



*Changing Lives,
Creating Futures*

Monty Sullivan
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Vincent St. Blanc, III

Student Members:
Samantha Rushlow
Shanco "Shawn" Williams

Louisiana
Community
& Technical
College System

265 South Foster Drive
Baton Rouge, LA 70806

Phone: 225-922-2800
Fax: 225-922-1185

www.lctcs.edu

LOUISIANA COMMUNITY & TECHNICAL COLLEGE SYSTEM

TO: Dr. Monty Sullivan
LCTCS President

THROUGH: Dr. René Cintrón *RC*
Chief Education and Training Officer

FROM: Dr. Adrienne Fontenot *AF*
Director of Adult Learning and Educational Programs

DATE: September 23, 2019

SUBJECT: Program Requests at SOWELA Technical Community College

APPROVED

SK 10/9/19
LCTCS BOARD OF SUPERVISORS

FOR BOARD ACTION:

Recommendation: Staff recommends the Board approve the following program requests listed below.

Program Additions

1. Associate of Applied Science (AAS), Machine Tool Technology (CIP 47.0303) –
5 STARS
 - a. Technical Diploma (TD), Machine Tool Technology (CIP 47.0303) with an
IBC in Level III Millwright from the National Center for Construction
Education and Research (NCCER) – **5 STARS**
 - i. Certificate of Technical Studies (CTS), Machine Tool Technology
(CIP 47.0303) with an IBC in Level II Millwright from the
National Center for Construction Education and Research
(NCCER) – **5 STARS**
 1. Career and Technical Certificate (CTC), Machine
Tool Technology (CIP 47.0303) with an IBC in
NCCER Core and Level I Millwright from the
National Center for Construction Education and
Research (NCCER) – **5 STARS**

Background: SOWELA's School of Transportation and Applied Technology proposes adding a new program in Machine Tool Technology. The Associate of Applied Science (AAS) in Machine Tool Technology has been developed to meet the requests of business and industry that a curriculum be designed to award students appropriate college credit.



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For several years, millwright and machinist skills have been taught at SOWELA as non-credit courses. These short-term courses were offered through the Division of Workforce Solutions as a quick response to the immediate demand. Industry has requested that SOWELA develop an AAS program to replace the non-credit program. This will meet the growing need for credentialed Machine Tool Technology professionals possessing advanced machinist/millwright skills. Program graduates will also have the knowledge and background that industry requires when looking to promote into leadership and supervisory positions.

Fiscal Impact: SOWELA's current facilities include the classroom, laboratory, and specialized equipment necessary to implement the AAS degree in Machine Tool Technology. The new Machine Tool Technology program is anticipated to employ one full-time instructor and one adjunct instructor. The cost of both instructors should not exceed \$100,000.

History of Prior Actions: In 2012, industry recognized a shortage of trained millwrights and machinists in Southwest Louisiana. Industry leaders approached SOWELA and asked the college to develop a series of short-term, non-credit training courses to address this immediate workforce shortage. SOWELA's Division of Workforce Solutions worked with subject matter experts from the machinist union and industry to develop a curriculum for non-credit delivery. SOWELA also collaborated with industry partners to identify financial resources to assist in supporting the program. After several years of offering the millwright and machinist program as a non-credit program, industry has requested that SOWELA develop an Associate of Applied Science in Machine Tool Technology. The AAS will replace the non-credit program to meet the growing need for Machine Tool Technology professionals.

Benefits to the System: The AAS in Machine Tool Technology will allow students to earn highly valued industry based credentials giving them a competitive edge over other applicants for entry-level positions.


