Program Information Report

Advanced Manufacturing

Advanced Manufacturing (CNC)-Machine Tool Setup, Operation and Programming (APMTOP)

Associate in Applied Science Degree

Program Effective Term: Fall 2024

High Demand Occupation High Skill Occupation High Wage Occupation

In this program, students will demonstrate proficiency in the operation of automated design and machine tool equipment. Competencies in machine operation (CNC), computer aided design and manufacturing (CAD/CAM), manual programming, and processing materials will be developed. In addition, students will hone skills in the manufacturing and troubleshooting of part programs used for advanced manufacturing systems. Students will apply problem-solving skills learned in the program to create innovative solutions for real-world manufacturing challenges in preparation for entry-level positions within the advanced manufacturing field including CNC machining.

Students with technology interests who enjoy working with their hands like gaming, manipulating code, robotics, 3D printing are suited for this line of work.

Articulation:
Eastern Michigan University, BS degree;
Wayne State University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: https://www.wccnet.edu/learn/transfer-wcc-credits/articulation-agreements.php.

Program Admission Requirements:
College Level Reading and Writing levels of 6 and Math Level 2 are required.

Students much reach Math Level 4 prior to enrolling in NCT 121.

First Semester		**(14 credits)**
MEC 100	Materials and Processes	3
MEC 101	Blueprint Reading for Manufacturing	2
NCT 100	Foundation Concepts for Manufacturing (CNC)	3
Elective	Writing Elective(s)	3
Elective	Math Elective(s)	3

Second Semester		**(14 credits)**
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II	2
NCT 120	Introduction to 2D CAD CAM Programming and Applications	2
WAF 103	Introduction to Gas Tungsten Arc Welding	2
Elective	Speech/Comp. Elective(s)	3
Elective	Art/Human. Elective(s)	3

Third Semester		**(5 credits)**
NCT 123	2D CAD CAM CNC Programming for Mills and Lathes	2
Elective	Nat. Sci. Elective(s)	3

Fourth Semester		**(14 credits)**
ELE 111	Electrical Fundamentals	4
NCT 121	Manual Programming and NC Tool Operation	4
NCT 201	Geometric Dimensioning and Tolerancing (GD&T)	2
Elective	Restricted Elective: Students may choose any ELE, MEC, NCT, ROB course not already listed.	4

Fifth Semester		**(15 credits)**
MEC 201	Mechanisms and Introduction to Mechatronics	2
NCT 221	Advanced Manual Programming and NC Tool Operation	4
NCT 244	Advanced Manufacturing Capstone (CNC)	3
	Soc. Sci. Elective(s)	3

Program Information Report

Elective	Restricted Elective: Students may choose any ELE, MEC, NCT, ROB course not already listed.	3

Minimum Credits Required for the Program: **62**

Notes:

Students may elect to take optional courses to meet MTA. Please refer to the WCC MTA Transfer Agreement web page https://www.wccnet.edu/learn/transfer-wcc-credits/mta.php for more information.

Program Information Report

Science, Computer Technology, Engineering & Math

Advanced Manufacturing (CNC)-Machine Tool Setup, Operation and Programming (APMTOP)

Associate in Applied Science Degree

Program Effective Term: Fall 2024

High Demand Occupation High Skill Occupation High Wage Occupation

In this program, students will demonstrate proficiency in the operation of automated design and machine tool equipment. Competencies in machine operation (CNC), computer aided design and manufacturing (CAD/CAM), manual programming, and processing materials will be developed. In addition, students will hone skills in the manufacturing and troubleshooting of part programs used for advanced manufacturing systems. Students will apply problem-solving skills learned in the program to create innovative solutions for real-world manufacturing challenges in preparation for entry-level positions within the advanced manufacturing field including CNC machining.

Students with technology interests who enjoy working with their hands like gaming, manipulating code, robotics, 3D printing are suited for this line of work.

Articulation:
Eastern Michigan University, BS degree;
Wayne State University, BS degree.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: https://www.wccnet.edu/learn/transfer-wcc-credits/articulation-agreements.php.

Program Admission Requirements:
College Level Reading and Writing levels of 6 and Math Level 2 are required.

Students much reach Math Level 4 prior to enrolling in NCT 121.

