



How important is local industry to your CNC program?

While there are schools that serve a national employer base, most technical schools (including community colleges that have manufacturing courses) must cater first and foremost to local industry. For these schools, satisfying local industry will be of paramount importance. It's pretty simple. Those schools that serve the needs of local industry will thrive. Those that don't will eventually fail.

How well you're satisfying your local industry is pretty easy to determine. Schools that satisfy local industry will have excellent placement ratios for graduating students (probably over 90%). There will be a waiting list for companies anxious to hire the people the school graduates. This makes it relatively easy to attract new students since students will be secure in the knowledge that they'll find a job after graduation. Companies will be sending their employees to the school's courses – or better yet – they'll contract the school to conduct courses on their own premises.

Admittedly, there are other factors that contribute to the success of any manufacturing-related curriculum – not the least of which is the amount and status of companies in your school's area. Unfortunately, some instructors can count on one hand the number of major manufacturing companies their school serves. And, of course, the local business climate will have a lot to do with whether or not companies are interested in providing training to their employees – or whether they will be hiring when your students graduate.

Instructor Notes is published quarterly by CNC Concepts, Inc. and distributed free of charge to instructors that teach CNC courses. Simply contact us to begin your subscription!

PowerPoint Tips

Editor's note

Microsoft PowerPoint is fast becoming the software product of choice for professional presenters. Each issue of *Instructor Notes* will include PowerPoint Tips to help you improve your slide show development skills.

Drawing Tools in PowerPoint

While it's no CorelDraw, PowerPoint offers many helpful drawing tools!

I've always found the drawing tools in PowerPoint to be more than adequate. Coupled with PowerPoint's ability to import just about any graphic file format, PowerPoint should never leave you wanting for graphics in your presentations.

Object to draw?

In the View menu, select Toolbars. Be sure the Drawing tool bar is checked. If it is, the drawing tool bar will be shown (mine's at the bottom of the display screen). The five most basic drawing tools include line, arrow, box, and oval (circle), and text box. Most of the basic shapes you need to place in a slide can be done with these five tools.

The Drawing tool bar allows you to insert WordArt, which includes a gallery of special text graphics. It also lets you select the Diagram / Organizational Chart tool, the Insert Clip Art tool, and the Insert Picture Tool.

Finally, the AutoShapes tool lets you insert special lines (line, arrow, double ended arrow, polygon, and squiggly line), a variety of basic shapes (cylinder, smiley face, cube, among many others), a variety of stars and banners, connectors, block arrows, flowchart characters, call-outs, and action buttons.

The snap to grid function

As you can see, there are many drawing tools to help you draw objects from scratch. If the drawing you're

working on requires several objects, it often helps to turn on the snap to grid function. This will allow you to keep all of the objects in line with one another.

Modifying objects

Once objects are drawn, the Draw tool bar also lets you easily modify them. Modifiers include Fill color, line color, text color, line thickness, line type (dotted, solid, etc.), arrow head types, and shadowing. You'll have full control of any object you draw.

In addition, by clicking the word Draw on the Draw tool bar, you can also group and ungroup objects, select order (bring to front, send to back), set grid and guides (dotted lines to help you keep objects aligned), Nudge (move an object slightly), align or distribute objects, rotate, flip (vertically or horizontally), and edit points in polygons.

All of these features, combined with normal editing features such as copy, paste, and duplicate provide PowerPoint with a very impressive set of drawing tools. And don't forget, you can import just about any kind of graphic file (though you may not be able to edit imported graphic files in PowerPoint).

What are you drawing?

You can add a little spice to just about any presentation by drawing in some appropriate objects. But non-artists (like me) are commonly intimidated

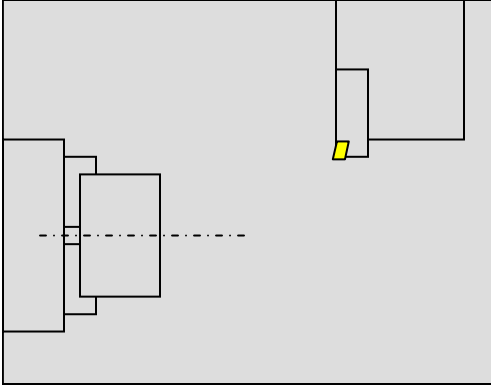
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Teaching with our curriculums?