Approved for Recommendation to the Board
Dr. Monty Sullivan

10-09-19

Date

MACHINE TOOL TECHNOLOGY

CIP Code: 470303

*Associate of Applied Science Degree***Program Description**

The Associate of Applied Science in Machine Tool Technology is designed to prepare students with a combined practical approach to the study of machining and millwright. The program will prepare students to install conveyor systems, connect machinery to power supplies and piping, direct hoisting and setting of machines, and adjust the moving and stationary parts of machines to certain specifications. Students will learn troubleshooting techniques and strategies. They will shape metal parts on lathes, grinders, drill presses, milling machines and computer numerical controlled machines and utilize these parts in the repair of heavy equipment and machinery. Students will also shape metal parts on lathes, grinders, drill presses, milling machines and computer numerical controlled machines. The program includes making computations for dimensions and cutting feeds and speeds using precision measuring instruments, laying out of parts, and heat treatment of metals. Students will receive hands-on experience with pumps, gearboxes, and compressors.

Program Learning Outcomes

Students who successfully complete The Associate of Applied Science or the Technical Diploma in Machine Tool Technology will be able to:

1. Demonstrate knowledge and skills required for an entry-level machinist/millwright position.
2. Demonstrate ability to install conveyor systems, connect machinery to power supplies and piping, direct hoisting and setting of machines, adjust the moving and stationary parts of machines to certain specifications.
3. Demonstrate ability to shape metal parts on lathes, grinders, drill presses, milling machines and computer numerical controlled machines.
4. Demonstrate ability to troubleshoot and repair pumps, gearboxes, and compressors.

Below is the four-semester plan for completing the AAS in Machine Tool Technology.

MACHINE TOOL TECHNOLOGY

CIP Code: 470303

Associate of Applied Science Degree

<u>Course No.</u>	<u>Course Title</u>	<u>Lecture</u>	<u>Lab</u>	<u>Total Credit Hrs.</u>	<u>Contact Hours</u>
Semester 1					
MTEC 1110	Orientation and Safety	2	1	3	60
MTEC 1120	Introduction to Machinist	1	2	3	75
MTEC 1130	Introduction to Millwright	1	2	3	75
General Ed	English Composition	3	0	3	45
MTEC 1140	Machine Shop Math	3	0	3	45
				15	300
Semester 2					
MTEC 1210	Machinist I	1	3	4	105
MTEC 1220	Millwright I	1	3	4	105
General Ed	Humanities	3	0	3	45
General Ed	MATH 1000 or 1100	3	0	3	45
				14	300
Semester 3					
MTEC 2110	Machinist II	1	3	4	105
MTEC 2120	Millwright II	1	3	4	105
General Ed	Social/Behavioral Science	3	0	3	45
MTEC 2130	Milling Operations	1	2	3	75
				14	330
Semester 4					
MTEC 2210	Advanced Millwright	1	3	4	105
MTEC 2220	Advanced Machinist	1	3	4	105
General Ed	Natural Science	3	0	3	45
MTEC 2230	Computer Numerical Control	1	3	4	105
				15	360

AAS –Machine Tool Technology (58 credit hours / 1290 contact hours)

The table below identifies the stackable exit points and IBCs which may be earned in the Machine Tool Technology curriculum.

MACHINE TOOL TECHNOLOGY

CIP Code: 470303

Diploma/Certificate Options

<u>Course No.</u>	<u>Course Title</u>	<u>Lecture</u>	<u>Lab</u>	<u>Total Credit Hrs.</u>	<u>Contact Hours</u>
MTEC 1110	Orientation and Safety	2	1	3	60
MTEC 1120	Introduction to Machinist	1	2	3	75
MTEC 1130	Introduction to Millwright	1	2	3	75
MTEC 1140	Machine Shop Math	3	0	3	45
	CTC - Machinist/Millwright Helper			12	255
	<i>12 credit hours/255 contact hours</i>				
MTEC 1210	Machinist I	1	3	4	105
MTEC 1220	Millwright I	1	3	4	105
MTEC 2110	Machinist II	1	3	4	105
MTEC 2120	Millwright II	1	3	4	105
MTEC 2130	Milling Operations	1	2	3	75
	CTS Machinist Apprentice			19	495
	<i>31 credit hours/750 contact hours</i>				
MTEC 2210	Advanced Millwright	1	3	4	105
MTEC 2220	Advanced Machinist	1	3	4	105
MTEC 2230	CNC	1	3	4	105
	TD – Machine Tool Technology			12	360
	<i>43 credit hours/1110 contact hours</i>				

When completing the CTC, CTS, and TD exit points, IBCs may be earned as indicated.

