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PROGRAM APPROVAL APPLICATION

NEW or SUBSTANTIAL CHANGE or LOCALLY APPROVED

(This application may not exceed 3 pages)

Fill In Form

Machine Tool Technology Proposed Program Title	2016 - 2017 Projected Program Start Date
Long Beach City College College	Long Beach Community College District District

Contact Information

Michelle Grimes-Hillman Voting Member	Dean Academic Services Title
(562) 938-4932 Phone Number	mhillman@lbcc.edu Email

Goal(s) of Program (Check all that apply):

☒ Career Technical Education (CTE) ☐ Transfer ☐ Other

Type of Program (Check all that apply):

☐ Certificate of Achievement 12-17 (or 17-27 quarter) units ☒ Certificate of Achievement 18+ semester (or 27+ quarter) units

☒ Associate of Science Degree ☐ Associate of Arts Degree

Reason for Approval Request (Check One):

☒ New Program ☐ Substantial Change ☐ Locally Approved

Program Information

0956.30	Recommended Taxonomy of Program (TOP) Code
60	Units for Major-Degree
60	Total Units for Degree
18	Required Units-Certificate

Written Form

1. **Insert the description of the program as it will appear in the catalog. (See PCAH pp. 142 and 170)**

The Machine Tool Technology program's mission is to provide technical training to meet the needs of industry and students for proficiency in entry-level skills necessary for employment, or upskilling for students already working in the field for promotion and advancement.

Program Learning Outcomes:

- Demonstrate the ability to interpret mechanical engineering drawings and specifications
- Perform precision measurement evaluation on machined parts
- Perform precision machine set-up and execute manual and/or automated machine tool operations

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- Create Computer Numerical Control (CNC) machine tool programs utilizing CNC programming technologies

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2. Provide a brief rationale for the program.

According to a 2014 article in the Los Angeles Times, Los Angeles & Orange counties have the largest concentration of advanced manufactures in the U.S. In July of 2014, the region had 510,900 advanced manufacturing workers, according to the Bureau of Labor Statistics. Many of these jobs are in machine tool technology. According to EMSI, LAOC had 49,548 jobs in machine tool technology in 2015. Data indicates a decline of 4.4% through 2018, however, the decline is not because manufacturers are closing shop or off-shoring jobs (although some are), part of the decline is caused by advances in technology which allows companies to produce more work with fewer people.

Industry relies on the community college system for a steady supply of skilled workers. Machine tool technology is a mix of skills-sets requiring knowledge in machine tool programming, engineering specification interpretation, geometric dimensioning and tolerancing, 3-dimensional computer aided design, automated manufacturing technology, and applied mathematics.

The LBCC program provides foundational to advanced training in machine tool technology and will enable student success in the competitive field of advanced manufacturing. Many of the 512k workers in the industry made their start on a production machine at a local manufacturer. Machine tool technology is a pathway to many other careers in advanced manufacturing, including business management, and engineering.

The LBCC Machine Tool program will prepare students for careers in the advanced manufacturing sector. Careers in the field include Machinist, Computer Numerical Controlled (CNC) Machinist, or CNC programmer. Typically, a high school diploma is required for entry-level employment, however, there are very few high school programs in the region that effectively prepare students for employment in the sector. Our industry advisory is quite vocal about their dissatisfaction with the readiness of some high school students both technically and socially.

Advances in technology require that workers continuously upgrade their skills in order to advance to higher levels of salary and responsibility. Students seek our program to help find better opportunities for themselves and their families. The LBCC program has invested in the latest machine tool and teaching technologies to support the program. The program will provide the Long Beach community with a cost effective program that will support our industry partners with a well-trained supply of skilled technicians.

3. Summarize the Labor Market Information (LMI) and employment outlook (including citation for the source of the data) for students exiting the program. (See PCAH pp. 85-88, 136, 147, 148, 165, 168, and 176)

Careers in the field include Machinist, Computer Numerical Controlled (CNC) Machinist, or CNC programmer. There were 49,568 jobs in the region in 2015. The job market is projected to decline to 47,470, a 4.4% decrease by 2018. The decrease is due to a number of factors including advances in automation resulting in productivity, out-sourcing to lower cost regions, and obsolescence of many job descriptions due to technology advances. Nearly all of the projected job declines are in job titles that indicate dated manufacturing technologies, such as, Tool Setters, or Machine Setters, with growth projected in job titles indicating advanced

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technologies, such as Computer Numerical Controlled Operator. Data indicates a transition to new technologies for the sector based on the projected decline of some job titles, however, further study in this area would be required. The median wage is $17.62 per hour with the job description of Machinist. CNC programmers earn a median wage of $27.36 per hour with $35.61 per hour at the 75th percentile of earnings.

In 2015, there were 16 regional programs with 843 annual completions. Of the 843 completions, 512 were from NTMA (National Tooling Manufacturers Association located in Santa Fe Springs), a proprietary trade school in the region with a *$14,500 tuition, book, and fee requirement. There were 11 regional community college programs with 81 completions in 2015. There were 1,245 job openings in 2015.

EMSI Q4 2016 Data Set
*NTMA – School Performance Fact Sheet 2014-2015

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4. List similar programs at other colleges in the Los Angeles and Orange County Region which may be adversely impacted. (There is space for 10 listings, if you need more, please contact laocrc@sccollege.edu)

College	Program	Who You Contacted	Outcome of Contact
Cerritos College	Machine Tool Technology	Real	No Response
El Camino College	Machine Tool Technology	Rapp	No response
Fullerton College	Machine Tool Technology	Benoit	No response
Glendale Community College	Machine Tool Technology	Swinton	No response
LA Pierce College	Machine Shop – CNC	Fernandez	No response
LA Trade Tech	Machine Shop – CNC	Wilson	No response
LA Valley	Manufacturing Tech	Nalepala	No response
Mt SAC	Manufacturing Tech	Blake-Judd	No Response
Orange Coast College	Manufacturing Tech	Coleman	No response
Pasadena City College	Manufacturing Tech	Davila	No response
Santa Ana College	Manufacturing Tech	Hoffman	No response

5. List all courses required for program completion, including core requirements, restricted electives and prerequisites. (There is space for 20 listings, if you need more, please contact laocrc.sccollege.edu). (See PCAH pp. 143 and 171)

Courses	Course Number	Course Title	Units
Required Courses			
Machine Tool Technology	MACHT 50	Machine Tool Operations	3
	MACHT 201	Machine Tool Math	3
	MACHT 202	CNC Programming	3
	MACHT 203	NC Graphic Programming	3
	MACHT 204	3D CNC Graphics Programming	3
Technology	TEC 211	Print Reading for Industry	3

6. Include any other information you would like to share.

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