

Program Information Report

**Introduction to Manufacturing Processes (CCMETI)
Certificate of Completion**

Program Effective Term: Fall 2016

In this program, students (including dual-enrolled high school students) interested in exploring the manufacturing industry will learn fundamentals in manufacturing including blueprint reading, 3D modeling systems and output files used to control manufacturing systems. Part manufacturing processes including measurement, safety, machining at mills, lathes and saws will be introduced. In these entry-level courses, students will learn setup and operation procedures at CNC computerized mills and lathes, control of process at CNC mills and lathes to produced quality parts as well as fundamentals for writing programs.

Major/Area Requirements		(8 credits)
MEC 101	3D Modeling and Blueprint Reading	2
MTT 102	Machining for Auto Applications	2
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II	2

Minimum Credits Required for the Program: 8

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.

<p>Program Name:</p> <p>Division and Department:</p> <p>Type of Award:</p> <p>Effective Term/Year:</p> <p>Initiator:</p>	<p><u>Introduction to Manufacturing Processes</u></p> <p><u>ATP/INTD</u></p> <p> <input type="checkbox"/> AA <input type="checkbox"/> AS <input type="checkbox"/> AAS <input type="checkbox"/> Cert. <input type="checkbox"/> Adv. Cert. <input type="checkbox"/> Post-Assoc. Cert. <input checked="" type="checkbox"/> Cert. of Comp. </p> <p><u>Fall 2016</u></p> <p><u>Tom Penird</u></p>	<p>Program Code:</p> <p><u>CCMETI</u></p> <p>CIP Code:</p> <p><u>48.05-01</u></p>
<p>Program Features</p> <p>Program's purpose and its goals.</p> <p>Criteria for entry into the program, along with projected enrollment figures.</p> <p>Connection to other WCC programs, as well as accrediting agencies or professional organizations.</p> <p>Special features of the program.</p>	<p>This program will introduce students (including dual-enrolled high school students) to various forms of manufacturing. Each of the classes is within the mechatronics program.</p> <p>Students continuing on at WCC will be able to add a few additional classes to attain the next level certificate: (Machine Tool Setup and Operations certificate (CTMISO) and then Machine Tool Programming (CNC) certificate (CTMTP)</p> <p>Students entering this certificate will take:</p> <p>MEC 101 3D Modeling and Blueprint Reading 2 cr. Students will gain knowledge in reading prints, be introduced to various modeling systems such as Solid Works and Inventor, be introduced to CAM system such as Surfcam, as well as output files to manufacturing equipment used to produce parts (3D printers and or CNC machine tools).</p> <p>MTT 102 Machining for Auto Applications 2 cr Students will learn safety, fundamentals of measurement as well as operation of mills lathes and saws</p> <p>NCT 101 Intro to Computerized Machining I 2 cr Students will learn basic setup and operation of CNC mills and lathes. They will be introduced to the structure of programming.</p> <p>NCT 110 Intro to Computerized Machining II 2 cr. Students will learn advanced setup operation of CNC mills and lathes. They will learn how to manufacture parts to print specifications They will assemble simple 2D point to point code and cut their first part from a program they have written.</p> <p>This program utilizes the equipment that is being purchased using the CC-Step grant and is the next step in preparing students for advanced work in Machine Tool (CNC) programming.</p>	

Office of Curriculum & Assessment
 logged 1/29/16 by mo
 done 7/18/16 WJ

<p>Need</p> <p>Need for the program with evidence to support the stated need.</p>	<p>We have been asked to create a mini certificate to meet the technology needs for local high schools. This certificate will allow students to take foundation classes toward the mechatronics program</p> <p>Since September 1, 2015, over 200 jobs have been posted for CNC and machine tooling on MonsterJobs.com. Machinist and tool and die makers earned a median annual salary of \$41,510 in 2014 according to the Bureau of Labor Statistics.</p>	
<p>Program Outcomes/Assessment</p> <p>State the knowledge to be gained, skills to be learned, and attitudes to be developed by students in the program.</p> <p>Include assessment methods that will be used to determine the effectiveness of the program.</p>	<p><u>Outcomes</u></p> <ol style="list-style-type: none"> 1. Interpret blueprints used within manufacturing 2. Create 3D models using engineering modeling software 3. Set up and perform machining processes 4. Setup operation of band saw, vertical mill, lathe and surface grinder 	<p><u>Assessment method</u></p> <ol style="list-style-type: none"> 1. Written Test 2. Capstone Project 3. Capstone project 4. Capstone project