CTC – NCCER Core and NCCER Level 1 Millwright

CTS – NCCER Level II Millwright

TD – NCCER Level III Millwright

Course Descriptions for MACHINE TOOL TECHNOLOGY

MTEC 1110. Orientation and Safety

Lecture 2, Lab 1, Credit 3

Safety practices, communication skills, employability skills, power and hand tools and work habits that are important to success in the machinist and millwright profession.

MTEC 1120. Introduction to Machinist

Lecture 1, Lab 2, Credit 3

Blueprint: Identifying types and uses of blueprints, identifying lines, and interpreting views, dimensions, and tolerances.

Bench work: Use of layout tools, precision measuring tools, identifying hand tools, metals, and grinding wheels. Cut stock with hand and power hacksaws, sharpen drill bits, MFR mechanical parts using layout and precision measuring tools.

MTEC 1130. Introduction to Millwright

Lecture 1, Lab 2, Credit 3

Identifies the types of fasteners, basic tools and the methods used for layout of various lines, angles, circles, and arcs. Describes gaskets and O-rings, along with their uses and explains the safety requirements for oxyfuel cutting and equipment setup requirements **(WE)**

MTEC 1140. Machine Shop Math

Lecture 3, Lab 0, Credit 3

Mathematical processes, principles, and techniques related to industrial machine shop.

MTEC 1210. Machinist I

Lecture 1, Lab 3, Credit 4

Drill press: Identifying types and uses of drill presses, and controls. Proper use of speeds and feeds and drilling and tapping. MFR mechanical parts using drilling, reaming and tapping operations.

Lathe: Identifying types of lathes, accessories, parts, and controls. How to indicate OD's, ID's, and faces of parts to set up for machining. How to face and turn OD's and use of speeds and feeds. Prerequisites: MTEC 1110 and MTEC 1120.

MTEC 1220. Millwright I

Lecture 1, Lab 3, Credit 4

Intermediate trade math, field sketching, intermediate blueprint reading, specialty tools, and millwright power tools. Prerequisites: MTEC 1110, MTEC 1130, and MTEC 1140.

MTEC 2110. Machinist II

Lecture 1, Lab 3, Credit 4

Basic lathe: How to knurl, groove/part off, bore, and calculate proper speeds and feeds. MFR mechanical parts using turning facing knurling, and grooving operations.

Basic Mill: How to mill squaring parts and calculating proper speeds and feeds. MFR basic 3-d parts using milling process. Prerequisite: MTEC 1210. **(WE)**

MTEC 2120. Millwright II

Lecture 1, Lab 3, Credit 4

Rigging, setting baseplates and soleplates, lubrication and introduction to bearings. Prerequisite: MTEC 1220.

MTEC 2130. Milling Operations

Lecture 1, Lab 2, Credit 3

Identifying types of milling machines, accessories, parts, and controls. Milling to length, squaring parts, milling basic milling setups, associated cutting tools, and calculate proper feeds and speeds MFR basic 3-D parts using a milling process. Prerequisite: MTEC 1210.

MTEC 2210. Advance Machinist

Lecture 1, Lab 3, Credit 4

Advanced Lathe: Perform steady-rest counter bores turn tapers, thread, and other advanced cutting operations.

Advanced mill: How to cut keyways and indexing calculating, pocket milling, boring, and other advanced milling operations. Prerequisite: MTEC 2110. *(WE)*

MTEC 2220. Advanced Millwright

Lecture 1, Lab 3, Credit 4

Trade math, precision measuring tools, installing packing, installing seals, installing mechanical seals, removing and installing bearings, couplings, fabricating shims, alignment fixtures and specialty jigs, pre-alignment for equipment installation, installing belt and chain drives and installing fans and blowers.