First Semester		**(14 credits)**
MEC 100	Materials and Processes	3
MEC 101	Blueprint Reading for Manufacturing	2
NCT 100	Foundation Concepts for Manufacturing (CNC)	3
Elective	Writing Elective(s)	3
Elective	Math Elective(s)	3

Second Semester		**(14 credits)**
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II	2
NCT 120	Introduction to 2D CAD CAM Programming and Applications	2
WAF 103	Introduction to Gas Tungsten Arc Welding	2
Elective	Speech/Comp. Elective(s)	3
Elective	Art/Human. Elective(s)	3

Third Semester		**(5 credits)**
NCT 123	2D CAD CAM CNC Programming for Mills and Lathes	2
Elective	Nat. Sci. Elective(s)	3

Fourth Semester		**(14 credits)**
ELE 111	Electrical Fundamentals	4
NCT 121	Manual Programming and NC Tool Operation	4
NCT 201	Geometric Dimensioning and Tolerancing (GD&T)	2
Elective	Restricted Elective: Students may choose any ELE, MEC, NCT, ROB course not already listed.	4

Fifth Semester		**(15 credits)**
MEC 201	Mechanisms and Introduction to Mechatronics	2
NCT 221	Advanced Manual Programming and NC Tool Operation	4
NCT 244	Advanced Manufacturing Capstone (CNC)	3
	Soc. Sci. Elective(s)	3

Program Information Report

Elective	Restricted Elective: Students may choose any ELE, MEC, NCT, ROB course not already listed.	3

Minimum Credits Required for the Program: **62**

Notes:

Students may elect to take optional courses to meet MTA. Please refer to the WCC MTA Transfer Agreement web page https://www.wccnet.edu/learn/transfer-wcc-credits/mta.php for more information.

Received by C&A 1/8/24

WASHTENAW COMMUNITY COLLEGE

PROGRAM CHANGE FORM

Program Code: APMTOP	Current Program Name: Advanced Manufacturing - Machine Tool Setup, Operation and Programming	Effective Term: Fall 2024
Division Code: ATP	Department: AMTD	

Directions:

1. Attach the current program listing from the WCC catalog or website and indicate any changes to be made.
2. Draw lines through any text that should be deleted and write in additions. Extensive narrative changes can be included on a separate sheet.
3. Check the boxes below for each type of change being proposed. Changes to courses, discontinuing a course, or adding new courses as part of the proposed program change, must be approved separately using CurricUNET, but should be submitted at the same time as the program change form.
4. If changes affect the program assessment plan or if program outcomes are updated, please submit a Program Assessment Plan Change form. These changes must be approved separately from the program change form and should be submitted at the same time. Current program assessment plans can be found on the Curriculum and Assessment Program Information page.

Requested Changes:

- ☐ Remove course(s): _____
- ☐ Add course(s): _____
- ☐ Program title (new title is _____)
- ☐ Description
- ☐ Advisors
- ☐ Program admission requirements
- ☐ Continuing eligibility requirements
- ☐ Program outcomes (may also result from removing or adding a course)*
- ☐ Program assessment plan*
- ☐ Accreditation information
- ☒ Other Layout changes

Show all changes on the catalog page you attach.

* Please submit a Program Assessment Plan Change form.

Note: A change to the Award Type requires the submission of a new program proposal form and a separate program inactivation form. Contact the Director of Curriculum & Assessment for more information.

Rationale for proposed changes:

Division is updating layouts to align with forthcoming part-time layouts

Financial/staffing/equipment/space implications:

List departments that have been consulted regarding their use of this program.

Signatures:

Reviewer	Print Name	Signature	Date
Initiator	Allan Coleman		1/8/24
Department Chair	Allan Coleman		1/8/24
Division Dean/Administrator	Jimmie Baber		1/8/24

Please return completed form to the Office of Curriculum & Assessment, SC 257
or by e-mail to curriculum.assessment@wccnet.edu
Once reviewed by the appropriate faculty committees we will secure the signature of the VPI.

Reviewer	Print Name	Signature	Date
Curriculum Committee Chair			
Assessment Committee Chair			
Interim Vice President for Instruction	Brandon Tucker		

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Reviewed by C&A Committees 2/1/24

Program layout updated due to course resequencing. Change made to facilitate data migration for new Course Leaf software. Per 2/1/24 C&A committees' meeting, resequencing with minimal effect to credit hours/per semester does not require C&A Committee review.

