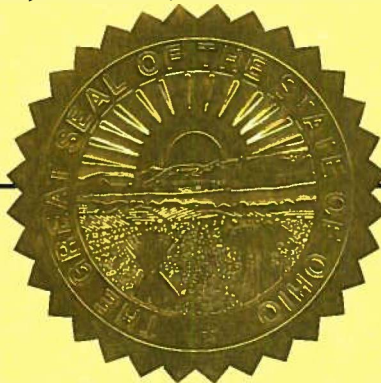


Ohio State Apprenticeship Council

Certificate of Recognition of Pre-Apprenticeship Program:

**FLEX High School
Richmond Heights, Ohio**

June 11, 2020



Ohio Department of Job & Family Services

A handwritten signature in blue ink, appearing to read "Rebecca DeMatteis".

*Rebecca DeMatteis
Program Administrator
ApprenticeOhio*

Pre-Apprenticeship Operating Plan:

FLEX High School
5222 Wilson Mills Road
Richmond Heights, OH 41443

High School

FOR THE PRE-APPRENTICED OCCUPATIONS OF:

Cuyahoga Community College

- Maintenance
- Machinist
- Mold Maker
- Tool and Die
- Machine Tryout Setter

In cooperation with the Ohio State Apprenticeship Council
Pre-Apprenticeship Operating Plan

(A) Equal Opportunity Pledge — The recruitment, selection, employment and training of pre-apprentices, shall be conducted without discrimination because of race, color, religion, national origin, age, or sex. The program shall take affirmative action to provide equal opportunity in its Pre-apprenticeship program as outlined under Title 29 of the Code of Federal Regulations, Part 30; Ohio Administrative Code 5101:11; and the Equal Employment Opportunity regulations of the State of Ohio.

(B) Enrollment —

School to Apprenticeship - Pre-Apprenticeship

This is an opportunity for selected Seniors to work in an approved apprenticeship work placement with appropriate classes. All students who meet the eligibility criteria and who are enrolled in **(FLEX High)** career technical programs that can be certified apprenticeship trades may request consideration for apprenticeship status for the Senior year. For more information on this career path, a student should contact his/her **(FLEX High)** guidance counselor.

Two Types of Programs:

#1 The students who meet the above qualifications can start work the summer before their Senior year and when school starts they can work two weeks full-time and return to school two weeks full-time and then alternate the entire Senior year with this schedule. We like to set employers up with two students so when one is at school the other one is at work.

#2 The students who meet the above qualifications can start work the summer before their Senior year and when school starts they will work a ½ day everyday schedule throughout the school year.

1. Eligibility for Trainees: The requirements to be accepted and maintain eligibility status into the pre-apprenticeship program are as follows:

- a. Maintain 95% attendance since enrolling in a pre-approved career-technical program.
- b. Have a minimum 2.0 grade point average and pass all classes during the Junior year.
- c. Be on-track for graduation.
- d. Have parent/guardian support and approval.
- e. Demonstrate good citizenship characteristics.
- f. Receive positive recommendations from all teachers.
- g. Student must have reliable transportation and a valid driver's license.

2. Eligibility Exceptions:

Attendance and Graduation requirements.

- a. Attendance exception - Hospital Stay and/or something beyond student control.
- b. Graduation requirement exception - Exemption from Ohio Graduation Test (OGT).

3. Selection Methods:

Any Student who meets the required requirement are eligible.

4. Selection Procedure Steps:

A Student who is enrolled and has completed level one of the career tech pre-apprenticeship program.

Step 1 - Student has met all requirements.

Step 2 - Application - verification of grades, GPA, attendance, OGT, credits, school fees, driver's license, transportation, teacher recommendations, Parent or Guardian support and employed by an approved sponsor.

Step 3 - Parent/Guardian orientation meeting / paperwork signatures and approval.

Step 4 - Employment with an approved registered apprenticeship sponsor.

Step 5 - Employer Paperwork and verification of all documents.

