




Lillian M. Lowery, Ed.D.
State Superintendent of Schools

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TO: Local Directors of Career and Technology Education (CTE)

FROM: Katharine M. Oliver 
Assistant State Superintendent
Career and College Readiness

DATE: June 28, 2013

SUBJECT: Career and Technology Education (CTE) Program of Study for Manufacturing Engineering Technology

I am pleased to share with you the recently approved CTE Program of Study for the Manufacturing Engineering Technologies (MET) pathway in the Manufacturing, Engineering, and Technology Career Cluster. I am also pleased to announce that the Maryland State Department of Education (MSDE) has entered into two articulation agreements for this program.

Manufacturing Engineering Technology Program of Study:

The MET Program prepares students for successful careers in Engineering Technology and Manufacturing. The program includes the following course titles, which will replace older course titles listed in the Maryland State Department of Education Standard Course Codes System:

- *Principles of Competitive Manufacturing (2 credits); and*
- *Manual Manufacturing Operations (2 credits); or*
- *Computer Numerically Controlled (CNC) Programming and Operations (2 credits); or*
- *Manual Machining/CNC Programming and Operations (2 credits).*

The first course, *Principles of Competitive Manufacturing*, prepares students to take exams for the required National Institute of Metalworking Skills (NIMS) credentialing areas: *Measurement, Materials and Safety* as well as *Job Planning, Benchwork, and Layout*. School systems will then identify two additional credentialing areas in the *Manual Machining Operations Pathway*, the *CNC Programming and Operations Pathway* or one from each. All certification assessments are based on the NIMS standards, and students are expected to take both the performance and theory exams. The NIMS credentials are awarded on satisfactory completion of both exams.

School systems that adopt the MET program of study will be given access to the ToolingU Learning Management System (LMS) free of charge for both students and teachers. The ToolingU LMS can be used by teachers to differentiate instruction and help students prepare for the NIMS certification areas. Student and teacher registration for ToolingU will be confirmed with the school system prior to the start of the 2013–2014 school year.

Articulation Agreements:

To help students prepare for both college and careers in this area, MSDE has entered into two articulation agreements with the College of Southern Maryland and the Community College of Baltimore County

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This is a wonderful opportunity for students in the MET program to gain advanced standing in challenging programs in higher education. The chart below shows the number of credits that may be earned at each postsecondary institution.

College of Southern Maryland (CSM) - Engineering Technology: Manufacturing, AAS

Program of Study Course Title	CSM Course Code	CSM Course Title	# of Credits
Principles of Competitive Manufacturing - <i>Measurement, Materials and Safety</i>	MFT 1010	Manufacturing Technology I	3 Credits
Principles of Competitive Manufacturing - <i>Job Planning, Benchwork and Layout</i>	MFT 1120	CAD/CAM: Drawing Designs in Manufacturing	3 Credits
CNC Programming and Operations (Includes one or more of the following) <ul style="list-style-type: none"> • <i>CNC Turning Operations</i> • <i>CNC Turning: Programming Set-up & Operations,</i> • <i>CNC Milling Operations, and</i> • <i>CNC Milling: Programming Set-up & Operations</i> 	MFT 1160	Computer Numerical Controls	3 Credits

Community College of Baltimore County (CCBC) - Manual Machinist Certificate

Program of Study Course Title:	CCBC Course Code:	CCBC Course Title:	# of Credits
Principles of Competitive Manufacturing – <i>Measurement, Materials & Safety</i>	CAMM 111	Manufacturing Processes I	4 Credits
Principles of Competitive Manufacturing – <i>Job Planning, Benchwork & Layout</i>	CAMM 112	Manufacturing Processes II	4 Credits
Machining Operations – <i>Manual Milling</i>	CAMM 161	Manual Mill Operations I	3 Credits
Machining Operations – <i>Turning Operations Between Centers or Turning with Chucking</i>	CAMM 152	Manual Lathe Operations	3 Credits
CNC Programming and Operations – <i>CNC Turning Operations and CNC Turning: Programming and Operations</i>	CAMM 253	CNC Lathe Operations	3 Credits
CNC Programming and Operations – <i>CNC Milling Operations and CNC Milling: Programming and Operations</i>	CAMM 252	CNC Milling Operations	3 Credits

Copies of the articulation agreements are attached. Please review them and note the responsibilities of all involved parties, including the school system, the student, the Maryland State Department of Education, and the postsecondary institutions.

MET Program of Study
June 28, 2013
Page 3

Questions about the articulation agreements and/or the CTE programs of study may be directed to the MSDE Manufacturing, Engineering and Technology Cluster Team. Please contact Lynne Gilli at 410-767-0518 or via email at lgilli@msde.state.md.us, Luke Rhine at 410-767-0177 or via email at lrhine@msde.state.md.us or Marquita Friday at 410-767-0183 or via email at mfriday@msde.state.md.us. Thank you for your continued support for high quality CTE programs of study.

