

Program Information Report

Advanced Machine Tool Programming (CVMTPA)

Advanced Certificate

Program Effective Term: Fall 2016

In this program, students will learn advanced CNC programming skills. Students will practice the fundamentals of Intuitive Probing Systems (IPS) and Visual Quick Code (VQC) needed to create machine tool programs. Starting with 2D and 3D CAM programming and advancing to 4th and 5th axis machining, students will learn the proper methods for creating tool paths.

Program Admission Requirements:

Completion of the Machine Tool Programming (CNC) certificate.

Major/Area Requirements		(16 credits)
MEC 120	3D-Printing: Machine, Process and Innovation	4
NCT 255	Probes, Macros and Conversational Programming for CNC	4
NCT 259	MasterCam 2D and 3D CAM CNC Programming for Mills	4
NCT 269	4 and 5 Axis Machining for the CNC Vertical Mills	4

Minimum Credits Required for the Program:

16

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>Advanced Machine Tool Programming</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 checked="" type="checkbox"/> Adv. Cert. <input type="checkbox"/> Post-Assoc. Cert. <input type="checkbox"/> Cert. of Comp. </p> <p><u>Fall 2016</u></p> <p><u>Tom Penird</u></p>	<p>Program Code:</p> <p><u>CV MTPA</u></p> <p>CIP Code:</p> <p><u>48.0501</u></p>
<p>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.</p>	<p>This program builds on the Machine Tool Setup and Operations certificate (CTMTSO) and the Machine Tool Programming (CNC) certificate (CTMTP) to train students in the advanced skill sets needed by industry. In order to enroll in the program, students must have completed both of these certificate programs.</p> <p>In this program, students will learn the knowledge and skills to write 2D and 3D CAM CNC programs. Students will create parts using a 3D printer. Advanced courses will teach 4th and 5th axis machining programs.</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>	
<p>Need Need for the program with evidence to support the stated need.</p>	<p>We have been asked to create an advanced machine tool programming certificate based on conversations with local manufacturing establishments. These companies plan to provide additional training to their current CNC machine tool operators or hire students with this training.</p> <p>WCC is collaborating with the University of Michigan Engineering program in the development of MEC 120 3D Printing which will be used in the U of M program.</p> <p>Since September 1, 2015, over 200 jobs have been posted for CNC and machine tooling on MonsterJobs.com.</p>	
<p>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.</p>	<p><u>Outcomes</u></p> <ol style="list-style-type: none"> 1. Set up and program CNC milling machines for operation on 4th and 5th axis. 2. Machine 4 and 5 axis parts using the CNC milling machines. 	<p><u>Assessment method</u></p> <ol style="list-style-type: none"> 1. Capstone project 2. Capstone project

logged 11/11/15 sj vmo Done 10/4/16MP

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.	MEC 120 3D Printing: Machine, Process and Innovation 4 credits NCT 255 Probes, Macros and Conversational Programming for CNC 4 credits NCT 259 MasterCam 2D and 3D CAM CNC Programming for Mills 4 credits NCT 269 4&5 Axis Machining for the CNC Vertical Mills 4 credits Total Certificate 16 credits																							
Budget Specify program costs in the following areas, per academic year:	<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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Program Description for Catalog and Web site	In this program, students will learn advanced CNC programming skills. Students will practice the fundamentals of Intuitive Probing Systems (IPS) and Visual Quick Code (VQC) needed to create machine tool programs. Starting with 2D and 3D CAM programming and advancing to 4 th and 5 th axis machining, students will learn the proper methods for creating tool paths.																							
Program Information	Accreditation/Licensure - None Advisors – Tom Penird Advisory Committee - None Admission requirements – Completion of the Machine Tool Programming Certificate Articulation agreements - None Continuing eligibility requirements - None																							

Assessment plan:

Program outcomes to be assessed	Assessment tool	When assessment will take place	Courses/other populations	Number students to be assessed
Setup and program CNC milling machines for operation on 4th and 5th axis.	Capstone Project	Fall 2019	All Graduates	All
Machine 4 and 5 axis parts using the CNC milling machines.	Capstone Project	Fall 2019	All Graduates	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.

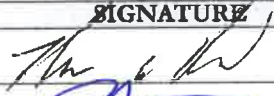

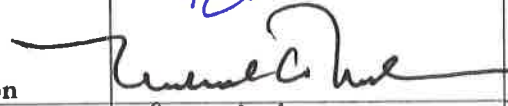
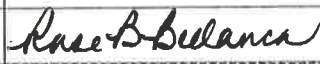
The Capstone Project will be scored using a departmentally-developed rubric.

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		10/22/2015
Dean	Brandon Tucker		11/10/15
Vice President for Instruction <input type="checkbox"/> Approved for Development <input type="checkbox"/> Final Approval	Michael Nealon		4/25/15
President	Rose Bellanca		1/11/16
Board Approval			2/25/16