(C) Instructional Content —

Secondary Pathway: **Manufacturing Operations** Postsecondary Program: **Systems Technology**

Secondary

7 8	English I	Algebra I	Physical Science	Social Studies	Fine Arts	Pre-Engineering Technologies		
9 10	English II	Geometry	Biology	World History	Health (.5) PE (.5)	Manufacturing Operations	World Languages	
11	English III	Algebra II	Chemistry	U.S. History	CNC Technology	Machine Tools	World Languages	
12	English IV	Trigonometry/Calculus	Physics	U.S. Government	Computer Integrated Manufacturing	Robotics		

Year 1 1st Semester	English Compositio n	Colleg e Algebr a	Computer Applicatio ns	Environmenta l Health & Safety	Operations Management I	Print Reading & Sketching		
Year 1 2nd Semester	Technic al Writing	Statistics	Quality Managemen t Systems	Manufacturin g Processes	Operations Management II	Human Relations in the Workplace		
Year 2 1st Semester	Communicatio n	Labor Relatio ns	Effective Managemen t	CNC Programming	Lean Systems			
Year 2 2nd Semester	Psychology	Manufacturin g Automation	Machin e Reliabilit y	Proble m Solving & Decisio ns				

An Example of Courses with Secondary and Postsecondary Credits

High School Career-Technical Education Program Courses
High School Courses for Postsecondary Credit (Including Apprenticeship Hours) and the Corresponding Postsecondary Courses
Required Courses
Recommended Electives

1. Apprenticeship occupations:

- Maintenance
- Machinist
- Mold Maker
- Tool and Die
- Machine Tryout Setter

2. Progressive Stages of training:

- a. Continued through Manufacturing Technology classroom training.
- b. Continued skills learning on the job with an approved individualized training plan by employer / school / student / parent

3. Periodic Evaluations: At school and on-the-job.

At school — Students will be graded as per school and classroom policies in Academic, lab and related classrooms

On-the-job — Students will be required to have a completed bi-weekly evaluation report filled out by Employer and Student.

***The bi weekly evaluation report shall consist of: Employer, Student and Parent input.**

Employer evaluations of: *See sample form below

Appearance

Attendance

Communications (reading, writing, listening, speaking)

Efficiency of work

Following rule and Safety regulations

Initiative

Problem Solving

Quality of work

Working with others (co-workers, supervisor, customers)

Student:

Dates, hours, job description of tasks performed and student comments with signature.

Student & Employer:

Comments and signature

(FLEX High) Representative:

Employer paperwork (1) - Site visit, sign, copy and file documents.

Employer / Student bi-weekly reports — Collect, copy, distribute to lab instructor for a grade and file.

Site visits and communicate with employer at least 1 time per quarter (4).

Sample Weekly Evaluation

Name:		Program:	Employer:
Date from		to	
	Hours	Type of work or reason for absence	
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			
Saturday			
Sunday			
Total			

<i>Mentor Observations</i>				
Category	Excellent	Good	Fair	Poor
Attendance	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>
Appearance for work	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>
Attitude	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>
Safety procedures	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>
Communications	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>
Follows instructions	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>
Overall performance	4 <input type="checkbox"/>	3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>

Student Signature/Date:
Student Comments:
Mentor/Employer Signature/Date:
Mentor/Employer Comments:

This report must be submitted to the Apprenticeship Coordinator when you return to school.

4. Instructional Design:

a. Alignment with prevailing industry standards for each apprenticeship occupational career technical program:

- (Cuyahoga Community College) approved/adopted course of study, syllabus and course sequence
- Ohio Department of Education CTE Career Field Technical Content Standards

b. Competencies Framework:

Name of Occupation: Manufacturing Ohio Department of Education Pathways

Provided Detailed related instruction RI Course Outline (will develop with company to get their information, look at a list of classes to see if qualify for pre-apprentices to see what's equivalent)

**FY 2020 Manufacturing Technologies
Career Field Pathways and Course Structure**

Available Courses in Manufacturing Operations (R7)

