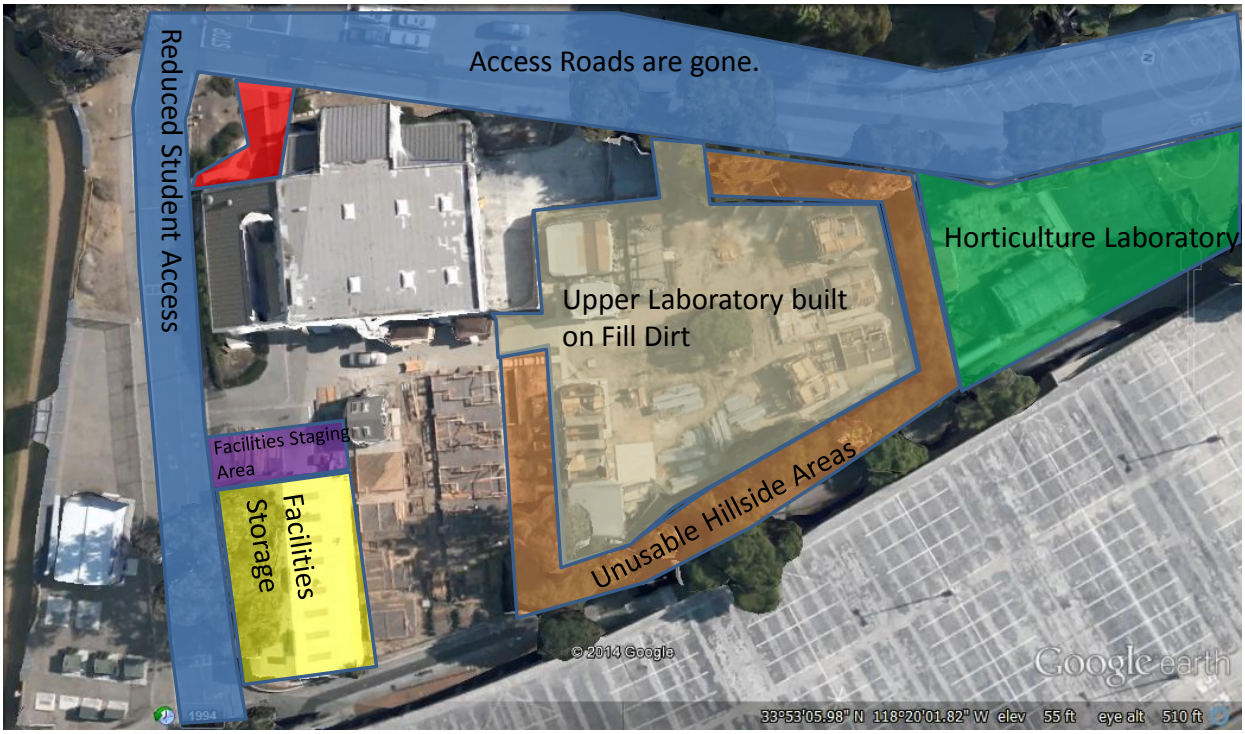
The demolition and rebuilding of the stadium, the new shops buildings and the expansion of baseball field have now land-locked the department, students can no longer access the building with vehicles to transport materials and projects to and from the area because the access roads have been removed and it is unclear if plans exist to replace the access roads.


CONSTRUCTION TECHNOLOGY

In the accompanying aerial photo of the department, the areas where the access roads used to exist are highlighted in light blue. The student access to the classroom and the Cabinetry and Woodworking lab is highlighted in red; it is now blocked by the stadium project.

In the photo, an area of unusable space also exists in the laboratory because a large deposit of excavated dirt creates a slope where the yard space cannot be utilized, it is highlighted in orange. The Facilities department also maintains a storage and staging area in the Construction Technology laboratory area which further reduces the usable space for program growth. A rough estimate of the usable space in the outside laboratory is approximately ½ an acre.

