

Program Creation Process Check List

Program Title: Certificate of Achievement in Steamfitting/Pipefitting
Division: BSS **Proposing Faculty name(s):** Mark Likeness – Foothill P/T Faculty
Type of Program: _____ Transfer or X Workforce
Type of Award:
_____ Non-transcriptable certificate
X _____ Certificate of Achievement
_____ AA/AS Degree

Documentation checklists:

Transfer documentation

- _____ Catalog Description
- _____ List of Courses
- _____ Articulation & transfer data
- _____ Identification of existing program(s) at CSU/UCs
- _____ Completer Projections
- _____ Identification of any additional resources needed to establish program (i.e. faculty, equipment, etc.)

Workforce documentation

- X _____ Catalog Description
- X _____ List of Courses
- X _____ Completer Projections
- X _____ Labor Market information
- X _____ Identification of any similar program(s) in the area
- X _____ Identification of any additional resources needed to establish program (i.e. faculty, equipment, etc.)

Transfer/Workforce Work Group Comments/Recommendations:

Recommend Approval.

Work Group Signature: _____



Date: _____

12/11/13

~~Operations Planning Committee~~ Comments/Recommendations:

This certificate strengthens the existing program.
Recommend Approval

VP
OPC Signature: _____



Date: _____

12/13/13

Planning & Resource Committee Comments/Recommendations:

PaRC Signature: _____

Date: _____

Division Curriculum Committee Comments/Recommendations:

Division CC Signature: _____



Date: _____

11/26/13

Following the review by the listed committees, this form should be forwarded to the Office of Instruction.

FOOTHILL COLLEGE
Credit Program Narrative
Certificate of Achievement in Steamfitting/Pipefitting

Item 1. Program Goals and Objectives

Foothill College is responding to local demand for Pipe Trades workers in Steamfitting/Pipefitting by establishing a Certificate of Achievement in Steamfitting/Pipefitting in partnership with the Loyd E. Williams Pipe Trades Training Center (PTTC), located in San Jose, CA. Graduates are recognized as journeypersons within the Pipe Trades industry. Graduates of the Certificate of Achievement in Steamfitting/Pipefitting program will be employable as: Journeyman Commercial/Industrial Steamfitter and Pipefitter, Commercial/Industrial Welder, Foreman, and General Foreman. Students earning a certificate in Steamfitting/Pipefitting will increase their marketability and employment opportunities.

The certificate in Steamfitting/Pipefitting at Foothill College serves to align apprenticeship programs with college and university academic tracks as directed by the federal and state government. Foothill College and the Loyd E. Williams Pipe Trades Training Center (PTTC) are collaborating in an LEA program along with the Division of Apprenticeship Standards (DAS) for the state of California.

The program learning outcomes for the Certificate of Achievement in Steamfitting/Pipefitting are:

- In compliance with applicable standards and codes, students will demonstrate ability to install and remove piping and equipment for complex heating and air conditioning applications and special industrial piping systems, such as those used in semiconductor, biotechnology, and power generation facilities.

- In compliance with applicable standards and codes, students will demonstrate ability to maintain, extend, and/or alter piping and equipment for heating and air conditioning, and for special industrial piping systems, such as those used in semiconductor, biotechnology, and power generation facilities.

Students complete the Certificate of Achievement in Steamfitting/Pipefitting through enrollment in and completion of the Steamfitting/Pipefitting apprenticeship program at the PTTC. To apply to the PTTC apprenticeship program, potential students must be at least 18 years of age, be able to perform the work of the trade, present verification of high school completion, either through a high school diploma or GED or High School Proficiency certificate, and demonstrate the ability to read, write, and speak English. The selection, employment and training of apprentices by the PTTC is without discrimination according to race, color, national or ethnic origin, age, gender, religion, sexual orientation or marital status. Students are admitted into the PTTC apprenticeship program based on obtaining a passing (75%) score on the "Pipe Trades Entrance Exam," an exam which measures the student's ability in math and mechanical reasoning. Students who pass the entrance exam are selected from an applicant waiting list, the order of which is established by the date the entrance exam was taken and the test score. Admission to apprenticeship classes is limited to apprentices registered with the California Department of Apprenticeships Standards. This limitation is authorized by the California Labor Code, Section § 3074.3.

Aside from Foothill College's ordinary enrollment fees, there are no additional costs to the student to complete the Certificate of Achievement in Steamfitting/Pipefitting.