PATHWAY COURSES
Manufacturing Operations ^{2, 4}
Robotics ⁴
Computer Integrated Manufacturing ⁴
Digital Electronics ⁴
Pre-Engineering Technologies ¹
Gas Metal Arc Welding ⁵
Shielded Metal Arc Welding ⁵
Flux Cored Arc Welding ⁵
Gas Tungsten Arc Welding ⁵
Machine Tools
Machining with Industrial Lathes
Machining with Industrial Milling Machines
Computer Numerical Control Technology with Industrial Mills and Lathes ⁵
Manufacturing Capstone ³
Welding Technologies ⁵
Welding Fabrication
Industrial Maintenance
Industrial Robotics ⁴
Hydraulics and Pneumatics
Integrated Production Technologies (SREB)
Automated Materials Joining Technology (SREB)

Manufacturing Operations^{2,4}

Subject Code: 175003 Students will learn the production processes applied across manufacturing operations. Students will be able to demonstrate a broad array of technical skills with an emphasis given to quality practices, measurement, maintenance and safety.

Robotics⁴

Subject Code: 175004 Students will apply the knowledge and skills necessary to program and operate robots, using the teach pendant as the main interface point. Students will learn robotic operations and system configurations. Students will code, compile and debug programs using the robotic programming language.

Computer Integrated Manufacturing⁴

Subject Code: 175006 In this course, students will be introduced to all aspects of computer-integrated manufacturing. They will learn about robotics and automation, manufacturing processes, computer modeling, manufacturing equipment, and flexible manufacturing systems.

Digital Electronics⁴

Subject Code: 175007

Students are introduced to the process of combinational and sequential logic design. The system uses a precise sequence of discrete voltages, representing numbers, non-numeric symbols or commands for input, processing, transmission, storage or display. Engineering standards and methods for technical documentation will also be learned.

Pre-Engineering Technologies¹

Subject Code: 175015

Students will acquire knowledge and skills in problem solving, teamwork and innovation. Students explore STEM careers as they participate in a project-based learning process, designed to challenge and engage the natural curiosity and imagination of middle school students. Teams design and test their ideas using modeling, automation, robotics, mechanical and computer control systems, while exploring energy and the environment.

Gas Metal Arc Welding⁵

Subject Code: 176000

Students will use the Gas Metal Arc Welding process (GMAW) to safely join various types of metal. They will cut metals using oxy-fuel processes and perform multiple types of welds and joints in all positions, up to and including overhead. They will select the appropriate type of electrode wire and shielding gas, and they will adjust welding equipment based on the physical characteristics and metal properties. Students will apply quality control factors to evaluate weld quality.

Shielded Metal Arc Welding⁵

Subject Code: 176001

Students will be able to use the Shielded Metal Arc Welding process (SMAW) to safely join various types of metal. They will perform multiple types of welds and joints in all positions, up to and including overhead. They will select the appropriate type of electrode and adjust welding equipment based on the physical characteristics and properties of the metal. Students will apply quality control factors to evaluate the quality of welds.

Flux Cored Arc Welding5

Subject Code: 176002

Students will be able to use the Flux Cored Arc Welding process (FCAW) to safely join various types of metal. They will perform multiple types of welds and joints in all positions up to and including overhead. They will select the appropriate type of cored electrode wire and adjust welding equipment based on the physical characteristics and properties of the metal. Students will apply quality control factors to evaluate the quality of welds.

Gas Tungsten Arc Welding5

Subject Code: 176003

Students will use the Gas Tungsten Arc Welding process (GTAW) to safely join various types of metal. They will perform multiple types of welds and joints in all positions, up to and including overhead. They will select the appropriate type of electrode, filler metal and shielding gas. They will be able to adjust welding equipment based on the physical characteristics and properties of the metal. Students will apply quality control factors to evaluate weld quality.

Machine Tools

Subject Code: 176004

This course introduces students to all aspects of machining applications in manufacturing. They will be able to perform routine calculations, interpret basic drawings, begin the process of performing accurate measurements and be able to plan simple machining processes. Students will learn the fundamental principles and practices of cutting, drilling and grinding using modern machine tools, hand tools and precision measuring instruments.