El Camino College Construction Technology

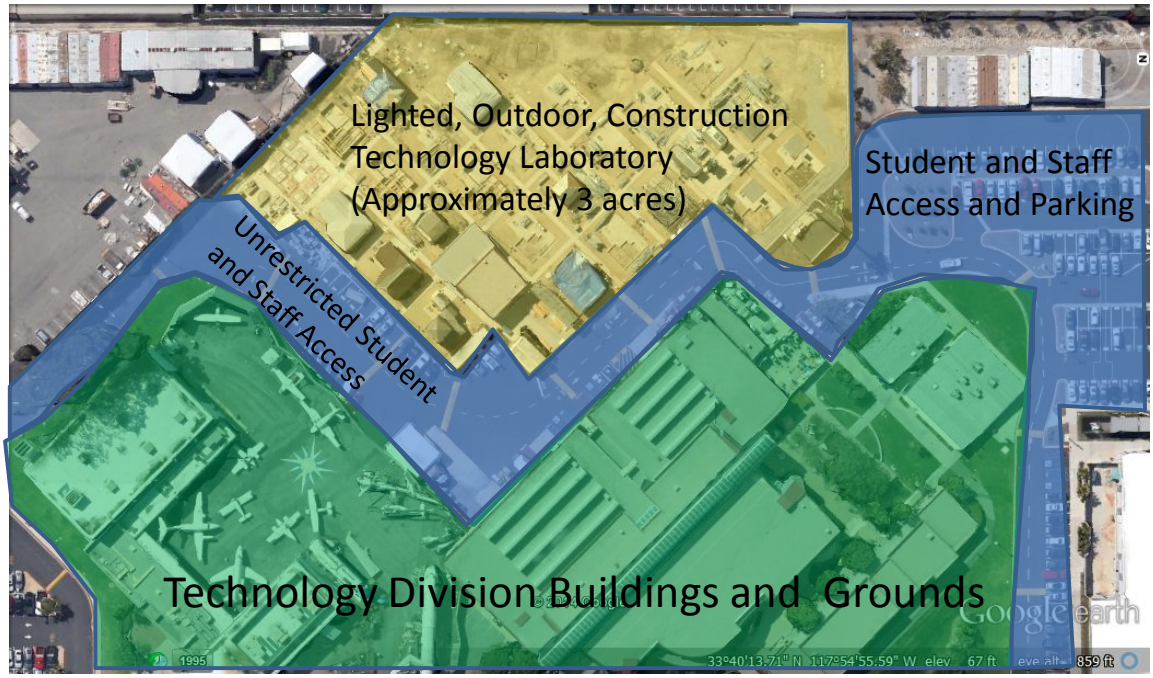


Laboratory and Building Configuration

The following aerial photograph is of the Exterior Construction Technology Laboratory yard at Orange Coast College (OCC) in Costa Mesa, CA. This program is the next closest comparable facility to El Camino College and is over 30 miles away and in a different county.

The areas shaded in blue represent student and staff access and program. The area highlighted in yellow is the dedicated Construction Laboratory; it is approximately 3 acres, 6 times the area of ECC's useable space, and is fully supplied with water and electrical sources. The Laboratory area is also completely lit with outdoor lighting which enables them to have a flourishing evening program. OCC also has multiple, indoor, dedicated laboratories for their electrical and Cabinetry and Woodworking programs. The area highlighted in green is the remainder of the Technology Division's buildings.

