**CURRICULUM COMMITTEE MEETING**

**September 20, 2019**

**Present:** Angela Buck, Tammy Nelson, Dave Raymond, Dwight Clayton, Michelle Collins, Eileen McDougal, Gail Roy, Betsy Harris, Wendy Bradstreet, Pamela Buck, Robert Carlson, Dean Duplessis, Michael Dunlop and Nancy Gagnon

**Absent:** JR Kierstead, Shannon Cook, Andrew Gagnon, Bob Collins, Trena Soucy, and Bill Egeler

The following curriculum changes were approved by the NMCC Curriculum Committee at the **September 20, 2019** meeting.

**TRADE & TECHNICAL**

**New Program**

**Effective: Fall 2020**

**CNC Machining One Year (two semester) Certificate Program – 36 credit hours – see attached**

\*(A motion to accept was made by Dwight Clayton and seconded by Wendy Bradstreet) Motion was carried

**New Course: DRT1xx Mechanical Print Reading and Drafting** 1 Lecture/2 Lab Hours 2 Credits

**Effective: Fall 2020**

**Graded Course:** Yes  **Major Course Designation:**  Yes

**Catalog Description:** Mechanical Print Reading and Drafting is an introductory course in reading, understanding, and preparing basic mechanical drawings used in the machine trades industry. Students will learn the proper use of software, drafting and design techniques and the graphic presentation of mechanical components. Students will be able to understand dimensioning, orthographic projection and isometric drawing. Students will use computer software to develop manufacturing drawings for mechanical parts.

**New Course: PMT1xx CNC Mill and Lathe Operations**  1 Lecture/4 Lab Hours 4 Credits

**Effective: Fall 2020**

**Graded Course:** Yes **Major Course Designation:** Yes

**Course Description:** CNC Mill and Lathe Operations is an introductory course in operating Computer Numerical Control (CNC) mills and lathes, to produce a variety of machined components in work-like conditions. This course will focus on maintaining quality and safety standards; keeping records; maintaining equipment and supplies. Program training includes basic CNC operator skills, inspection, and process adjustments.

**New Course: PMT1xx CNC Mill Programming** 2 Lecture Hours 2 Credits

**Effective: Fall 2020**

**Graded Course:** Yes **Major Course Designation**: Yes

**Course Description:** CNC Mill Programming introduces the student to basic CNC Mill programming. Students will write simple programs to perform facing, contouring and hole-making operations for typical CNC Vertical Machining Centers. Emphasis is placed on developing an understanding of typical G and M Codes used in modern CNC controls. Throughout the course, students will be required to perform calculations for speeds and feeds for various tooling and machining applications.

**New Course: PMT1xx CNC Lathe Programming** 2 Lecture Hours 2 Credits

**Effective: Fall 2020**

**Graded Course:** Yes  **Major Course Designation:** Yes

**Course Description:** CNC Lathe Programming introduces the student to basic CNC Turning Center programming. Students will write simple programs to perform facing, turning, boring, threading, and cut-off operations for typical CNC Turning Centers. Emphasis is placed on developing an understanding of typical G and M codes used in modern CNC controls. Throughout the course, students will be required to perform calculations for speeds and feeds for various tooling and machining applications.

**New Course: PMT1xx CNC Mill Setup** 1 Lecture/3Lab Hours 2 Credits

**Effective: Fall 2020**

**Graded Course:** Yes  **Major Course Designation:** Yes

**Course Description:** CNC Mill Setup is an introductory course in the setup 3 axis CNC mills through practical application. Every aspect of machine setup is covered from selecting the starting stock to performing a first article inspection on the completed part. Students will load tools, setup work-holding fixtures, set work and tool offsets. Students will verify their setup is correct before machining by running a graphic simulation and above-part verification. They will cut the first piece and inspect their own work, adjusting offsets as necessary to produce a part within customer specification.

**New Course: PMT1xx CNC Lathe Setup** 1 Lecture/3 Lab Hours 2 Credits

**Effective: Fall 2020**

**Graded Course:**  Yes **Major Course Designation:** Yes

**Course Description:** CNC Lathe Setup is an introductory course in the setup 2 axis CNC lathes through practical application. Every aspect of machine setup is covered from selecting the starting stock to performing a first article inspection on the completed part. Students will load tools, setup work-holding fixtures, set work and tool offsets. Students will verify their setup is correct before machining by running a graphic simulation and above part verification. They will cut the first piece and inspect their own work, adjusting offsets as necessary to produce a part within customer specification.