Machining with Industrial Lathes

Subject Code: 176005

This course directs the student in the safe use of different types of manual industrial lathes. Students will use these machine tools to shape, pattern, bore, thread and polish metal and other materials. Students will apply their knowledge of product characteristics, perform necessary calculations, use precision measuring instruments and make all adjustments needed to fabricate products to print dimensions. Students will be able to identify operational problems and provide routine care and maintenance to the lathe.

Machining with Industrial Milling Machines

Subject Code: 176006

In this course, students are directed in the safe use of manual milling machines. Students apply their knowledge of product characteristics, perform necessary calculations, and use precision measuring instruments and layout equipment to mill products to print dimensions. Students will use these machine tools to shape, cut, drill and bore metal and other materials. Students will be able to identify operational problems and provide routine care and maintenance to the manual mill.

Computer Numerical Control Technology with Industrial Mills and Lathes5

Subject Code: 176007

In this course, students will use computer numerical control (CNC) programming to mill products comprised of various materials. Students will prepare numerical control programs in positioning systems using standard industrial G and M codes. They will program computerized numerical control mills and lathes.

Manufacturing Capstone3

Subject Code: 176008

The capstone course provides opportunities for students to apply knowledge, attitudes and skills that were learned in a Manufacturing program in a more comprehensive and authentic way. Capstones often include project/problem based learning opportunities that occur both in and away from school. Under supervision of the school and through community partnerships, students may combine classroom learning with work experience. This course can be delivered through a variety of delivery methods including cooperative education or apprenticeship.

Welding Technologies5

Subject Code: 176009

Students will use fundamental welding principles involving shielded metal arc, oxyacetylene, gas tungsten and gas metal arc welding in the flat, horizontal and vertical positions. An emphasis is given to electrode selection, equipment setup, operating procedures, welding inspection and testing. Students will learn joint designs and layout and will be introduced to welding codes and standards. Additional topics include employability skills and an emphasis will be given to personal safety.

Welding Fabrication

Subject Code: 176015

Students will apply the knowledge and skills necessary to safely fabricate parts by cutting, drilling, bending, shaping, forming, edging and assembling stock to drawing dimensions. Students will identify weld types, fasteners and adhesives to join materials.

Industrial Maintenance

Subject Code: 176020

Students will apply the knowledge and skills necessary for installing, maintaining and safely troubleshooting modern industrial machinery. Students will learn about pneumatic, hydraulic, mechanical and electrical systems. They will learn to solve practical maintenance problems, read and interpret drawings and maintenance manuals and understand manufacturing process quality practices. Students will troubleshoot electrical controls, sensors and actuators for automated machinery and manufacturing processes.

Industrial Robotics⁴

Subject Code: 176025 Students will apply the knowledge and skills necessary to program, safely operate, and troubleshoot industrial robots. Students will learn industrial robotic operations and system configurations. Students will code, compile and debug programs using industrial robotic programming language.

Hydraulics and Pneumatics

Subject Code: 010225 Students will learn to diagnose, repair and rebuild hydraulic systems and their components. Students will learn the physical and mechanical principles of both hydraulic and hydrostatic operating units. Topics include testing system components and properly maintaining hydraulic and hydrostatic circuits. Students will demonstrate contamination control and system cleanliness in both hydraulic and hydrostatic operating systems. Throughout the course, site and personal safety procedures and business practices are reinforced.

Integrated Production Technologies (SREB)

Subject Code: 145999 Students will engage in using innovative industry driven technologies to imagine and design new and improved products. Additionally, students will be introduced to entry-level jobs leading to challenging, high-paying careers. Students will build and maintain cyber-mechanical systems; invent unmanned exploration vehicles; apply electrical and mechanical engineering principles to the construction of production systems; and use logistics to develop solutions to the modern world's most pressing needs and wants. (SREB Advance Career Curriculum)

Automated Materials Joining Technology (SREB)

Subject Code: 175990 Students will be introduced to innovative materials development and use, structural design and product integrity in relation to automated materials joining. Students will explore materials joining and forming methods, computer-aided design and automated systems that transform design concepts into fully developed products. Lastly, students will be introduced to a variety of career possibilities. (SREB Advance Career Curriculum)

Name of Occupation: Manufacturing

Provided Detailed RI Course Outline

Find the program that is right for you.