Program Information Report

Manufacturing & Automotive

Advanced Manufacturing (CNC)-Machine Tool Setup, Operation and Programming (APMTOP)

Associate in Applied Science Degree

Program Effective Term: Fall 2022

In this program, students will demonstrate proficiency in the operation of automated design and machine tool equipment. Competencies in machine operation (CNC), computer aided design and manufacturing (CAD/CAM), manual programming, and processing materials will be developed. In addition, students will hone skills in the manufacturing and troubleshooting of part programs used for advanced manufacturing systems. Students will apply problem-solving skills learned in the program to create innovative solutions for real-world manufacturing challenges in preparation for entry-level positions within the advanced manufacturing field including CNC machining.

Students with technology interests who enjoy working with their hands like gaming, manipulating code, robotics, 3D printing are suited for this line of work.

Program Admission Requirements:
College Level Reading and Writing levels of 6 and Math Level 2 are required.

Students much reach Math Level 4 prior to enrolling in NCT 121.

First Semester		**(13 credits)**
MEC 101	Blueprint Reading for Manufacturing	2
NCT 100	Foundation Concepts for Manufacturing (CNC)	3
NCT 120	Introduction to 2D CAD CAM Programming and Applications	2
Elective	Math Elective(s)	3
Elective	Art/Human. Elective(s)	3

Second Semester		**(12 credits)**
MEC 100	Materials and Processes	3
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II	2
Elective	Restricted Elective: Students may choose any ELE, MEC, NCT, ROB course not already listed.	2
Elective	Nat. Sci. Elective(s)	3

Third Semester		**(13 credits)**
NCT 123	2D CAD CAM CNC Programming for Mills and Lathes	2
Elective	Restricted Elective: Students may choose any ELE, MEC, NCT, ROB course not already listed.	2
Elective	Writing Elective(s)	3
Elective	Speech/Comp. Elective(s)	3
Elective	Soc. Sci. Elective(s)	3

Fourth Semester		**(12 credits)**
ELE 111	Electrical Fundamentals	4
MEC 201	Mechanisms	2
NCT 121	Manual Programming and NC Tool Operation	4
NCT 201	Geometric Dimensioning and Tolerancing (GD&T)	2

Fifth Semester		**(12 credits)**
NCT 221	Advanced Manual Programming and NC Tool Operation	4
NCT 244	Advanced Manufacturing Capstone (CNC)	3
WAF 103	Introduction to Gas Tungsten Arc Welding	2
Elective	Restricted Elective: Students may choose any ELE, MEC, NCT, ROB course not already listed.	3

Minimum Credits Required for the Program: 62

Notes:

Program Information Report

Students may elect to take optional courses to meet MTA. Please refer to the WCC MTA Transfer Agreement web page https://www.wccnet.edu/learn/transfer-wcc-credits/mta.php for more information.

Program Information Report

Science, Computer Technology, Engineering & Math

Advanced Manufacturing (CNC)-Machine Tool Setup, Operation and Programming (APMTOP)

Associate in Applied Science Degree

Program Effective Term: Fall 2022

In this program, students will demonstrate proficiency in the operation of automated design and machine tool equipment. Competencies in machine operation (CNC), computer aided design and manufacturing (CAD/CAM), manual programming, and processing materials will be developed. In addition, students will hone skills in the manufacturing and troubleshooting of part programs used for advanced manufacturing systems. Students will apply problem-solving skills learned in the program to create innovative solutions for real-world manufacturing challenges in preparation for entry-level positions within the advanced manufacturing field including CNC machining.

Students with technology interests who enjoy working with their hands like gaming, manipulating code, robotics, 3D printing are suited for this line of work.

Program Admission Requirements:
College Level Reading and Writing levels of 6 and Math Level 2 are required.

Students much reach Math Level 4 prior to enrolling in NCT 121.

First Semester		**(13 credits)**
MEC 101	Blueprint Reading for Manufacturing	2
NCT 100	Foundation Concepts for Manufacturing (CNC)	3
NCT 120	Introduction to 2D CAD CAM Programming and Applications	2
Elective	Math Elective(s)	3
Elective	Art/Human. Elective(s)	3

Second Semester		**(12 credits)**
MEC 100	Materials and Processes	3
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II	2
Elective	Restricted Elective: Students may choose any ELE, MEC, NCT, ROB course not already listed.	2
Elective	Nat. Sci. Elective(s)	3

Third Semester		**(13 credits)**
NCT 123	2D CAD CAM CNC Programming for Mills and Lathes	2
Elective	Restricted Elective: Students may choose any ELE, MEC, NCT, ROB course not already listed.	2
Elective	Writing Elective(s)	3
Elective	Speech/Comp. Elective(s)	3
Elective	Soc. Sci. Elective(s)	3