In accordance with the State Chancellor's office, the goals and objectives of the Certificate of Achievement in Steamfitting/Pipefitting align with the primary mission of California community colleges, as established in Ed. Code § 66010.4, which mandate that community colleges provide vocational instruction to students and to advance California's economic growth and global competitiveness through education and training that contribute to workforce development. The Certificate of Achievement program in Steamfitting/Pipefitting aligns with Foothill College's Institutional Outcomes and directly supports the Computation and the Creative, Critical, and Analytical Thinking rubrics.

Item 2. Catalog Description

The apprenticeship program, which includes coursework, lab work and on-the-job training, involves learning about the assessment, installation, maintenance, and repair of different types of pipe systems, effective and safe tool use, material applications, related mathematics & science and storage. Upon completion of the program, students will be able to assess and install high-pressure pipe systems in order to move liquids or gases under high pressure. The courses required for the Certificate of Achievement in Steamfitting/Pipefitting also meet many of the requirements for the Associate in Science degree in Steamfitting and Pipefitting Technology.

The Steamfitting/Pipefitting Certificate of Achievement program is conducted in partnership with the Pipe Trades Training Center apprenticeship program. The apprenticeship program is five years in duration, requiring a minimum of 9,000 hours of on-the-job training. After 5 years of classroom and paid work experience, students are recognized as journeypersons within the Pipe Trades industry and work to protect our environment by properly installing and maintaining piping and equipment for complex heating and air conditioning and special industrial piping systems. Graduates of the Certificate of Achievement program will be employable as: Journeyman Commercial/Industrial Steamfitter and Pipefitter, Commercial/Industrial Welder, Foreman, and General Foreman in industries such as the semiconductor, biotechnology, energy, healthcare, education, housing, water treatment, and food and beverage processing industries. Labor Market Analysis indicates increased employment opportunities in the Pipe Trades through 2020. Students earning a certificate in Steamfitting/Pipefitting will increase their marketability and employment opportunities. Admission to apprenticeship classes is limited to apprentices registered with the California Department of Apprenticeships Standards, according to the California Labor Code, Section § 3074.3.

Item 3. Program Requirements

Certificate of Achievement in Steamfitting/Pipefitting						
Requirements	Dept. Name / Course #	Name	Units	CSU-GE	IGET C	Sequence
Core Courses (47 Units)	APPT 141	Basic Steamfitting Skills	4.5	NA	NA	Year 1, Fall & Winter
	APPT 142	Related Math, Drawing & Rigging	4.5	NA	NA	Year 1, Spring & Summer
	APPT 143	Cutting & Welding	4.5	NA	NA	Year 2, Fall & Winter
	APPT 144A	Science, Electricity & Air Conditioning	2.5	NA	NA	Year 2, Spring & Summer
	APPT 134B	Industrial Safety	2.5	NA	NA	Year 2, Spring & Summer
	APPT 145	Advanced Trade Math for Steamfitters	4.5	NA	NA	Year 3, Fall & Winter
	APPT 146	Steam Technology	4.5	NA	NA	Year 3, Spring & Summer
	APPT 147A	Hydronic Systems	2.5	NA	NA	Year 4, Fall & Winter
	APPT 147B	Industrial Rigging	2.5	NA	NA	Year 4, Fall & Winter
	APPT 148	Advanced Drawing & Blueprint Reading	4.5	NA	NA	Year 4, Spring & Summer
	APPT 139A	Industrial Installations	2.5	NA	NA	Year 5, Fall & Winter
	APPT 139B	Medical Gas Installations	2.5	NA	NA	Year 5, Fall & Winter
	APPT 129	Special Topics	2.5	NA	NA	Year 5, Spring & Summer
	APPT 130	Review & Turnout	2.5	NA	NA	Year 5, Spring & Summer

Required Major Total:

47 units

Proposed Sequence:

- Year 1, Fall & Winter = 4.5 units
- Year 1, Spring & Summer = 4.5 units
- Year 2, Fall & Winter = 4.5 units
- Year 2, Spring & Summer = 5.0 units
- Year 3, Fall & Winter = 4.5 units

Year 3, Spring & Summer = 4.5 units
 Year 4, Fall & Winter = 5.0 units
 Year 4, Spring & Summer = 4.5 units
 Year 5, Fall & Winter = 5.0 units
 Year 5, Spring & Summer = 5.0 units
TOTAL UNITS: 47 units