Complete in 0 - 3 months

- [Advanced Technology Academy](#)
- [Auto CAD and Solidworks](#)
- [CNC Machining and Composites Manufacturing](#)
- [Computer Numerical Control \(CNC\)](#)
- [Manufacturing Skills Standards Council \(MSSC\)](#)
- [Manufacturing Technical Readiness](#)
- [Nondestructive Testing NDT](#)

- [Precision Machining Technology \(PMT\)](#)
- [Right Skills Now CNC Operations Program](#)

Complete in 4 - 12 months

- [Digital Design and Product Innovation](#)
- [Digital Manufacturing and Product Launch](#)
- [Introductory Welding](#)
- [Precision Machining](#)
- [Siemens Mechatronic Systems Certification Program \(SMSCP\)](#)

Complete in 1 year +

- [Apprenticeship Training Program](#)
- [Automation Maintenance Technician](#)
- [Electrical Maintenance Technician](#)
- [Facility Maintenance Technician](#)
- [First Energy Power Systems Institute](#)
- [Industrial Welding](#)
- [Mechatronics](#)

c. On the Job Training (OJT) Component:

Once the Pre-Apprenticeship Student has completed their Junior year in high school and becomes eligible for Pre-Apprenticeship and finds an approved registered apprenticeship sponsor, the employer and school completes a training plan for the OJT portion of employment.

The OJT portion of the training not only gives the Pre-Apprenticeship Student the opportunity to utilize all of the tools and training they have obtained during their Junior year in their career technical program, they will also be gaining first-hand experience and understanding of their industry. In this phase of training the focus is the skills, knowledge and attitudes needed to be successful as a Pre-Apprenticeship Student.

Two Pre - Apprenticeship OJT employment options:

1. Student can start work the summer before their Senior year and when school starts they can work two weeks full-time and return to school two weeks full-time and then alternate the entire Senior year with this rotation schedule.
2. Student can start work the summer before their Senior year and when school starts they can attend school 1/2-day and work 1/2-day everyday schedule throughout the entire Senior school year.

d. Collaboration:

Articulation agreements partnerships:

- Cuyahoga Community College

**Cuyahoga Community College
and
FLEX High School Cleveland**

(**Cuyahoga Community College**) and the (**FLEX High School**) have joined together to address the educational needs of the workforce with the development of a (**Manufacturing Technology**) program. Tech Prep is a seamless, four-year program spanning the Junior year in high school through the completion of an associate's degree.

It offers a high-level alternative to the traditional college prep program and a solid academic foundation based on real life applications. The planned sequence of courses minimizes duplication and provides students with an advanced skill level in their program of study. The purpose of this agreement is to establish program requirements and procedures for a close working relationship between (**Cuyahoga Community College**) and (**FLEX High School**) in order to implement a well-coordinated technical education program leading to one of the following degrees from the (**Cuyahoga Community College**):

Complete in 0 - 3 months ▼

Advanced Technology Academy
Auto CAD and Solidworks
CNC Machining and Composites Manufacturing
Computer Numerical Control (CNC)
Manufacturing Skills Standards Council (MSSC)
Manufacturing Technical Readiness
Nondestructive Testing NDT
Precision Machining Technology (PMT)
Right Skills Now CNC Operations Program

Complete in 1 year + ▼

Automation Maintenance Technician
Electrical Maintenance Technician
Facility Maintenance Technician
First Energy Power Systems Institute
Industrial Welding
Mechatronics

Complete in 4 - 12 months ▼

Digital Design and Product Innovation
Digital Manufacturing and Product Launch
Introductory Welding
Siemens Mechatronic Systems Certification Program (SMSCP)

Based upon the mutual concern of (**Cuyahoga Community College**) and the (**FLEX High School**) for the needs of students pursuing an advanced technology degree and in an effort to provide a continuing articulated program from the Junior year in high school through the REISOCARIC, degree, we, the undersigned, hereby subscribe to the following guidelines:

1. Upon entry into the Tech Prep program, students will be jointly admitted to (**Cuyahoga Community College**). *Table I* details specific program entry requirements for acceptance to the Tech Prep program and (**Cuyahoga Community College**)
2. Students will complete entry-level competencies during their Junior and Senior years and move into advanced levels of study at the community college.
3. Students must complete the high school portion of the curriculum with at least a "C or 2.5" average.