Fourth Semester		**(12 credits)**
ELE 111	Electrical Fundamentals	4
MEC 201	Mechanisms	2
NCT 121	Manual Programming and NC Tool Operation	4
NCT 201	Geometric Dimensioning and Tolerancing (GD&T)	2

Fifth Semester		**(12 credits)**
NCT 221	Advanced Manual Programming and NC Tool Operation	4
NCT 244	Advanced Manufacturing Capstone (CNC)	3
WAF 103	Introduction to Gas Tungsten Arc Welding	2
Elective	Restricted Elective: Students may choose any ELE, MEC, NCT, ROB course not already listed.	3

Minimum Credits Required for the Program: 62

Notes:

Program Information Report

Students may elect to take optional courses to meet MTA. Please refer to the WCC MTA Transfer Agreement web page https://www.wccnet.edu/learn/transfer-wcc-credits/mta.php for more information.

Received by C&A 1/18/22

WASHTENAW COMMUNITY COLLEGE

PROGRAM CHANGE FORM

Program Code: APETEC	**Current Program Name: Engineering Technologist-Manufacturing**	**Effective Term: Fall 2022**
Division Code: ATP	**Department:** Advanced Manufacturing	

Directions:

1. Attach the current program listing from the WCC catalog or website and indicate any changes to be made.
2. Draw lines through any text that should be deleted and write in additions. Extensive narrative changes can be included on a separate sheet.
3. Check the boxes below for each type of change being proposed. Changes to courses, discontinuing a course, or adding new courses as part of the proposed program change, must be approved separately using CurricUNET, but should be submitted at the same time as the program change form.
4. If changes affect the program assessment plan or if program outcomes are updated, please submit a Program Assessment Plan Change form. These changes must be approved separately from the program change form and should be submitted at the same time. Current program assessment plans can be found on the Curriculum and Assessment Program Information page.

Requested Changes:

ROB 101, MEC 120

- ☒ Remove course(s): NCT255, 259, 269, MTT102, 111
- ☒ Add course(s): NCT100, NCT 201, NCT 244
- ☒ Program title (new title is: Advanced Manufacturing (CNC)-Machine Tool Setup, Operation and Programming
- ☒ Description (attached)
- ☐ Advisors
- ☐ Program admission requirements
- ☐ Continuing eligibility requirements
- ☐ Program outcomes (may also result from removing or adding a course)*
- ☐ Program assessment plan*
- ☐ Accreditation information
- ☐ Other _____

Show all changes on the catalog page you attach.

Note: A change to the Award Type requires the submission of a new program proposal form and a separate program inactivation form. Contact the Director of Curriculum & Assessment for more information.

* Please submit a Program Assessment Plan Change form.

Rationale for proposed changes: This degree was created with the intent of being an accelerated program along with using grant-funded equipment. Student completion was not possible due to staffing to run the higher level courses. This revision will allow standard completion closer to the 60 credit threshold. General education are returned to electives. Specific course callouts were due to accelerated program scheduling. Existing outcomes are appropriate for this program change. NCT 100 is a course updated from MTT102 to current technology. NCT 201 new course was created and added at the recommendation of advisory board as a capstone course to increase hands-on application; it will be used to assess program.

Financial/staffing/equipment/space implications:

None

List departments that have been consulted regarding their use of this program.

Not required.

Signatures:

Reviewer	Print Name	Signature	Date
Initiator	Allan Coleman	Allan Coleman	12/15/2021
Department Chair	Allan Coleman	Allan Coleman	01/17/2022

PROGRAM CHANGE FORM

Division Dean/Administrator	Jimmie Baber	Jimmie Baber	1/18/2022

Please return completed form to the Office of Curriculum & Assessment, SC 257
or by e-mail to curriculum.assessment@wccnet.edu
Once reviewed by the appropriate faculty committees we will secure the signature of the VPI and President.

Reviewer	Print Name	Signature	Date
Curriculum Committee Chair	Randy Van Wagnen		3-3-22
Assessment Committee Chair	Shawn Deron		3/09/2022
Vice President for Instruction	Kimberly Hurns		3/10/22

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Reviewed by C&A Committees 2/24/22

Program Information Report

Engineering Technologist-Manufacturing (APETEC)

Associate in Applied Science Degree

Program Effective Term: Fall 2018

Students in this program will demonstrate proficiency in the operation of various types of automated design/machine tool equipment. Competencies in design, programming, and materials and machine processing will be developed. In addition, students will hone skills in the manufacturing and troubleshooting of mechanical parts and the setup and operations of advanced manufacturing systems. Students will apply problem-solving skills learned in the program to create innovative solutions for real-word manufacturing challenges in preparation for entry-level Engineering Technologist or Technician positions.