Labor Market Analysis: The occupational outlook for the Pipe Trades industry shows strong demand and growth over the next ten years in Santa Clara and San Benito counties. The projected employment of Plumbers, Pipefitters, and Steamfitters is expected to grow by 29.8% in the period from 2010 to 2020. The California State Employment Development Department expects the number of professionals employed in the Pipe Trades to increase from 1,190 to 2,480. The Certificate of Achievement in Steamfitting/Pipefitting is an important contribution in efforts to educate California's workforce and meet local demands for educated professionals in the Pipe Trades. More generally, the National Skills Coalition reported in November, 2007, that jobs in the middle of the labor market, "those that require more than high school, but less than a four-year degree" are in demand, and will remain "robust relative to its supply." See Appendix A for Santa Clara County Labor Market Information.

Approval for this certificate program is shown in Appendix B: Advisory Committee Meeting Minutes and Member list.

Item 4. Master Planning

The Certificate of Achievement in Steamfitting/Pipefitting aligns with the planned goals of the College and the District because the program serves the regional area in support of workforce development and economic growth. The Certificate of Achievement in Steamfitting/Pipefitting is a new degree and does not duplicate an already-existing program within the Foothill-De Anza district or the surrounding colleges.

The only competition to the Certificate of Achievement in Steamfitting/Pipefitting program at Foothill College occurs from two out-of-state colleges that offer on-line degrees. PTTC apprentices and recently-graduated journeymen are taking on-line courses at Washtenaw Community College and at National Labor College at considerably higher tuition, \$194/credit hour and \$297/credit hour respectively, and other expenses in order to earn a Certificate of Achievement in Apprenticeship Completion or Construction Management. Offering a Certificate of Achievement in Steamfitting/Pipefitting at Foothill College would well serve the college's primary stakeholders: the students, community partners, and the community at-large.

Local references in support of the Certificate of Achievement in Steamfitting/Pipefitting include all Advisory Committee representatives from the PTTC who strongly support the partnership between the PTTC and Foothill College due to their understanding of local economic workforce needs and their ongoing contact with apprenticeship students, which provides grounded understanding of their students' short-term and long-term educational goals.

Item 5. Enrollment and Completer Projections

Item 5. Enrollment and Completer Projections

Course #	Course Title	Year 1		Year 2	
		Annual Sections	Annual Enrollment	Annual Sections	Annual Enrollment
APPT 141	Basic Steamfitting Skills	3	36	2	29
APPT 142	Related Math, Drawing & Rigging	1	11	2	21
APPT 143	Cutting & Welding	2	20	1	13
APPT 144A	Science, Electricity & Air Conditioning	1	14	1	15
APPT 134B	Industrial Safety	1	13	1	12
APPT 145	Advanced Trade Math for				

	Steamfitters	1	6	1	14
APPT 146	Steam Technology	1	7	1	13
APPT 147A	Hydronic Systems	1	12	1	8
APPT 147B	Industrial Rigging	1	12	1	9
APPT 148	Advanced Drawing & Blueprint Reading	1	12	1	8
APPT 139A	Industrial Installations	2	24	1	12
APPT 139B	Medical Gas Installations	2	27	1	11
APPT 129	Special Topics	2	25	2	23
APPT 130	Review & Turnout	2	24	1	16

The number of students completing the required courses aligns with the Labor Market Analysis (Appendix A).

Item 6. Place of Program in Curriculum/Similar Programs

The Certificate of Achievement in Steamfitting/Pipefitting does not adversely affect existing programs at Foothill College in terms of competition for students or courses, nor does it take material resources away from other existing programs at the College. The Certificate of Achievement in Steamfitting/Pipefitting is designed to create pathways for students from Pre-Apprenticeship and Apprenticeship through an Associate in Science degree and potential transfer to a four-year institution. Thus, the students can easily move from the Certificate of Achievement in Steamfitting/Pipefitting to the Associate in Science degree in Steamfitting and Pipefitting Technology. This streamlined approach facilitates the students' ability to readily complete their educational goals and to earn family-supporting wages.

Item 7. Similar Programs at Other Colleges in Service Area

There are no similar programs in existence in the college service area of Foothill College; the partnership with the Loyd E. Williams Pipe Trades Training Center is unique in the college service area.