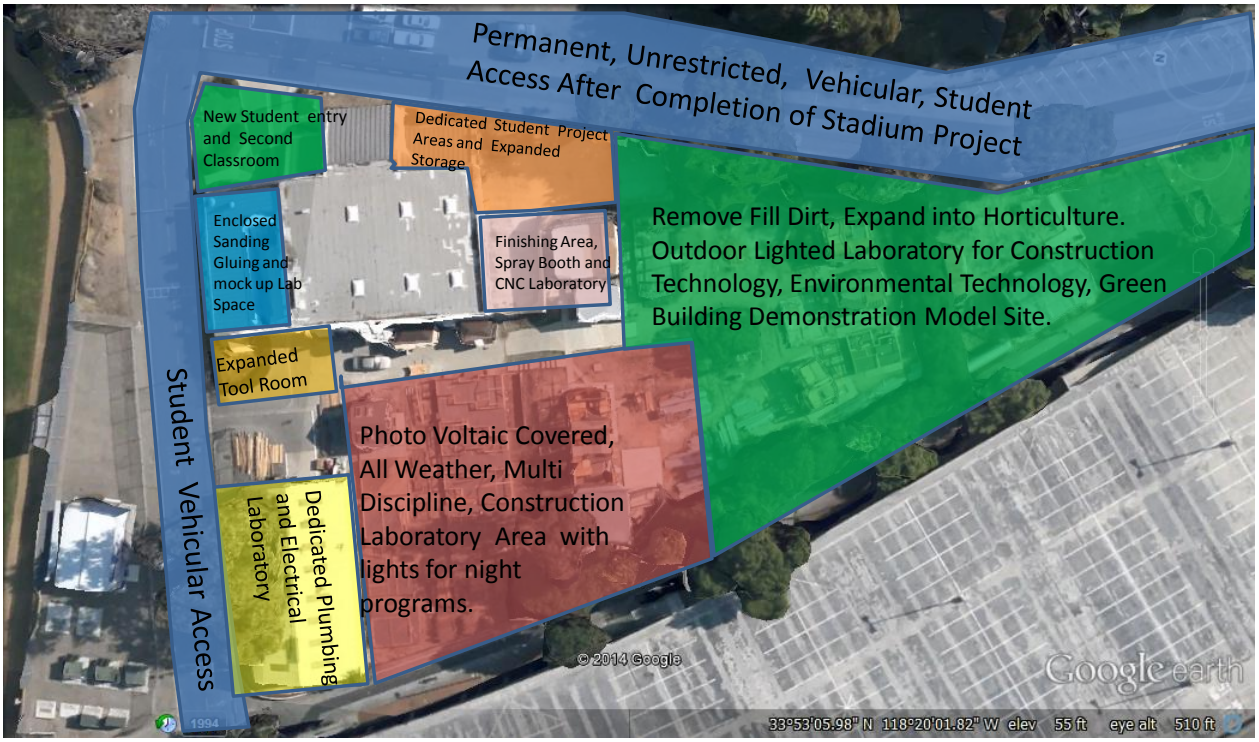
Orange Coast College Technology Division
Building and Laboratory Areas



Although we are able to meet many students' needs, we are continuously under pressure for additional interior lab and storage space for student supplies, projects and departmental materials. The current tool room is also inadequate due to the increase in additional sub craft classes, each of which requires its own unique supplies and tools. To enable the program to grow the current laboratory areas, both interior and exterior, need to be expanded to accommodate the wide range of class offerings.

Short of a completely new facility, remodeling and repurposing the existing facilities is the next option. The following photograph is just one of many possible uses of the Construction Technology area.

El Camino College Construction Technology



Proposed Laboratory and Building Configuration

The proposed plan still calls for unrestricted Vehicular access for students and staff. Repurposing the facilities warehouse (highlighted in yellow) to house dedicated electrical and plumbing classes would be a relatively easy way to provide secure areas for those trades as well as evening offerings. The tool room can be expanded into the yard to free up space in the main interior laboratory and serve both areas equally well. Additions to the original building can house areas for: dedicated student project areas and expanded class section specific, storage areas.

f) Long range

Other additions will be used for the CNC and spray booths, dedicated sanding areas, mock up and gluing areas. The installation of an industrial spray booth will enable professors to introduce curriculum and instruction in the use of emerging environmentally-friendly finishing materials (green) unique to cabinet making and fine woodworking. Computer Numerical Control (CNC) equipment: A CNC wood router is a Numerical control tool that creates objects from wood. Parts of a project can be designed in the computer with a CAD/CAM program, and then cut automatically using a router to produce a finished part. The CNC works on the Cartesian coordinate system (X, Y, Z) for 3D motion control. This gives the computer the ability to drive a CNC machine to make parts. The CNC Router is great for engineering prototyping, product development, art, robotic education, and production work. This equipment is the next evolution in the connection between architects, designers, prototype developers and the shop floor.

The addition of at least two more classrooms, to a total of three, is needed to eliminate classroom conflicts now that the Technical Arts building is being moved to the other side of the campus.