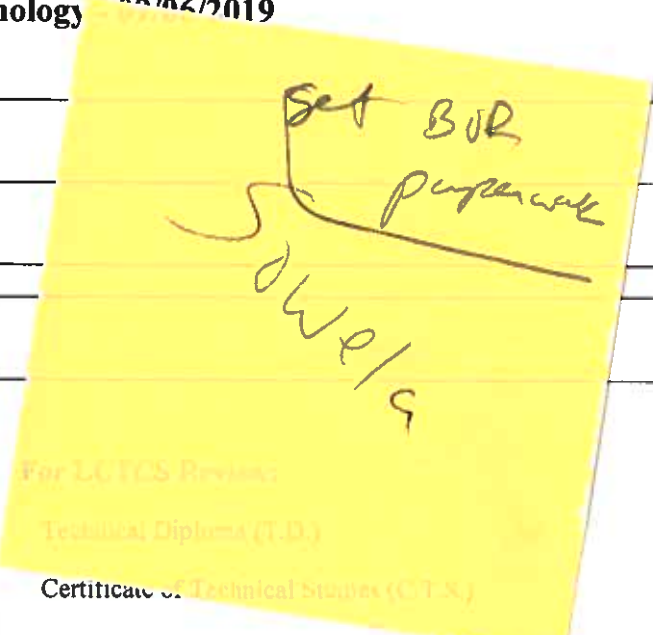
Prerequisite: MTEC 2120. *(WE)*

MTEC 2230. Computer Numerical Control

Lecture 1, Lab 3, Credit 4

Perform tool and machine setup, G-code programing, and operating of CNC machines. Prerequisites: MTEC 2110 and MTEC 2120.

Machine Tool Technology - 02/06/2019

TYPE OF PROPOSED CHANGE : New Program	
PROGRAM NAME : Machine Tool Technology	
AWARD LEVEL(S)	
For Board of Regents and LCTCS Review: Associate of Applied Science (A.A.S.) Name:	 For LCTCS Review: Technical Diploma (T.D.) Certificate of Technical Studies (C.T.S.) Career and Technical Certificate (C.T.C.) TCA - For Archive Purpose Only

NAME OF PROGRAM(S) and AWARD LEVEL(S)						
Stars : 5 Stars						
Name: Machine Tool Technology				Program Delivery Mode: Standard		
CIP: 470303	Credit Hours: 58.00		Contact Hours: 1290.00		Associate of Applied Science (A.A.S.)	
Stars : 5 Stars						
Name: Machine Tool Technology				Program Delivery Mode: Standard		
CIP: 470303	Credit Hours: 43.00		Contact Hours: 1110.00		Technical Diploma (T.D.)	
IBC: NCCER Level III Millwright	Issuing Body: National Center for Construction Education and Research	Course Title:	Course Prefix:	Course Number:	Credits Awarded: 0.00	IBC Awarded upon Completion? : No-Test is Required
Stars : 5 Stars						
Name: Machinist Apprentice				Program Delivery Mode: Standard		
CIP: 470303	Credit Hours: 31.00		Contact Hours: 750.00		Certificate of Technical Studies (C.T.S.)	

IBC: NCCER Level II Millwright	Issuing Body: National Center for Construction Education and Research	Course Title:	Course Prefix:	Course Number:	Credits Awarded: 0.00	IBC Awarded upon Completion?: No-Test is Required
Stars : 5 Stars						
Name: Machinist/Millwright Helper				Program Delivery Mode: Standard		
CIP: 470303	Credit Hours: 12.00		Contact Hours: 255.00		Career and Technical Certificate (C.T.C)	
IBC: NCCER Core and NCCER Level I Millwright	Issuing Body: National Center for Construction Education and Research	Course Title:	Course Prefix:	Course Number:	Credits Awarded: 0.00	IBC Awarded upon Completion?: No-Test is Required

PROPOSED CHANGE

a) For New Programs, state the purpose and objective; b) For Curriculum Modifications, state previous credit and clock hours; c) For Program Termination, state program and all award levels; d) For Curriculum Adoption, state the college from which curriculum is being adopted and the date it was approved by LCTCS.