Appendix A:
Labor Market Analysis
for Plumbing and Steamfitting Employment
for San Benito and Santa Clara Counties
from 2010 – 2020

Employment Development Department
 Labor Market Information Division
 January 7, 2013

**2010-2020 Occupational Employment Projections
 San Jose-Sunnyvale-Santa Clara
 (San Benito and Santa Clara Counties)**

SOC Code*	Occupational Title	Annual Average		Employment		Average Annual			2012 First Quarter		Education and Training		
		2010	2020	Numerical [1]	Percent	New Jobs [2]	Replacement Needs [3]	Total Jobs [4]	Median Hourly	Median Annual	Entry Level Education	Work Experience	On-the-Job Training
47-0000	Construction and Extraction Occupations	34,740	43,590	8,850	25.5	886	738	1,624	\$27.06	\$56,278			
47-1000	Supervisors of Construction and Extraction Workers	2,630	3,400	770	29.3	77	61	138	N/A	N/A			
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	2,630	3,400	770	29.3	77	61	138	\$39.32	\$81,797	7	>5 years	None
47-2000	Construction Trades Workers	29,180	36,560	7,380	25.3	738	597	1,335	N/A	N/A			
47-2021	Brickmasons and Blockmasons	200	290	90	45.0	10	4	14	\$28.63	\$59,540	7	None	APP
47-2031	Carpenters	5,230	6,370	1,140	21.8	114	111	225	\$28.07	\$58,390	7	None	APP
47-2041	Carpet Installers	950	1,070	120	12.6	12	20	32	\$23.80	\$49,514	8	None	ST OJT
47-2042	Floor Layers, Except Carpet, Wood, and Hard Tiles	200	210	10	5.0	2	4	6	\$31.02	\$64,532	7	None	MT OJT
47-2044	Tile and Marble Setters	640	810	170	26.6	16	14	30	\$21.34	\$44,390	8	None	LT OJT
47-2051	Cement Masons and Concrete Finishers	810	1,130	320	39.5	32	13	45	\$24.70	\$51,368	8	None	MT OJT
47-2061	Construction Laborers	5,720	7,170	1,450	25.4	145	46	191	\$20.32	\$42,266	8	None	ST OJT
47-2071	Paving, Surfacing, and Tamping Equipment Operators	310	410	100	32.3	10	6	16	\$18.58	\$38,649	7	None	MT OJT
47-2073	Operating Engineers and Other Construction Equipment Operators	790	1,020	230	29.1	22	18	40	\$33.64	\$69,968	7	None	MT OJT
47-2081	Drywall and Ceiling Tile Installers	1,340	1,720	380	28.4	39	37	76	\$28.38	\$59,022	8	None	MT OJT
47-2082	Tapers	540	730	190	35.2	19	15	34	\$27.71	\$57,630	8	None	MT OJT
47-2111	Electricians	4,040	5,200	1,160	28.7	116	109	225	\$33.93	\$70,590	7	None	APP
47-2141	Painters, Construction and Maintenance	2,960	3,610	650	22.0	64	65	129	\$18.71	\$38,905	8	None	MT OJT
47-2151	Pipelayers	370	420	50	13.5	5	11	16	\$26.33	\$54,779	7	None	ST OJT
47-2152	Plumbers, Pipefitters, and Steamfitters	1,910	2,480	570	29.8	56	55	111	\$34.72	\$72,210	7	None	APP
47-2181	Roofers	1,190	1,450	260	21.9	26	24	50	\$26.80	\$55,724	8	None	MT OJT
47-2211	Sheet Metal Workers	840	1,030	190	22.6	20	14	34	\$33.22	\$69,102	7	None	APP
47-2221	Structural Iron and Steel Workers	230	300	70	30.4	7	5	12	\$60.98	\$126,832	7	None	APP
47-3000	Helpers, Construction Trades	1,340	1,830	490	36.6	50	35	85	N/A	N/A			
47-3011	Helpers-Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters	180	300	120	66.7	12	5	17	\$18.16	\$37,766	8	None	ST OJT
47-3012	Helpers-Carpenters	150	250	100	66.7	9	4	13	\$14.74	\$30,668	8	None	ST OJT
47-3014	Helpers-Painters, Paperhangers, Plasterers, and Stucco Masons	220	280	60	27.3	5	6	11	\$13.04	\$27,124	8	None	ST OJT
47-3019	Helpers, Construction Trades, All Other	140	200	60	42.9	6	4	10	\$13.78	\$28,660	8	None	ST OJT
47-4000	Other Construction and Related Workers	1,500	1,710	210	14.0	21	43	64	N/A	N/A			
47-4011	Construction and Building Inspectors	630	710	80	12.7	8	18	26	\$41.87	\$87,088	7	>5 years	MT OJT
47-4051	Highway Maintenance Workers	280	300	20	7.1	2	7	9	\$24.47	\$50,889	7	None	MT OJT
47-4071	Septic Tank Servicers and Sewer Pipe Cleaners	180	200	20	11.1	2	5	7	\$22.85	\$47,530	8	None	MT OJT
47-4799*	Construction and Related Workers, All Other	250	300	50	20.0	5	8	13	\$19.32	\$40,195	7	None	MT OJT
47-5000	Extraction Workers	100	90	-10	-10.0	0	2	2	N/A	N/A			