**New Course: PMT1xx Inspection**  1 Lecture/3 Lab Hours 2 Credits

**Effective: Fall 2020**

**Graded Course:** Yes **Major Course Designation:** Yes

**Course Description:** The Inspection course will provide the student with training in geometric dimensioning & tolerancing (GD&T) interpretation, and inspection, per the ASME Y14.5-2009 standard. This course also reinforces dimensional metrology practices, and introduces new methods such as Coordinate Measuring Machine (CMM), and FARO Arm inspection. With the use of precise inspection equipment, students will verify part quality and document results for quality control. This course provides the student with the complete fundamentals of geometric dimensioning and tolerancing (GD&T) concepts as adopted by ANSI and published by ASME. It buildings on prior knowledge of blueprints and machined parts and applies that knowledge to “geometric tolerance” drawings. Students will learn the terminology and definitions of geometric dimensioning and tolerancing and how to apply its concepts.

**New Course: PMT1xx CNC Mill and Lathe Programming, Setup & Operation** 1 Lecture/9 Lab Hours 4 Credits

**Effective: Fall 2020**

**Graded Course:** Yes **Major Course Designation:** Yes

**Course Description:** CNC Mill and Lathe Programming, Setup & Operation is an intermediate course in operating Computer Numerical Control (CNC) mills and lathes, to produce a variety of machined components in work-like conditions. This intermediate course will future develop skills required to program, setup, and operate CNC mills and lathes. This course will utilize “live” work projects to provide student exposure to real-world machining applications, and introduce multi-axis applications such as thread milling, 4th-axis indexing, 5th-axis indexing, external threading, internal threading, and boring.

**New Course: PMT1xx Basic CAM for Milling** 1 Lecture/3 Lab Hours 2 Credits

**Effective: Fall 2020**

**Graded Course:** Yes **Major Course Designation:** Yes

**Course Description:**  Basic CAM for Milling is an entry level course in CNC program and toolpath generation for milling machine applications using CAM software. By utilizing a graphical software package to generate part programs for a CNC mill, students will learn how to create toolpath using solid models. The emphasis of the course is placed on learning to use the CAM software to select tools, manipulate part geometry, and concert screen graphics into a CNC program. This course will focus on basic 2-1/2 axis milling applications.

**New Course: PMT1xx Basic CAM for Turning** 1 Lecture/3 Lab Hours 2 Credits

**Effective: Fall 2020**

**Graded Course:** Yes **Major Course Designation:** Yes

**Course Description:** Basic CAM for Turning is an entry level course in CNC program and toolpath generation for turning center applications using CAM software. By utilizing and graphical software package to generate part programs for a CNC mill, students will learn how to create toolpath using solid models. The emphasis of the course is placed on learning to use the CAM software to select tools, manipulate part geometry, and convert screen graphics into a CNC program. This course will focus on basic 2-axis turning applications.

**New Course: PMT2xx Auxiliary Devices for CNC Mills** 1 Lecture/6 Lab Hours 3 Credits

**Effective: Fall 2020**

**Graded Course:** Yes **Major Course Designation:** Yes

**Course Description:** Auxiliary Devices for CNC Mills is an intermediate course with a focus on setting up 4th-axis indexers, 5th-axis indexers, spindle probes and table probes.

**Prerequisites:** All PMT1xx courses from first semester or instructor’s permission

**New Course: PMT2xx Auxiliary Devices for CNC Lathe** 1 Lecture/3 Lab Hours 2 Credits

**Effective: Fall 2020**

**Graded Course:** Yes **Major Course Designation:** Yes

**Course Description:** Auxiliary Devices for CNC Lathe is an intermediate course with a focus on setting up a probe arm, tailstock, bar puller, and parts-catcher.

**Prerequisites:** All PMT1xx courses from first semester or instructor’s permission

\*(A motion to accept all new courses was made by David Raymond and seconded by Eileen McDougal) Motion was carried