Additional yard space and lighting: The exterior laboratory lighting is essential to developing a strong evening program which is currently an untapped student population. El Camino College students have expressed interest in attending evening classes. Many of our students work in the industry during the day and would find it easier to attend class in evening. The red highlighted area is a proposed, photo voltaic, covered, multidiscipline, all weather, lighted, laboratory area. This area could be utilized by multiple disciplines and would generate electricity during the day offsetting the extra energy consumed by an evening course schedule. If constructed properly, the photo voltaic panels could be monitored and utilized by the electrical or environmental technology students in a laboratory setting. This covered area would create a shaded area during times of extreme heat and shelter from the rain, enabling students to work in inclement weather, reducing missed laboratory sessions.

The green highlighted area would include what is now the horticulture area. Horticulture is being impacted by the stadium and the area is inadequate for a full program, but it would be an ideal addition to the construction laboratory. The elevated dirt area would be removed and the laboratory would be graded to a consistent elevation. The green area would be uncovered but still lighted to be utilized for evening classes. This area would also be available for a "green" technology demonstration model to be constructed by students and used by different disciplines to explore green building techniques.

The Construction Technology shops, classroom and laboratory are need of wireless internet. Students need access in the laboratory and classroom to enable them to fully integrate technology into their learning experience.

Many of the pieces of equipment in the program are nearing the end of their useful life span and are in need of upgraded replacements. Other areas are in need of equipment, like CNC machines and a spray booth, which will help the program to move in new dynamic directions.

A. Prioritized recommendations and needs of your program/department

1. Unrestricted Student vehicular access to the building and grounds- $100,000
2. Incorporate existing peripheral laboratory spaces in the Construction Technology building in to one larger laboratory and expand the rest of the building. - $ 1,500,000
3. Exterior work lighting and exterior photo voltaic cover - $ 1,000,000
4. Repurpose the facilities storage building to house electrical and plumbing laboratories - $ 85,000
5. Remove fill dirt and expand into the horticulture area - $250,000
6. Spray booth - $ 100,000
7. Offer evening classes - ?
8. Replace ageing equipment - $ 100,000

7. Technology and Software

a) The integration of technology in the Construction Technology area is, at best, poor. There is a single station in the classroom with a monitor and projector. There are no working computers for the Part time instructors in the staff office. When the internet is working it is very slow. There is no wireless connectivity anywhere in the building or the adjoining exterior laboratory.
b) This lack of connectivity hampers the work of students and staff in the laboratory when they need to access information for their projects or demonstrations. The cost of wireless and a new system is roughly $10,000.
c) Long range needs are completely dependent on the approved additions of curriculum and equipment for the program. Many of the newest pieces of equipment will have software requirements that will only be known when the machinery is purchased.

8. Staffing

a) Current staffing

1. 2 full-time Professors
2. 4 part-time instructors
3. One full time Tool room attendant
4. One part time Instructional Associate

b) Future needs

As the economy improves and the program grows, we anticipate the need for 1 additional full-time and 2 additional part-time instructors. At present time, incumbent faculty teaching loads are full. In order to expand the program to meet the needs of the community, the current faculty roster must be expanded.

Expanded toolroom hours and staffing is also needed for the proper operation of the existing and expanded program.

The following information from the California Department of education illustrates the State's recognition of the need of programs like Construction Technology.

Building Trades and Construction

Students are prepared for employment in various building trades and construction industries.

Description

A strong demand for workers continues in the building trades and construction industry sector, and that demand increases as populations, businesses, and local economies expand. According to the U.S. Bureau of Labor Statistics, construction is among the top ten of the nation's industries, constituting almost 5 percent of the total national gross domestic product. In California, the long-term (2004–2014) occupational projection for the building trades and construction industry includes a need to fill 17,790 new jobs and provide 17,920 replacement workers as members of the current workforce. In some trades, in California, an increase of more than 30 percent in the number of available jobs is expected over the next ten years. Nationally, more than one million construction jobs will be created over the next decade, with job categories ranging from laborers to engineers to contractors.

In building trades and construction industry sector classes, activities range from general or exploratory skills to job-specific skills that prepare students to select and pursue career paths through postsecondary training, work experience education, apprenticeships, and postsecondary education. The classes incorporate and apply academic core content to career-related education. These interdisciplinary approaches provide students with strong foundation skills and advanced skills in the career field of their choice, allowing students to exit programs and enter occupations directly or pursue further specialty training.

