



DEPARTMENT OF
HIGHER EDUCATION &
WORKFORCE DEVELOPMENT

New Program Report

Date Submitted:

04/20/2023

Institution

Ranken Technical College

Site Information

Implementation Date:

8/28/2023 12:00:00 AM

Added Site(s):

Selected Site(s):

Ranken Technical College, 4431 Finney Avenue, St. Louis, MO, 63113

Ranken West-Lincoln County Workforce Development Center, 651 John Deere Dr., Troy, MO, 63379

CIP Information

CIP Code:

480501

CIP Description:

A program that prepares individuals to apply technical knowledge and skills to plan, manufacture, assemble, test, and repair parts, mechanisms, machines, and structures in which materials are cast, formed, shaped, molded, heat treated, cut, twisted, pressed, fused, stamped or worked.

CIP Program Title:

Machine Tool Technology/Machinist

Institution Program Title:

Advanced Precision Machining Technology

Degree Level/Type

Degree Level:

Certificate \geq 1 Year but $<$ 2 Year

Degree Type:

Certificate 1

Options Added:

Collaborative Program:

N

Mode of Delivery

Current Mode of Delivery

Hybrid

Student Preparation

Special Admissions Procedure or Student Qualifications required:

See attachment.



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Specific Population Characteristics to be served:

n/a

Faculty Characteristics

Special Requirements for Assignment of Teaching for this Degree/Certificate:

See attachment

Estimate Percentage of Credit Hours that will be assigned to full time faculty:

See attachment

Expectations for professional activities, special student contact, teaching/learning innovation:

See attachment

Student Enrollment Projections Year One-Five

Year 1	Full Time: 15	Part Time: 0	
Year 2	Full Time: 15	Part Time: 0	
Year 3	Full Time: 15	Part Time: 0	Number of Graduates: 15
Year 4	Full Time: 15	Part Time: 0	
Year 1	Full Time: 15	Part Time: 0	
Year 2	Full Time: 15	Part Time: 0	
Year 3	Full Time: 15	Part Time: 0	Number of Graduates: 15
Year 4	Full Time: 15	Part Time: 0	
Year 5	Full Time: 15	Part Time: 0	Number of Graduates: 15

Percentage Statement:

n/a

Program Accreditation

Institutional Plans for Accreditation:

See attachment.

Program Structure

Total Credits:

57

Residency Requirements:

Minimum of 29 credit hours must be completed at Ranken Technical College.

General Education Total Credits:

6

Major Requirements Total Credits:

51



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Course(s) Added

COURSE NUMBER	CREDITS	COURSE TITLE
APM 1110	12	Machining Theory and Applied Foundations
APM 1210	8	CNC Mill Programming
APM 2015	5	Professional Internship II
APM 1205	5	Professional Internship I
APM 2110	8	CAD and CAM Programming
APM 2115	5	Professional Internship III
APM 2010	8	CNC Lathe Programming

Free Elective Credits:

0

Internship or other Capstone Experience:

N/A

Assurances

I certify that the program will not unnecessarily duplicate an existing program of another Missouri institution in accordance with 6 CSR 10-4.010, subsection (9)(C) Submission of Academic Information, Data and New Programs.

I certify that the program will build upon existing programs and faculty expertise.

I certify that the institution has conducted research on the feasibility of the proposal and it is likely the program will be successful. Institutions' decision to implement a program shall be based upon demand and/or need for the program in terms of meeting present and future needs of the locale, state, and nation based upon societal needs, and/or student needs.

Contact Information

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Sent: Friday, March 24, 2023 1:03 PM

Cc: J.C Owens <jowens@ranken.edu>; David Cadle <dacadle@ranken.edu>; Julia M. Bradshaw <jmbradshaw@ranken.edu>; Charles G. Corrigan <cgcarrigan@ranken.edu>

Subject: APM Change for 2023-2024

The Education Committee recently approved the following changes to the Advanced Precision Machining Technology (APM) program at the St. Louis Location effective Fall 2023.