<p>Curriculum</p> <p>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.</p>	<p>MEC 101 3D Modeling and Blueprint Reading 2 credits</p> <p>MTT 102 Machining for Auto Applications 2 credits</p> <p>NCT 101 Intro to Computerized Machining I 2 credits</p> <p>NCT 110 Intro to Computerized Machining II 2 credits</p> <p>Total Certificate 8 credits</p>	
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<p>Budget</p> <p>Specify program costs in the following areas, per academic year:</p>	<table border="1"> <thead> <tr> <th></th> <th>START-UP COSTS</th> <th>ONGOING COSTS</th> </tr> </thead> <tbody> <tr> <td>Faculty</td> <td>\$.</td> <td>\$.</td> </tr> <tr> <td>Training/Travel</td> <td>.</td> <td>.</td> </tr> <tr> <td>Materials/Resources</td> <td>.</td> <td>.</td> </tr> <tr> <td>Facilities/Equipment</td> <td>CC – Step Grant</td> <td>.</td> </tr> <tr> <td>Other</td> <td>.</td> <td>.</td> </tr> <tr> <td>TOTALS:</td> <td>\$.</td> <td>\$.</td> </tr> </tbody> </table>			START-UP COSTS	ONGOING COSTS	Faculty	\$.	\$.	Training/Travel	.	.	Materials/Resources	.	.	Facilities/Equipment	CC – Step Grant	.	Other	.	.	TOTALS:	\$.	\$.
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<p>Program Description for Catalog and Web site</p>	<p>In this program, students (including dual-enrolled high school students) interested in exploring the manufacturing industry will learn fundamentals in manufacturing including: blueprint reading, 3D modeling systems and output files used to control manufacturing systems. Part manufacturing processes including measurement, safety, machining at mills, lathes and saws will be introduced. In these entry-level courses, students will learn setup and operation procedures at CNC computerized mills and lathes, control of process at CNC mills and lathes to produce quality parts as well as fundamentals for writing programs.</p>
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<p>Program Information</p>	<p>Accreditation/Licensure - None</p> <p>Advisors – Tom Penird</p> <p>Advisory Committee - None</p> <p>Admission requirements - None</p> <p>Articulation agreements - None</p> <p>Continuing eligibility requirements - None</p>
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Assessment plan:

Program outcomes to be assessed	Assessment tool	When assessment will take place	Courses/other populations	Number students to be assessed
Interpret blueprints used within manufacturing	Written Test	Fall 2019	All enrolled in the program who completed MEC 101	All
Create 3D models using engineering modeling software	Capstone Project	Fall 2019	All enrolled in the program who completed MEC 101	All
Setup operation of band saw, vertical mill, lathe and surface grinder.	Capstone Project	Fall 2019	All enrolled in the program who completed NCT 110	All
Set up and perform machining processes	Capstone Project	Fall 2019	All enrolled in the program who completed NCT 110	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.


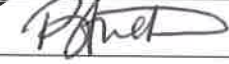

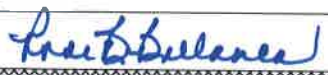
The written test will be scored using an answer key. The capstone project will be scored using a departmentally-developed rubric.

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

75% of the students will score 75% or higher.

3. Indicate who will score and analyze the data.

Departmental Faculty

REVIEWER	PRINT NAME	SIGNATURE	DATE
Department Chair/Area Director	Tom Penird		
Dean	Brandon Tucker		1/25/16
Vice President for Instruction <input type="checkbox"/> Approved for Development <input type="checkbox"/> Final Approval	Michael Nealon		2/26/16
President	Rose Bellanca		4/9/16
Board Approval			4/26/16