4. The curriculum pathway details the waiver of any courses at (**Cuyahoga Community College**) based on completion of the courses during the Junior and Senior years as part of a special course offering by (**Cuyahoga Community College**) at the high school. courses jointly taught, or completion through the high school Tech Prep curriculum.

(D) Participant Status

These records will be made available to OSAC upon request.

1. Information on each Participant: Application, status, skill level and all other information obtained by student before during and after exiting from the program will be kept in a student file by the (FLEX High School) pre-apprenticeship coordinator.
2. Student will receive written notice of suspension or cancellation, those who complete the program will receive a certificate of completion.
3. Retain documentation and records in school database and filing system.

(E) Safety and Welfare

1. All trainees will receive instruction in safety and healthful work practices both on-the-job and in related instruction that are in compliance with the Occupational Safety and Health Administration (OSHA) Standards promulgated by the Secretary of Labor under 29 U.S.C. 651 et seq., as amended, dated December 29, 1970, and subsequent amendments to that law, or State Standards that have been found to be at least as effective as the Federal Standards.
2. Trainees will be taught and trained that accident prevention is very largely a matter of education, vigilance and cooperation and that they should strive at all times to conduct themselves in their work to ensure their own safety and that of their fellow workers.

(F) Program Administrator

1. Bernice Howard, CEO & Principal
5222 Wilson Mills Road
Richmond Heights, OH 44143
216.310.9750
bhoward@llac.org

(G) Linkage

FLEX High pre-apprenticeship program is linked to a registered program at Cuyahoga Community College (Tri-C). Tri-C is a sponsor of a registered pre-apprenticeship program.

Pre-Apprenticeship Provider Organizations:

1. Apprenticeship Training Program

Starr Sherman
700 Carnegie Avenue
Cleveland, OH 44115
216.987.0146

starr.sherman@tri-c.edu

2. Apprenticeship Training Program

Devon Pleasant
700 Carnegie Avenue
Cleveland, OH 44115
216.987.3172

Devon.Pleasant2@tri-c.edu

3. Apprenticeship Training Program

Alicia Booker
700 Carnegie Avenue
Cleveland, OH 44115
216.987.0146

Alicia.Booker@tri-c.edu



***Workforce, Community & Economic Development**
Manufacturing Technology Center
2415 Woodland Avenue
Cleveland, OH 44115

June 1, 2020

Bernice Howard, MEd., MBA
Principal
FLEX High School Cleveland Ohio
5222 Wilson Mills Road
Richmond Heights, OH 44143

Dear Bernice Howard,

The Manufacturing Technology Center a Division of Cuyahoga Community College (Tri-C) recognizes and supports FLEX High School with opportunities of enrollment into the Tri-C manufacturing pre-apprenticeship program serving youth and adults.

We will support FLEX High School in various ways that include:

- Enrollment support through College Credit Plus (CCP) and open enrollment
- Provide related classroom instruction
- Industry exposure in the form of job fairs, employer speaker forums, and other career services

Our state registered youth pre-apprenticeship program provides the students the basic foundation to pursue additional workforce training in the manufacturing-engineering industry. Students who successfully complete the youth pre-apprenticeship program will receive an industry-recognized credential, which can be utilized as a component of a high school graduation requirement in Ohio. The related classroom instruction covers career readiness, preparation for shop math, basic blueprint and hands-on learning.

We have the support of our industry partners to engage and participate as we introduce multiple career pathways to advance manufacturing and strengthen the pipeline within the industry through gainful employment.

We are pleased to support FLEX High School in its response to the community to provide opportunities for youth and young adults. We believe by supporting this program students and potential employers can improve the development of workforce with an eye on the future of the industry.

If you feel the need to contact me directly, please feel free to do so at any time.

Sincerely,

A handwritten signature in black ink, appearing to read "Starr Sherman", with a long horizontal flourish extending to the right.

Starr Sherman, Program Manager