Building Trades and Construction Industry Sector Pathways

- Cabinetmaking and Wood Products
- Engineering and Heavy Construction

- Mechanical Construction
- Residential and Commercial Construction

Sample of Career Technical Education Courses
Illustrates: education level, and related occupations for cabinetmaking and wood products, engineering and heavy construction, mechanical construction, and residential and commercial construction. (Education, 2013)

9. Future Direction and Vision

a) The construction industry in southern California is rebounding as reported in the Los Angeles times, "The once-beleaguered construction industry is forecast to be the top growth sector in the state through 2019, making up ground after tremendous job losses during the recession" (Kirkham, 2014).

"The forecast also estimates that, after years of stagnant growth, the construction industry will grow at an annual rate of 6.8% in the state over the next five years, nearly triple the rate of other fast-growing sectors such as healthcare" (Kirkham, 2014).

"John Benson, a vice president of human resources at construction firm Skanska, said California is a major growth market for commercial real estate and infrastructure projects, requiring additional labor. He said the company has benefited from a skilled set of construction workers in the state, many of whom had struggled to find work in prior years" (Kirkham, 2014).

The Construction Technology Program at El Camino College is one of but a few places where students looking to enter the construction trades can receive and education and training in a myriad of topics related the industry.

The forcasted increase in the industry and the rebound in the economy as a whole will create a need for a skilled work force.

b) The vision for the program includes expanding the types of class offererings and the frequency in offering the courses. New green technology is also forefront in future course proposals. The construction technology department would also suggest transfering photovoltaic electrical training to the department from the HVACR department. New California compliant finishing materials also need to be integrated into the program as well as CNC facilities. One of the strongest needs for the program is space. The program needs to expand the area both inside and outside in order to accommodate the projected growth of industry and the program. This expanded space could also serve as a multidisciplinary laboratory space to be shared with othe departments in the division.

A. Prioritized recommendations and needs of your program/department

9. Unrestricted Student vehicular access to the building and grounds- $100,000
10. Incorporate existing peripheral laboratory spaces in the Construction Technology building in to one larger laboratory and expand the rest of the building. - $ 1,500,000
11. Exterior work lighting and exterior photo voltaic cover - $ 1,000,000
12. Repurpose the facilities storage building to house electrical and plumbing laboratories - $ 85,000
13. Remove fill dirt and expand into the horticulture area - $250,000
14. Spray booth - $ 100,000
15. Offer evening classes - ?
16. Replace ageing equipment - $ 100,000

CAREER AND TECHNICAL EDUCATION – SUPPLEMENTAL QUESTIONS

1. How strong is the occupational demand for the program?

A strong demand for workers continues in the building trades and construction industry sector, and that demand increases as populations, businesses, and local economies expand. According to the U.S. Bureau of Labor Statistics, construction is among the top ten of the nation's industries, constituting almost 5 percent of the total national gross domestic product.

2. How has the demand changed in the past 5 years and what is the outlook for the next 5 years?

In California, the long-term (2004–2014) occupational projection for the building trades and construction industry includes a need to fill 17,790 new jobs and provide 17,920 replacement workers as members of the current workforce. In some trades, in California, an increase of more than 30 percent in the number of available jobs is expected over the next ten years. Nationally, more than one million construction jobs will be created over the next decade, with job categories ranging from laborers to engineers to contractors.

3. What is the district's need for the program?

The south bay area of Los Angeles is in desperate need of educated and qualified practitioners in the Cabinetry, Fine woodworking and Construction trades. A recent Los Angeles Times article the authors explain the need for qualified individuals.

> With home prices surging in Southern California and across the country, builders are again seeing big opportunities. Housing starts and new-home sales are up. But even as California unemployment remains stuck above 9% — among the highest in the nation — construction companies say they're struggling to find enough qualified workers to keep up with demand for new homes. (Semuels & Lazo, 2013)

The District needs more qualified workers to fill the positions left empty by the most recent economic down turn. Employers are now requiring more training and skills from the workforce and the higher quality employees are getting the new jobs.