Advanced Precision Machining Program

- DAY Program: (Change from a 5-semester program to a 4-semester program)
 - Last semester of the APM program was removed.
 - Multi-Axis programming is now done at a more introductory/general level in the 4th semester APM 2100 CAD and CAM Programming course.
 - First semester is the same content, but now done in one 16-week course.
 - Second semester is very similar to the old Manufacturing Processes course. There is just a course title change.
 - Third semester focuses on CNC Lathe Programming.
 - Fourth semester still incorporates MasterCAM, but also includes the multi-axis exposure.
 - All courses are taught at both locations.
 -

Books & Tools forms are in the process of getting revised under the new Course Codes.

Please let me know if you have questions or concerns.

Shannon Brueggemann
Vice President for Education

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CHANGE: Eliminate 5th semester in Advanced Precision Machining Technology

Rationale:

- Increase enrollment in the APM program in STL and TRY.
 - Removes 5th Semester from program
 - Decrease cost of Education (Strategic Plan Alignment)
 - Decrease time to Graduation
 - Decrease course contact hours on 8-week courses
 - Accommodate adult students needing to work while in seated courses.
- Includes a first semester structured to improve retention in program
 - Creates one 16-week course in the first semester
 - In the past, a failure in first 8 weeks, typically created a financial hardship preventing students from returning.
 - Structure of previous 1st semester courses created obstacles with retaining the material.

Advanced Precision Machining Technology

CTT/AT/AS

Program Outcomes:

- Demonstrate an understanding of basic safety practices in a machining environment.
- Interpret engineering drawings and apply mathematical principles that result in the creation of parts that meet industry standards.
- Set-up and operate conventional and CNC equipment.
- Employ CAD/CAM applications.

Semester	Course	Credits	Prereq
1 st	APM 1110 Machining Theory and Applied Foundations	12	
2 nd	APM 1210 CNC Mill Programming APM 1205 Professional Internship I	8 5	APM 1110 APM 1210
3 rd	APM 2010 CNC Lathe Programming APM 2015 Professional Internship II	8 5	APM 1210 APM 1210
4 th	APM 2110 CAD and CAM Program APM 2115 Professional Internship III	8 5	APM 1210 APM 1210
	Total	51	

Proposed Format

- Eliminates the Multi-Axis Mastercam Programming course per employers feedback that only an general understanding is needed.
- Hours
 - Day Program (seated courses)
 - 1st semester: 4 hrs/day, 5 days/week (16 weeks seated)
 - 2nd-4th semesters: 4 hrs/day, 5 days/week (8 weeks) – 8 week

SEMESTER 1

DAY: 4 Hours/day, 5 days/week (16 weeks)

APM 1110 Machining Theory and Applied Foundations:

This course begins with a thorough understanding of Machine Shop Safety that includes covering OSHA, NIOSH and appropriate PPE. Students will learn to use standard hand tools, gages, and precision measuring tools that are commonly found in the machinist field. They will also develop entry-level skills of proper feed and speed to operate manual lathes and mills. Students will be introduced to machinist formulas, GD&T, and trigonometry. Additionally, students will read and interpret mechanical prints by identifying tolerance, symbols, line types, and the different views. Finally, students will apply these mathematical and print reading skills by seeing how it applies to a machined part. Students will apply concepts by manufacturing parts based on provided technical drawings. Twelve credits.

SEMESTER 2

Day: 4 hours/day, 5 days/week (8 weeks)

APM 1210 CNC Mill Programming

This course addresses the manufacturing processes used to build a product, from design to delivery in the marketplace by reinforcing GD&T, Machinist formulas, and trigonometric functions. In creating a final product, students will also be introduced to G and M Code programming for CNC mills and ISO programming methods. Finally, students will correct possible errors of tools and workpiece offsets by utilizing a simulation software. Eight credits.