The School of Transportation and Applied Technology proposes adding a new program in Machine Tool Technology. The Associate of Applied Science in Machine Tool Technology has been developed to meet the requests of business and industry that a curriculum be designed to award students appropriate college credit. The purpose of the AAS program is to prepare students with a combined practical approach to the study of machining and millwright. The program will prepare students to install conveyor systems, connect machinery to power supplies and piping, direct hoisting and setting of machines, and adjust the moving and stationary parts of machines to certain specifications. Students will learn troubleshooting techniques and strategies. They will shape metal parts on lathes, grinders, drill presses, milling machines and computer numerical controlled machines and utilize these parts in the repair of heavy equipment and machinery. The program includes making computations for dimensions and cutting feeds and speeds using precision measuring instruments, laying out of parts, and heat treatment of metals. Students will receive hands-on experience with pumps, gearboxes, and compressors.

IMPLEMENTATION DATE (Semester and Year)

Fall 2020

HISTORY OF PRIOR ACTIONS

Provide an overview of changes to this program.

In 2012, industry recognized a shortage of trained millwrights and machinists in Southwest Louisiana. Industry leaders approached SOWELA and asked us to develop a series of short-term, non-credit training courses to address this immediate workforce shortage. SOWELA's Division of Workforce Solutions worked with subject matter experts from the machinist union and industry to develop a curriculum for non-credit delivery. SOWELA also collaborated with industry partners to identify financial resources to assist in supporting the program. After several years of offering the millwright and machinist program as a non-credit program, industry has requested that SOWELA develop an Associate of Applied Science in Machine Tool Technology. The AAS will replace the non-credit program to meet the growing need for Machine Tool Technology professionals.

JUSTIFICATION FOR THE PROPOSED CHANGE

Include support such as four-year university agreements, industry demand, advisory board information, etc.

For several years, millwright and machinist skills have been taught at SOWELA as non-credit courses. These short-term courses were offered through the Division of Workforce Solutions as a quick response to the immediate demand. Industry has requested that SOWELA develop an AAS program to replace the non-credit program. This will meet the growing need for credentialed Machine Tool Technology professionals possessing advanced machinist/millwright skills. Program graduates will also have the knowledge and background that industry requires when looking to promote into leadership and supervisory positions.

SITE(S) OF NEW PROGRAM OR CURRICULUM MODIFICATION: Main Campus

QUALIFIED FACULTY (Check all that apply)

Use Existing Faculty: No # - Full Time: 0 # - Part Time: 0	Hire Adjunct Faculty: No # - 1	Hire Full-Time Faculty: No # - 1
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ADMINISTRATION and IMPLEMENTATION COSTS

Department :

How will this change affect the administrative structure and/or allocation of departmental funds in terms of:

Faculty :	Facilities :	Library Resources :
Support :	Related Fields :	Other :

MINIMUM CREDENTIALS REQUIRED FOR FACULTY

Education: Associate Degree	Experience: Minimum 5 years	Certification: Journeyman
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FISCAL IMPACT: ADMINISTRATION and IMPLEMENTATION COSTS

Department : School of Transportation and Applied Technology

Describe how this change will affect the administrative structure and/or allocation of departmental funds in terms of faculty, facilities, support, and any other resources.

SOWELA's current facilities include the classroom, laboratory, and specialized equipment necessary to implement the AAS degree in Machine Tool Technology. The new Machine Tool Technology program is anticipated to employ one full-time instructor and one adjunct instructor. The cost of both instructors should not exceed \$100,000.