49-0000	Installation, Maintenance, and Repair Occupations	25,880	30,930	5,050	19.5	507	576	1,083	\$24.83	\$51,651			
49-1000	Supervisors of Installation, Maintenance, and Repair Workers	1,980	2,330	350	17.7	35	52	87	N/A	N/A			
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	1,980	2,330	350	17.7	35	52	87	\$35.92	\$74,710	7	1-5 years	None
49-2000	Electrical and Electronic Equipment Mechanics, Installers, and Repairers	5,640	6,520	880	15.6	91	121	212	N/A	N/A			
49-2011	Computer, Automated Teller, and Office Machine Repairers	1,860	2,040	180	9.7	19	46	65	\$18.81	\$39,126	5	None	None
49-2022	Telecommunications Equipment Installers and Repairers, Except Line Installers	1,930	2,380	450	23.3	45	31	76	\$31.43	\$65,357	5	None	MT OJT
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	630	700	70	11.1	8	15	23	\$30.56	\$63,566	5	None	LT OJT
49-2098	Security and Fire Alarm Systems Installers	440	620	180	40.9	18	11	29	\$24.77	\$51,530	7	None	MT OJT
49-3000	Vehicle and Mobile Equipment Mechanics, Installers, and Repairers	6,050	7,380	1,330	22.0	133	154	287	N/A	N/A			
49-3011	Aircraft Mechanics and Service Technicians	300	360	60	20.0	6	9	15	\$27.72	\$57,665	5	None	None
49-3021	Automotive Body and Related Repairers	570	710	140	24.6	14	14	28	\$22.59	\$46,985	7	None	MT OJT
49-3023	Automotive Service Technicians and Mechanics	3,460	4,280	820	23.7	82	89	171	\$23.22	\$48,310	7	None	LT OJT
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	720	840	120	16.7	12	16	28	\$24.83	\$51,646	7	None	LT OJT
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	340	400	60	17.7	6	9	15	\$30.03	\$62,461	7	None	LT OJT
49-3093	Tire Repairers and Changers	430	540	110	25.6	11	11	22	\$14.29	\$29,714	7	None	MT OJT
49-9000	Other Installation, Maintenance, and Repair Occupations	12,220	14,700	2,480	20.3	248	249	497	N/A	N/A			
49-9012	Control and Valve Installers and Repairers, Except Mechanical Door	120	130	10	8.3	1	2	3	\$28.86	\$60,029	7	None	MT OJT
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	1,520	2,150	630	41.5	63	27	90	\$26.96	\$56,093	5	None	LT OJT
49-9041	Industrial Machinery Mechanics	750	970	220	29.3	23	14	37	\$30.87	\$64,202	7	None	LT OJT
49-9043	Maintenance Workers, Machinery	180	190	10	5.6	1	3	4	\$23.71	\$49,309	7	None	MT OJT
49-9052	Telecommunications Line Installers and Repairers	750	830	80	10.7	8	14	22	\$31.52	\$65,561	7	None	LT OJT
49-9062	Medical Equipment Repairers	250	360	110	44.0	10	7	17	\$26.07	\$54,228	4	None	MT OJT
49-9071	Maintenance and Repair Workers, General	5,990	6,890	900	15.0	90	110	200	\$22.07	\$45,903	7	None	MT OJT
49-9094	Locksmiths and Safe Repairers	130	170	40	30.8	4	2	6	\$31.83	\$66,214	7	None	LT OJT
49-9098	Helpers—Installation, Maintenance, and Repair Workers	660	770	110	16.7	12	30	42	\$15.35	\$31,938	7	None	MT OJT
49-9799*	Installation, Maintenance, and Repair Workers, All Other	1,250	1,480	230	18.4	23	23	46	\$26.80	\$55,750	7	None	MT OJT