Attachments:

- MET CTE Program of Study Proposal
- College of Southern Maryland Articulation Agreement
- Community College of Baltimore County Articulation Agreement

c: Robert Gates
William Werneke
CTE Staff



Lillian M. Lowery, Ed.D.
State Superintendent of Schools

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**ARTICULATION AGREEMENT
COMMUNITY COLLEGE OF BALTIMORE COUNTY
AND THE
MARYLAND STATE DEPARTMENT OF EDUCATION
ON BEHALF OF LOCAL SCHOOL SYSTEMS***

August 2013 – August 2015

Maryland State Department of Education (MSDE) and the Community College of Baltimore County (CCBC) enter into this articulation agreement in order to facilitate the enrollment of students from the Maryland Manufacturing Engineering Technology (MET) Career and Technology Education (CTE) Program of Study into the Community College of Baltimore County.

Subject to terms of this agreement, a student who successfully completes either the Machining Operations Pathway, CNC Programming and Operations Pathway, or the Machining / CNC Programming and Operations Pathway in the Manufacturing Engineering and Technology Program of Study which includes: *Principles of Competitive Manufacturing (2 credits)* as well as *Machining Operations (2 credits)* or *CNC Programming and Operations (2 credits)* will be granted advanced credit at the Community College of Baltimore County for the following courses:

Program of Study Course Title:	CCBC Course Code:	CCBC Course Title:	Number of Credits:
Principles of Competitive Manufacturing – <i>Measurement, Materials & Safety</i>	CAMM 111	Manufacturing Processes I	4 Credits
Principles of Competitive Manufacturing – <i>Job Planning, Benchwork & Layout</i>	CAMM 112	Manufacturing Processes II	4 Credits
Machining Operations – <i>Manual Milling</i>	CAMM 161	Manual Mill Operations I	3 Credits
Machining Operations – <i>Turning Operations Between Centers or Turning with Chucking</i>	CAMM 152	Manual Lathe Operations	3 Credits
CNC Programming and Operations – <i>CNC Turning Operations and CNC Turning: Programming and Operations</i>	CAMM 253	CNC Lathe Operations	3 Credits

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CNC Programming and Operations – <i>CNC Milling Operations</i> and <i>CNC Milling: Programming and Operations</i>	CAMM 252	CNC Milling Operations	3 Credits
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The Community College of Baltimore County accepts Advanced Placement examination scores of three or better to fulfill General Education requirements.

The terms of this agreement are as follows:

Maryland Local School Systems will:

- Offer the Maryland MET CTE program of study as stated in the program proposal;
- Communicate details of this agreement to principals, parents, teaching staff, guidance personnel and students; and
- Identify an MET contact person at the local school system’s central office who will communicate with CCBC regarding this agreement.

Students will:

- Complete the entire MET Machining Operations Pathway, CNC Programming and Operations Pathway or the Machining / CNC Programming and Operations Pathway in the Maryland MET CTE program of study by taking all required courses;
- Take and pass the National Institute of Metalworking Skills (NIMS) exam for each certification area as appropriate;
- Earn a B grade in all Maryland MET CTE program of study courses, and maintain an overall B grade average;
- Receive a high school diploma;
- Meet the admission dates and procedures that apply to all new students at the Community College of Baltimore County;
- Provide a letter of recommendation from his/her lead MET Program instructor;
- Apply within five years of high school graduation to be accepted; and
- Provide a copy of their official NIMS certification.

The Community College of Baltimore County will:

- Communicate details of this agreement to admissions staff, chairs of academic departments and faculty;
- Award the appropriate number of academic and technical credits upon completion of the student’s requirement as specified in this agreement upon appropriate review of the student’s transcript and standing at the college or university (no more than twelve credits may be earned);
- Ensure credits are recorded on the student’s transcript; and
- Provide MSDE with the number of students matriculating from the Maryland CTE Program of Study as well as the number of credits awarded to the students.

Maryland State Department of Education will:

- Communicate details of this agreement with local school systems;
- Provide CCBC with a list of approved Maryland MET CTE Programs of Study; and
- Update the approved list biannually.

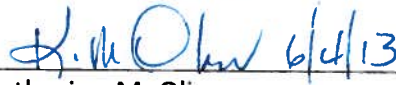
The Community College of Baltimore County (CCBC) will arrange meetings with students on the Maryland MET Program school campuses to provide information and assistance in matriculating at CCBC. The Admissions Office of CCBC will supply MSDE with promotional literature that will be used to assist students with the transfer process.

**For the Community College of
Baltimore County:**



Doug Kendzierski,
Campus Director

**For Maryland State Department of
Education:**



Katharine M. Oliver,
Assistant State Superintendent
Division of Career and College Readiness



Michael Netzer,
Campus Dean



Mark McColloch,
Chief Academic Officer