SEMESTER 3 or Semester 4

Day: 4 hours/day, 5 days/week (8 weeks)

APM 2010 CNC Lathe Programming

This course is an entry-level class for CNC Lathe Programming. The course teaches students how to navigate software interfaces, create lathe geometry, select toolpaths, select tools, chuck accessories, and the functionalities associated with "C" and "Y" axis live tooling. By the end of the course, students will gain enough experience in operating a CNC lathe and its software that they will be able to manufacture a finished part from a self-created program. Eight credits

APM 2100 CAD and CAM Programming

This course is an entry-level class for Mastercam 2D Milling. This course introduces students to Mastercam and Solidworks software and takes them from successfully modeling, to programming, to manufacturing finished parts and assemblies for machining on a CNC mill and lathe. Not only will students be introduced to multi-axis programming, but they will also understand advanced-level essential skills such as manipulation of the setting, correct model placement, and construction of 2D and 3D geometry. Finally, students will gain exposure to basic tool and die and mold making. Eight credits

8 Week Internships - 5 Credit Hours: APM 1205, APM 2015, APM 2105

Students will participate in a work-study in a professional machining environment during their second, third, and fourth semesters. Students will apply skills learning in previous courses in a real-world industry setting. Five credit hours each

Teachout Plan

We will teach out remaining students under old format. If a student fails under the old format, the College will offer the course for that student.

NO CHANGES to CIP code, degree/certificate offerings, or major code.
CHANGES to concentration codes, credit hours, terms required, and program length are described below and highlighted in yellow.

Advanced Precision Machining Technology (APM)			Same CIP code: 480501				
Program Division: Manufacturing							
	Campus	Major Title	Concentration Title	Degree Codes	Tech Credits	Terms Required	Program Length
Current program (Effective FA20 term, Aug 2020)	St. Louis	Advanced Precision Machining Technology	Advanced Machining	CT, AT, AS	80	5	80 weeks
	Troy	Advanced Precision Machining Technology	Mazatrol	CT, AT, AS	80	5	80 weeks
New program (Effective FA23 term, Aug 2023)	St. Louis	Advanced Precision Machining Technology	None	CT, AT, AS	51	4	64 weeks
	Troy	Advanced Precision Machining Technology	None	CT, AT, AS	51	4	64 weeks



Advanced Precision Machining Technology

Degree Choices: CT, AT, AS

Campus: St. Louis and Troy

2023-24 Curriculum Guide

	<u>Hours</u>	<u>Prerequisites</u>
<u>1st Semester</u>		
APM 1110 Machining Theory and Applied Foundations	12	
WEG PM11 Work Ethic Grade course	0	
General Education classes as needed per degree choice		
<u>2nd Semester</u>		
APM 1210 CNC Mill Programming	8	APM 1110
APM 1205 Professional Internship I	5	APM 1210
WEG PM12 Work Ethic Grade course	0	
General Education classes as needed per degree choice		
<u>3rd or 4th Semester</u>		
APM 2010 CNC Lathe Programming	8	APM 1210
APM 2015 Professional Internship II	5	APM 1210
WEG PM20 Work Ethic Grade course	0	
General Education classes as needed per degree choice		
<u>3rd or 4th Semester</u>		
APM 2110 CAD and CAM Programming	8	APM 1210
APM 2115 Professional Internship III	5	APM 1210
WEG PM21 Work Ethic Grade course	0	
General Education classes as needed per degree choice		

General Education Requirements	Hours	Certificate of Technology (CT)	Associate of Technology (AT)	Associate of Science (AS)	Prerequisite /Corequisite
Communications	3	COM 1080 Technical Communications	COM 1105 Oral Communications	COM 1105	
Business & Information Technology	3	BUS 1000 Career Success Skills	BUS 1000	BUS 1000	
	3		MNG 1204 Intro to Business & Mgmt	MNG 1204	ENG 1099 (coreq)
English	3		ENG 1099 Foundations of Composition	ENG 1099	
	3		ENG 1101 College Composition I	ENG 1101	ENG 1099
	3		ENG 2102 College Composition II	ENG 2102	ENG 1101
Social Sciences	3		SOC 1206 Principles of Sociology or PSY 1206 Introduction to Psychology	SOC 1206 or PSY 1206	ENG 1099 (coreq)
Mathematics & Science	3		MTH 1110 Elementary Algebra	MTH 1110	
	3		MTH 1111 Intermediate Algebra	MTH 1111	MTH 1110
	3			MTH 2112 College Algebra	MTH 1111
	3			MTH 2220 Trigonometry	MTH 2112
	3			PHY 2230 College Physics	MTH 2220
	3			MTH 2240 Survey of Calculus	MTH 2112

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Interoffice use only: Major = ADPMT; Concentration = none; major hours = 51; Degree Audit Code: ADPMT