

# Helping Fill the Skills Gap

## NTMA's MISSION

To help members of the U.S. precision custom manufacturing industry achieve profitable growth and business success in a global economy through advocacy, advice, education, networking, information, programs, and services.

## OUR FOCUS ON EDUCATION

In partnership with industry experts, NTMA has developed NTMA-U, a fully online program of modules developed for precision machining and related occupations.

### Key features include:

- Available anytime, anywhere with Internet connection
- Narrated modules with practice problems and assessments
- Content covers NIMS competencies, paired with resources
- College credit-earning potential with the University of Akron
- Federal Bureau of Apprenticeship Training approved

Help fill the manufacturing pipeline by investing in the right training, purpose-built for the precision machining industry.

## MECHANICAL APTITUDE TEST

An important first step in hiring, training or promoting individuals is to assess current capabilities and knowledge. NTMA's online mechanical aptitude test covers:

- Mechanical and Spatial Relations
- Mechanical Reasoning
- Applied Mathematics
- Theoretical Reasoning

This test is also helpful in determining which module to start an experienced student in.

## SAFETY TRAINING

Safety is everyone's responsibility, and NTMA has developed a stand-alone online course that lays a solid foundation. Certificates of completion for this module can be used to document safety training for OSHA files.

### NTMA-U 0-0960- Shop Safety

This course covers basic shop safety practices, drill press safety, machine guarding, Lock-out Tag-out, MSDS-SDS, hazard communication standards, OSHA fact sheets, safe lifting, basic first aid and blood borne pathogens.

## NTMA-U CORE CONTENT

Modules are grouped into progressive series, but students can take any module, at any time, in any order. Each module can be purchased individually, or in groups of three.

### SERIES 1

#### NTMA-U 1: 1100-1A - Basic Blueprint

This course teaches proper terminology, symbols, and guidelines for reading, sketching, and interpreting blueprints in a manufacturing environment using geometric equations and symbols. It includes dimensioning techniques, tolerancing, drafting lines using geometric equations, symbols, line types, orthographic views, isometric views, and offset, auxiliary and broken sections.

#### NTMA-U 1: 1120-1A - Basic Math

This course teaches shop math concepts such as fractions, fraction to decimal conversions, and calculating angles.



**NTMA U**

#### NTMA-U 1: 1200-1A - Precision Machining Technology

This course introduces metal cutting operations – basic metallurgy, types of machines and their safe operation and setup, terminology, quality measurement devices and methods, cutting tools, layouts, print reading, hand tools, and cutting tools.

### SERIES 2

#### NTMA-U 2: 1200-2A - Precision Machine Technology 2

This course focuses on metal removal processes and proper setup and use of workholding devices on the drill press, engine lathe, milling machine, and surface grinder, with a continued emphasis on shop safety and quality measurement devices. It also reviews the use of the coordinate measuring machine (CMM), the optical comparator, and the electro-discharge machine (EDM).

#### NTMA-U 2: 1100-2 - Intermediate Blueprint Module 2

This course improves efficiency in blueprint reading. It covers dimensioning, fraction to decimal conversion, drafting lines using geometric equations, line types, orthographic and isometric views, symbols, and offset, auxiliary, and broken sections.

#### NTMA-U 2: 1120-2A - Applied Mathematics

This course emphasizes the math skills and concepts required for interpreting drawings and applying them to manufacturing processes.

### SERIES 3

#### NTMA-U 3: 2300-3 - CNC With Simulator

This course introduces tools and technology for computer numeric control (CNC) machining, G&M Codes, and principles and applications of the Cartesian Coordinate System. It reviews the use of metal cutting tools with CNC programming, and the process for creating CNC programs, including safety precautions, proper machine set up and operational skills, and controlling part sizes with wear offsets.

#### NTMA-U 3: 2500-3 - Intermediate Applied Math

It explains the proper use of the Pythagorean theory and trigonometric function, right triangle problems, and the use of sine bars and gage blocks.