ANTICIPATED ENROLLMENT:

Students	Year One	Year Two	Year Three	Year Four	Year Five
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DAY	10	14	20	25	30
EVENING					
DISTANCE EDUCATION					
Describe Process for Attaining & Estimating Enrollment:	The college will work with business and industry, workforce agencies and SOWELA's enrollment management team to identify prospective students. Recruitment efforts will target incumbents looking to change jobs or careers, the unemployed and underemployed, and students completing high school.				

PROGRAM ACCREDITATION:	
Is Program Accreditation, Licensure or Certification Required?	No Accreditation status: N/A
Type/Name of Program Accreditation, Licensure or Certification Required:	

DESCRIBE IMPLEMENTATION COSTS (Include Faculty, Facilities, Library Resources, etc.)

PROGRAM CURRICULUM Use the template below or insert separate attachment. All modifications should include the OLD and NEW curriculum with changes appropriately noted so that it is visually clear what has been added, deleted and/or changed. Note if any special requirements, such as internships, are part of the curriculum. List all embedded IBCs. If you are adopting curriculum, you do not need to complete this section.							
Subject Code	Course Number	Course Title	Lecture Hours	Lab Hours	Contact Hours	Credit Hours	Clinical Hours
Program, Degree or Concentration: AAS in Machine Tool Technology					Credit Hours: 58.00		
Semester: Semester 1					Credit Hours: 15.00		
MTEC	1110	Orientation and Safety	2.00	1.00	60.00	3.00	0.00
MTEC	1120	Introduction to Machinist	1.00	2.00	75.00	3.00	0.00
MTEC	1130	Introduction to Millwright	1.00	2.00	75.00	3.00	0.00
MTEC	1140	Machine Shop Math	3.00	0.00	45.00	3.00	0.00
Gen Ed		English Composition	3.00	0.00	45.00	3.00	0.00
Semester: Semester 2					Credit Hours: 14.00		

MTEC	1210	Machinist I	1.00	3.00	105.00	4.00	0.00
MTEC	1220	Millwright I	1.00	3.00	105.00	4.00	0.00
Gen Ed		Humanities	3.00	0.00	45.00	3.00	0.00
Gen Ed		MATH 1000 or 1100	3.00	0.00	45.00	3.00	0.00
Semester: Semester 3					Credit Hours: 14.00		
MTEC	2110	Machinist II	1.00	3.00	105.00	4.00	0.00
MTEC	2120	Millwright II	1.00	3.00	105.00	4.00	0.00
Gen Ed		Social/Behavioral Science	3.00	0.00	45.00	3.00	0.00
MTEC	2130	Milling Operations	1.00	2.00	75.00	3.00	0.00
Semester: Semester 4					Credit Hours: 15.00		
MTEC	2210	Advanced Millright	1.00	3.00	105.00	4.00	0.00
MTEC	2220	Advanced Machinist	1.00	3.00	105.00	4.00	0.00
Gen Ed		Natural Science	3.00	0.00	45.00	3.00	0.00
MTEC	2230	Computer Numerical Control (CNC)	1.00	3.00	105.00	4.00	0.00
Program, Degree or Concentration: See attached documentation for IBCs and stackable exit points: CTC, CTS, and TD.					Credit Hours: 0.00		

BENEFITS TO THE SYSTEM

Discuss how this change will benefit your students, your community, and the LCTCS.

*The AAS in Machine Tool Technology will allow students to earn highly-valued industry based credentials giving them a competitive edge over other applicants for entry-level positions.

*Graduates will have access to high wage, high demand jobs which lead to multiple career pathways.

*Graduates will also have a strong educational foundation should they choose to pursue advanced degrees.

*The AAS will produce a high-quality pool of applicants to meet the ongoing needs of area businesses and industries.

*All of these positive outcomes underscore and support the mission and goals of SOWELA and the LCTCS system.

KEYWORDS

Machinist, Millwright, Machine Tool Technology