4. What is the state's need for the program?

The following introduction to an article written by Sarah Bohn from the Public Policy Institute of California very clearly expresses the state's need for quality workers in the construction trades. She addresses the idea of "some college" as a niche area in the trades and the state wide need for those niches to be filled.

CALIFORNIA FACES A GAP IN SKILLED WORKERS

By 2025, California is likely to face a shortage of workers with some postsecondary education but less than a bachelor's degree. In fact, the future gap among "some college" educated workers may be as high as 1.5 million—even larger than the projected one-million-worker shortage of college graduates.[1] This portends missed opportunities for the state economy and also for California's workers. To close the gap, the state needs information with which to better target its support for training, and students and workers need information for evaluating educational choices. Focusing on wages and in-demand occupations, this analysis looks at the type of jobs and skills that hold the most promise for "some college" workers.

"Some college" workers is a label necessitated by survey data used in this analysis and includes associate degree holders, those with one- or two-year technical certificates, and anyone who attended college but did not receive a credential.[2] Though private colleges—particularly for-profits—play a role in providing training,[3] these **workers with some college training primarily attend California's community colleges. An entry point to postsecondary education for more than two million Californians,[4] the community college system is a potential gateway to the jobs of the future.**

The projected shortage of educated workers with some college stems from a mismatch between the share of the workforce projected to have some college education by 2025 (29%) and the share of jobs that will require workers with those skills (36%, Figure 1). This mismatch is driven by major educational and economic trends. On the education side, workers entering the labor market are less likely to have completed postsecondary education than retiring workers.[5] This trend, in turn, is related to the increasing share of Latinos in the workforce, a group with traditionally lower rates of college enrollment. While schooling has increased among Latinos in California—especially at the "some college" level—educational attainment is not projected to accelerate enough to meet future employer skill needs. Adult education—postsecondary training later in life—could mitigate the skills gap, but not enough adults currently seek retraining to have a discernible impact.

Lower educational attainment levels among the workforce is problematic because economic forecasts point to the increasing demand for skill by the state's employers. **Training beyond high school has become increasingly valuable in the labor market,[6] and forecasts of the composition of industries and jobs indicate that this trend is likely to continue over the next decade**. (Bohn, 2014)

5. How does the program address needs that are not met by similar programs in the region?

This program is the only one of its kind in the district and in the Los Angeles south bay area; there are no other programs of this depth, breadth and caliber. There are very few areas in the state where students can receive the training and education.

In building trades and construction industry sector classes, activities range from general or exploratory skills to job-specific skills that prepare students to select and pursue career paths through postsecondary training, work experience education, apprenticeships, and postsecondary education. The classes incorporate and apply academic core content to career-related education. These interdisciplinary approaches provide students with strong foundation skills and advanced skills in the career field of their choice, allowing students to exit programs and enter occupations directly or pursue further specialty training.

Through an extensive program of career technology classes the El Camino Construction Technology program addresses the needs of students and community members by preparing them for transfer, degrees, and providing a place to learn the construction trades for practical application in the industry.

6. Are the students satisfied with their preparation for employment?

Students are satisfied with their preparation for employment. Many previous students continue to use the faculty in the department for references and referrals after they have moved in to industry. Much of our advisory board is made up of past students and several or our adjunct professors are El Camino Graduates.

7. Are the employers in the field satisfied with the level of preparation of our graduates?

According to the feedback from employers and the advisory committee members, as well as local contractors, all respondents would like to see students who have benefitted with increased laboratory time in order to truly master their chosen line of study. Employers would also like to see more of an offering in the afternoon and evening in order for their current employees to maximize time in class and time on the job.

8. What are the completion, success, and employment rates for the students?

When using the information supplied by the institutional research department, the numbers for the program participation over the last 4 years directly mirror the fiscal cuts imposed by the college to the offerings in this department. The percentages of enrollment of night and day classes are skewed by the fact that a majority of the classes in the department are only offered during the day and weekends. Many of the students in the program are already employed and are coming back to school for training in new skills or improving existing skill sets.

The distribution of grades is relatively stable across the years (Course Totals). Even with the dropping enrollment rates at the college the programs have maintained a high student achievement rate and consistent grade patterns.