"NTMA-U is a program that benefits both the employer and employee for an industry that requires both skill and knowledge. It is a must to provide proper training. NTMA-U allows employers to plan for future workforce, while the employee can gain control of his/her career. The program is flexible and full use provides a solid platform of knowledge in machining. Employers will create and retain more skilled employees and employees will have skills and experience rather than job history. The company that creates skilled and engaged employees will be the company that stays competitive. This is what NTMA-U has done for me. The knowledge that I received from actively participating in NTMA-U has provided me with a career and continuous growth professionally."

~ Sean Osborne, Wagner Machine

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NTMA U

## NTMA-U 3: 1500-3 - Intermediate Blue Print Reading with Basic Essentials for GDT

This course introduces symbols and concepts of geometric dimensioning and tolerancing for engineering drawings.

### SERIES 4

#### NTMA-U 4: 2720-4 - Metallurgy

This course introduces the nature, properties, and characteristics of materials, with a focus on metals. Chemical reactions, thermodynamics, and processing of iron and steel are covered, as well as how metals are alloyed and formed to achieve desired mechanical properties.

#### NTMA-U 4: 2800-4 - Advanced Math

This course includes more complex applications, such as the law of sines and the law of cosines.

#### NTMA-U 4: 2900-4 - Quality Control / SPC / Inspection

This course introduces quality control practices for machining. It teaches proper inspection techniques, using the appropriate tools. This course also touches on the applications of statistics in process and quality control.

### SERIES 5

#### NTMA-U 5: 2420-5 - Manufacturing Technology

This course focuses on the machining of various metals, including differing speeds and feed rates, as well as the use of different cutting tools.

#### NTMA-U 5: 2500-5 - GDT

This course focuses on how to interpret and apply the concepts of geometric dimensioning and tolerancing to engineering drawings. Topics include fundamentals of symbols, terms, positional tolerance applications, data frames, and conversion tables.

#### NTMA-U 5: 2800-5 - Advanced Applied Math

This course builds on previous courses and teaches applied mathematics needed to solve for unknown surfaces found on advanced blueprints.

### SERIES 6

#### NTMA-U 6: 2420 - 6 Jig and Fixture

This course covers the designs of jigs, fixtures and dies. It includes the use and application of bushings, locating devices and work holding devices used in jigs, fixtures and dies.

#### NTMA-U 6: 2410-6 - Moldmaking

This course covers the principles of injection molding, the equipment required, process set-up, and methods.

#### NTMA-U 6: 2800-6 - Advanced Math

This course goes into more depth on applied mathematics required to solve for unknown surfaces found on more advanced blueprints.

#### NTMA-U 6: 1300-6 - Diemaking

This course covers metal stamping die construction, materials, components, processes, and types related to automated manufacturing technology.

## ADVANCED MODULES

### NTMA-U 0-4000-7 Dimensional Metrology

This course teaches technical manufacturing terms and principles, the proper use of common hand-held measuring tools, the applications for GD&T, and probability and statistics.

### NTMA-U 0-0950 -Advanced Diemaking Series 2

This course covers die to press relationships, automatic feeds, inverted dies, compound dies, and progressive dies using the blank through process, and chop-off and parting principles. It also covers secondary operations, drawing operations, and computations.

"Basic blue print reading was my favorite, it really got me to understand what I was looking at every single day and understand the icons and tolerances and different measurements and to be able to use the print to make a better program. The basic math was a good refresher to help me get back into the trig and finding the unknowns, and using those formulas... As a company we do push for our newer employees to use these courses.

~ Ryan Flohr, Flohr Machine

## PRICING

Please contact us to learn more about pricing, membership, and textbooks. We do offer free online 30 minute demos!

If you plan to enroll more than 10 students per year, please contact us to learn about Portals—a personalized learning site with NTMA content!



## CONTACT US

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