

# COLLEGEWIDE COURSE OUTLINE OF RECORD

## MTTC 107, CNC SETUP AND OPERATIONS I

COURSE TITLE: CNC Setup and Operations I  
COURSE NUMBER: MTTC 107  
PREREQUISITE: MTTC 101 Introduction to Machining  
COREQUISITE: MTTC 101 Introduction to Machining  
SCHOOL: Technology  
PROGRAM: Machine Tool Technology  
CREDIT HOURS: 3  
CONTACT HOURS: Lecture: 2      Lab: 2  
DATE OF LAST REVISION: Fall, 2012  
EFFECTIVE DATE OF THIS REVISION: Fall, 2013

CATALOG DESCRIPTION: Introduces and instructs the student in all aspects of Computer Numeric Control (CNC) machine operation and setup. The student will set up and operate CNC mills and lathes utilizing set-up, production, in-process inspection, and preventive maintenance methods similar to what the student may experience in the present day work environment. This course prepares students to take the NIMS Level I CNC operations certification.

MAJOR COURSE LEARNING OBJECTIVES: Upon successful completion of this course the student will be expected to:

1. Demonstrate knowledge of basic OSHA requirements, general shop safety, and MSDS information. (i)
2. Create and interpret documentation for safety, set-up, and quality control purposes. (b)
3. Utilize standard shop documents such as Job Routers, Job Process Sheets, Inspection Plans, etc. (b)
4. Effectively interpret part prints or technical drawings, including GD&T, and use the information to select proper gauging and measurement tools. (b)
5. Demonstrates knowledge of primary mill and lathe components. (a)
6. Correctly perform preventative maintenance checks on the CNC lathe and mill. (i)
7. Demonstrate correct response to CNC malfunctions and taking appropriate steps to recover the machine. (i)
8. Interpret CNC programs to determine units of measure, positioning system, tools, spindle speeds, feed rates, canned cycles, coolant use, and axis movements. (b)

Note: Letters following objective correspond to ATMAE Outcomes.

COURSE CONTENT: Topical areas of study include –

Introduction to CNC	Safety checklist
Cartesian-Rectangular-Polar Coordinates	Variable and Attribute Gauging
Absolute-Incremental Positioning	Machine-Program-Part Zeros
Basic G & M Code Functions	Controller Functions
MSDS Sheets	Lockout/Tagout Procedures
Tool length compensation	Preventative Maintenance

Creating process plans and tooling routings  
Calculate proper feeds and speeds  
Mill and Lathe Indexable tooling applications

Selecting appropriate tooling  
Follow safety checklist

#### GRADING POLICY:

It is required that you complete all coursework and pass the required NIMS Certification assessments for this course to achieve a grade higher than a “C”. Failure to take the NIMS Certification assessment tests will result in a failing grade for the class. Please review the grading matrix below for clarification.

Coursework	Certifications	Grade
A, B, C, D, F	Pass	A, B, C, D, F
A, B, C, D, F	Fail	C, D, F
A, B, C, D, F	No Take	F

#### HOW TO ACCESS THE IVY TECH COMMUNITY COLLEGE LIBRARY:

The Ivy Tech Library is available to students’ on- and off-campus, offering full text journals and books and other resources essential for course assignments. Go to <http://www.ivytech.edu/library/> and choose the link for your campus.

#### ACADEMIC HONESTY STATEMENT:

The College is committed to academic integrity in all its practices. The faculty value intellectual integrity and a high standard of academic conduct. Activities that violate academic integrity undermine the quality and diminish the value of educational achievement.

Cheating on papers, tests or other academic works is a violation of College rules. No student shall engage in behavior that, in the judgment of the instructor of the class, may be construed as cheating. This may include, but is not limited to, plagiarism or other forms of academic dishonesty such as the acquisition without permission of tests or other academic materials and/or distribution of these materials and other academic work. This includes students who aid and abet as well as those who attempt such behavior.

#### COPYRIGHT STATEMENT:

Students shall adhere to the laws governing the use of copyrighted materials. They must insure that their activities comply with fair use and in no way infringe on the copyright or other proprietary rights of others and that the materials used and developed at Ivy Tech Community College contain nothing unlawful, unethical, or libelous and do not constitute any violation of any right of privacy.

#### ADA STATEMENT:

Ivy Tech Community College seeks to provide reasonable accommodations for qualified individuals with documented disabilities. If you need an accommodation because of a documented disability, please contact the Office of Disability Support Services.

If you will require assistance during an emergency evacuation, notify your instructor immediately. Look for evacuation procedures posted in your classroom.

## SYLLABUS FOR MTTC 107, CNC SETUP AND OPERATIONS I

The instructor will provide students with a course syllabus on the first scheduled class meeting. The syllabus should communicate clear and concise information to help the student understand the scope of the course and expectation for successful completion. The following information will appear on the syllabus and be identical to information on the Course Outline of Record (COR):

### Required Syllabus Information from (COR)

- Course title
- Course prefix and number
- Prerequisite(s)
- Corequisite(s)
- Program
- Division
- Credit hours
- Contact hours
- Catalog description
- Major course learning objectives
- Course content
- Academic honesty statement
- ADA statement

### Additional Required Syllabus Information

The syllabus must also contain the following additional information. The instructor may determine the content of this information.

- Instructor
- Course section number
- Additional course learning objectives (if required)
- Required text, or other instructional materials
- Required consumable materials and equipment supplied by student
- Instructor phone number
- Instructor e-mail address
- Instructor office location and hours
- Method(s) of instructional delivery
- Method(s) of evaluation
- Grading scale
- Make-up policy
- Attendance policy
- Activities schedule, including calendar of topics, assignment, test, etc.
- Last date to drop course without grade
- The name and location of the Disability Service Coordinator

- Right of revision statement

### Optional Syllabus Information

Faculty are encouraged to provide additional information that will help the student understand in more detail how the class will be conducted.

- Extra credit work, if applicable
- Class/lab relationship
- References or reading that are optional but recommended
- Format for papers, projects, or other assignments
- Computer room/lab rules if applicable
- Withdrawal process and responsibility
- Other