Program Admission Requirements:
College level reading and writing levels of 6 and math level 4 are required.

First Semester		(13 credits)
MEC 100	Materials and Processes	3
MEC 101	3D Modeling and Blueprint Reading	2
MTT 102	Machining for the Technologies	2
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II	2
ROB 101	Robotics I - I	2

Second Semester		(16 credits)
COM 101	Fundamentals of Speaking	3
MTH 178	General Trigonometry*	3
MTT 111	Machine Shop Theory and Practice	4
NCT 120	Introduction to 2D CAD CAM Programming and Applications	2
NCT 121	Manual Programming and NC Tool Operation	4

Third Semester		(13 credits)
ART 150	Monuments and Cultures	3
NCT 123	2D CAD CAM CNC Programming for Mills and Lathes	2
NCT 221	Advanced Manual Programming and NC Tool Operation	4
PHY 111	General Physics I	4

Fourth Semester		(11 credits)
ECO 110	Introduction to Economics	3
NCT 255	Probes, Macros and Conversational Programming for CNC	4
NCT 259	MasterCam 2D and 3D CAM CNC Programming for Mills	4

Fifth Semester		(11 credits)
ENG 107	Technical Writing Fundamentals	3
MEC 120	3D-Printing: Machine, Process and Innovation	4
NCT 269	4 and 5 Axis Machining for the CNC Vertical Mills	4

Minimum Credits Required for the Program: 64

Notes:

**MTH 178 requires academic math level 5.*
***Students may elect to take optional courses to meet MTA. Please refer to the WCC MTA Transfer Agreement web page http://www.wccnet.edu/services/transferresources/mta/ for more information.*

PROGRAM PROPOSAL FORM

☐ **Preliminary Approval –** Check here when using this form for preliminary approval of a program proposal, and respond to the items in general terms.

☒ **Final Approval –** Check here when completing this form after the Vice President for Instruction has given preliminary approval to a program proposal. For final approval, complete information must be provided for each item.

Program Name: **Division and Department:** **Type of Award:** **Effective Term/Year:** **Initiator:**	Engineering Technologist - Manufacturing ATP / AMTD ☐ AA ☐ AS ☒ AAS ☐ Cert. ☐ Adv. Cert. ☐ Post-Assoc. Cert. ☐ Cert. of Comp. Fall 2018 Tom Penird and Bonnie Tew	**Program Code:** APETEC **CIP Code:** 15.0405
Program Features Program's purpose and its goals. Criteria for entry into the program, along with projected enrollment figures. Connection to other WCC programs, as well as accrediting agencies or professional organizations. Special features of the program.	This program prepares students for entry-level Engineering Technologist/Technician positions in manufacturing within sectors including automotive, computers, aerospace, medical devices, and more. Skills taught include the design, modification, troubleshooting, operation, integration and maintenance of automated mechanical equipment and component parts. Students receive hands-on laboratory training experience in control systems, mechanics, programming, robotics, systems development, design, materials, machining processes, and setup/operation of advanced manufacturing systems. The Engineering Technologist, or Technician, applies practical knowledge in engineering science/technology, production, mechanical operation of machines/tools, and mathematics. Technical skills are leveraged in areas of control systems, programming, robotics, systems development, design, materials and machine processes, as well as the setup and operation of advanced manufacturing systems. NOTE: Unique Program Features: 1. The program will be compressed into 11 months to more quickly respond to industry needs for workers with these skills and to provide students with an opportunity to complete the degree, instead of pieces of it. Initially, it is expected a cohort of 15-20 individuals will successfully graduate with a two-year degree, every eleven months. 2. A unique value added portion of the program is the contextualization of all General Education courses to specifically address the skills needed to be successful in an Engineering Technologist position.	
Need Need for the program with evidence to support the stated need.	Employers in multiple manufacturing sectors are experiencing a severe gap between the supply of skilled workers and the demand for workers on the Engineering Technologist/Technician level in organizations. Indeed.com currently lists over 18,000 job postings/openings around the United States in this field, and over 1,500 in Michigan. The Bureau of Labor Statistics anticipates an average projected growth (5 - 9%) between 2016 and 2026. The median salary in 2016 was $29.96 hourly or $62,330 annually. Michigan employment data predicts an 11% increase in jobs annually.	