The Success Rate (84.1% in 2012) in the Construction Technology Department is higher than the latest institutional rate of 63% and the Industry and Technology division rate 74.8% 2013 is also much higher than the institutional average. We think this rate of success is achievable and would like to set a goal rate of 75% as a success standard.

Retention Rate (87.6% in 2012) in the Construction Technology Department is higher than the latest institutional rate of 84% and the Industry and Technology division rate 87% in 2013 is also much higher than the institutional average.

With regards to the employment rates for student, many are already employed and attend classes in their off hours, evenings and through schedule changes with employers. Most Construction Technology students are looking to improve their station through attending community college while working and living.

9. What is the role of the advisory committee and what impact does it have on the program?

The department continues to strive to remain current with its curriculum and is considering developing new, or expanding existing, courses per the recommendations made by the Construction Technology Advisory Committee. New course offerings regarding "Green Technology" and Environmental Technology are being explored. In response to the advisory committee's recommendation of expanding lab hours, a new cabinet making laboratory class is in the approval process with the curriculum committee. The advisory committee officially meets each year to discuss pertinent information with the members and faculty. Unofficially, committee members meet regularly in smaller groups to discuss trends in the industry and how the department can anticipate the needs of the community it serves.

10. If there is a licensure exam for students to work in their field of study, please list the exam and the pass rate. If there are multiple licensure exams in the program, include them all.

The California Contractors State License Board (CSLB), a division of the California Department of Consumer Affairs, is the testing, licensing, and governing body for all licensed contractors in the state of California. Any individual wishing to work as a contractor in any one of the following list of license classifications must first provide documentation of 4 years of Journeyman level qualifications in the classification for which they are applying. College courses and programs can satisfy up to 2 years of the state mandated 4 years experience requirement. Individuals can take years to get to the level Journeyman in their profession. The state of California recognizes the advantage of a college degree, and the breadth of knowledge, skills, and abilities learned in the academic arena, and rewards individuals completing these types of

programs with Journeyman level status for their achievements in the classroom. This achievement helps El Camino Construction Technology students in powerful positions when competing in the workforce. Students completing the course work at El Camino still need to work in the industry for a minimum of 2 more years, gaining critical on the job training, before be accepted to take the licensing exam. The following list of contractor classifications is taken from the CSLB web site:

- A - General Engineering
- B - General Building
- C-2 - Insulation and Acoustical
- C-4 - Boiler, Hot Water Heating and Steam Fitting
- C-5 - Framing and Rough Carpentry
- C-6 - Cabinet, Millwork and Finish Carpentry
- C-7 - Low Voltage Systems
- C-8 - Concrete
- C-9 - Drywall
- C-10 - Electrical
- C-11 - Elevator
- C-12 - Earthwork and Paving
- C-13 - Fencing
- C-15 - Flooring and Floor Covering
- C-16 - Fire Protection
- C-17 - Glazing
- C-20 - Warm-Air Heating, Ventilating and Air-Conditioning
- C-21 - Building Moving and Demolition
- C-22 - Asbestos Abatement
- C-23 - Ornamental Metal
- C-27 - Landscaping
- C-28 - Lock and Security Equipment
- C-29 - Masonry
- C-31 - Construction Zone Traffic Control
- C-32 - Parking and Highway Improvement
- C-33 - Painting and Decorating
- C-34 - Pipeline
- C-35 - Lathing and Plastering
- C-36 - Plumbing
- C-38 - Refrigeration
- C-39 - Roofing
- C-42 - Sanitation System
- C-43 - Sheet Metal
- C-45 - Electrical Sign
- C-46 - Solar
- C-47 - General Manufactured Housing
- C-50 - Reinforcing Steel
- C-51 - Structural Steel

- C-53 - Swimming Pool
- C-54 - Ceramic and Mosaic Tile
- C-55 - Water Conditioning
- C-57 - Well Drilling
- C-60 - Welding
- C-61 - Limited Specialty - No study guide available (No trade exam required)
- ASB - Asbestos Certification
- HAZ - Hazardous Substances Removal Certification
- LAW - Law and Business

(CA.GOV)

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