Program Outcomes/Assessment State the knowledge to be gained, skills to be learned, and attitudes to be developed by students in the program. Include assessment methods that will be used to determine the effectiveness of the program.	Outcome	Assessment method
	1. Use multiple processes, materials and types of equipment in the creation of a capstone project. 2. Develop systems to design, machine, assemble and create a capstone project	1. Capstone project/portfolio 2. Capstone project/portfolio

Curriculum

List the courses in the program as they should appear in the catalog. List minimum credits required. Include any notes that should appear below the course list.

Semester 1		
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II	2
ROB 101	Robotics I - I	2
MTT 102	Machining for the Technologies	2
MEC 100	Materials and Processes	3
MEC 101	3D Modeling and Blueprint Reading	2
	Total	**13**
Semester 2		
MTH 178	General Trigonometry *	3
COM 101	Fundamentals of Speaking	3
MTT 111	Machine Shop Theory and Practice	4
NCT 120	Introduction to 2D CAD CAM Programming and Applications	2
NCT 121	Manual Programming and NC Tool Operation	4
	Total	**16**
Semester 3		
PHY 111	General Physics I	4
ART 150	Monuments and Cultures	3
NCT 123	2D CAD CAM CNC Programming for Mills and Lathes	2
NCT 221	Advanced Manual Programming and NC Tool Operation	4
	Total	**13**
Semester 4		
ECO 110	Introduction to Economics	3
NCT 255	Probes, Macros and Conversational Programming for CNC	4
NCT 259	MasterCam 2D and 3D CAM CNC Programming for Mills	4
	Total	**11**
Semester 5		
ENG 107	Technical Writing I	3
MEC 120	3D-Printing: Machine, Process and Innovation	4
NCT 269	4 and 5 Axis Machining for the CNC Vertical Mills	4
	Total	**11**
Minimum Credits Required for the Program		**64**

* **MTH 178** requires academic math level 5 or MTH 176 minimum grade "C"; may enroll concurrently

Budget Specify program costs in the following areas, per academic year:		START-UP COSTS	ONGOING COSTS
	Faculty – Full Time Lab-Tech	$50,000	$50,000
	Training/Travel	0	0
	Materials/Resources	0	0
	Facilities/Equipment	0	0
	Other		
	TOTALS:	$50,000	$50,000

Program Description for Catalog and Web site	Students in this program will demonstrate proficiency in the operation of various types of automated design/machine tool equipment. Competencies in design, programming, and materials and machine processing will be developed. In addition, students will hone skills in the manufacturing and troubleshooting of mechanical parts and the setup and operation of advanced manufacturing systems. Students will apply problem-solving skills learned in the program to create innovative solutions for real-world manufacturing challenges in preparation for entry-level Engineering Technologist or Technician positions.
Program Information	**Accreditation/Licensure** – None **Advisors** - TBD **Advisory Committee** - TBD **Admission requirements** – College Entry Scores in Math (4), Reading (6), Writing (6) **Articulation agreements** - None **Continuing eligibility requirements** – Minimum grade of "C" in most program courses.

Assessment plan:

Program outcomes to be assessed	Assessment tool	When assessment will take place	Courses/other populations	Number students to be assessed
1. Use multiple processes, materials and types of equipment in the creation of a capstone project.	Capstone Project/Portfolio	Fall 2019	Students Completing Program	All
2. Develop systems to design, machine, assemble and create a capstone project.	Capstone Project/Portfolio	Fall 2019	Students Completing Program	All

Scoring and analysis plan:

1. Indicate how the above assessment(s) will be scored and evaluated (e.g. departmentally-developed rubric, external evaluation, other). Attach the rubric.

   Departmentally-developed rubric

2. Indicate the standard of success to be used for this assessment.

   75% of the students will attain a minimum of 70% on the capstone project

3. Indicate who will score and analyze the data.

   Department faculty

REVIEWER	PRINT NAME	SIGNATURE	DATE
Faculty Preparer:	T. Penird & B. Tew		12/11/2017
Department Chair/Area Director	Tom Penird		12/11/2017
Dean	B. Tucker & K. Good		12/11/2017
Curriculum Committee Chair	David Wooten		1/8/18
Vice President for Instruction ☐ Approved for Development ☐ Final Approval	Kimberly Hurns		1/9/18
President	Rose Bellanca		1/21/18

Approved by BOT 2/27/18