Recent developments...

- **Two new Operator's Guides!**
Since many local companies may want you to provide operator training (not programming), we've introduced two new operator's guides. We've even developed PowerPoint slideshows to accompany them and act as your visuals. For more information, visit our website (www.cncci.com) or call us.

PowerPoint Notes... (cont. from pg 1)
whenever they must draw something. Fight this intimidation. It's quite amazing what you can do with some very basic drawing techniques. It borders on magic!
Here's an example using simple box tools.



As you can see, we've drawn the chuck, workpiece and turret of a turning center. This has been done with the simple box tool. The only exception is the tool insert that has been drawn with an AutoShape tool. We've used a modifier to for the centerline of the workpiece. Snap to grid was turned on for the entire drawing to make it easy to line up each of the boxes. This drawing took about three minutes to create. Also, note that the workpiece (again just another box) has been modified using "Bring to Front" so that it appears above the chuck jaws. The same is true for the centerline, so it appears above the workpiece.

With a little practice, you can draw just about any kind of object. In fact, almost all drawings shown in our instructors curriculums and CD-rom courses have been created in this fashion.

End

Publicize your school

We maintain a **schools forum** on our website (www.cncci.com). It's free – and it's a great way to let potential students know about your CNC-related courses!

Simply fill in an online form that asks for some general information about your CNC courses, lab equipment, and degree information. About half the schools currently listed are using our CNC curriculums to help them teach CNC courses!

Local industry... (cont. from pg 1)

Who's in your area?

Technical instructors should be very well versed with the manufacturing companies in the region served by their school. Products being produced, processes being performed, and location of customers served by local companies are among the general things you should know.

You should also get to know the people in key positions. Who's the manager of Human Resources? Who manages the Manufacturing Engineering department? Who is the plant manager? While you may be hesitant to contact companies to meet and get to know these people, you may be surprised at how receptive they are once you work up the nerve to contact them.

Remember, most manufacturing companies are struggling to get hire and keep qualified people. They've probably attempted their own in-plant training programs with limited success. When an instructor from the local technical college calls to see if the school can help, most manufacturing people will jump at the opportunity to expand their training resources.

What skills are required?

Progressive instructors will strive to determine what their students will be doing once they graduate and begin working in a local company. Only with this knowledge can an instructor prepare an appropriate curriculum. As you talk to key people in local manufacturing companies, find out what they require. Additionally, find out what problems they are currently having when it comes to the proficiency of their work force.

Be prepared for some criticism

People working in local companies have probably had some previous experience with your school. Maybe they've hired some of your graduates. Maybe they've attended some of your classes. Or maybe they know people that have. It's likely that they have some pre-conceived notions about what your school does. And it may not be all good. Be sure that the people you talk to understand that the whole point of your visit is to gain an understanding of what the company expects of employees so you can better

accommodate these needs.

Don't ignore small companies

While your biggest potential for new students may come from larger companies, remember that most larger companies have a series of local suppliers (commonly called contract shops or job shops when it comes to CNC). The people working in these smaller companies often need more training than people working in larger companies – especially when it comes to actually working with CNC machines. So if you can serve the needs of smaller companies, it's likely that you'll have no trouble doing so for larger companies.

Additionally, having success with a small company in your area may be a way to get your foot in the door to the larger companies this company supplies. Don't forget – people in small companies have the best contacts in larger companies.

Get busy!

Truly – your best potential for new students comes from local industry. Get out and meet them!

End

CNC Instructors! Teach CNC with the best materials!

- Two Recently Updated Courses!**
- Machining Center Programming-Setup-Operation
 - Turning Center Programming-Setup-Operation

Instructor's materials

- **Instructor's manual** – Includes instructions for teaching the course, a course outline, a hard copy of review slide presentation, an answer book for students' exercises, and a final test with answers.
- **Instructor Notes manual** – Guidance for teaching in step-by-step form for each lesson.
- **CD-rom disk/s** – Include two sets of PowerPoint presentations (one with audio guidance and one without), PowerPoint Viewer software, all written documentation (manuals) in Adobe Acrobat (PDF) format, and Adobe Acrobat Reader.

Student's materials

- **Course manual** – Over 300 pages manual that follows along with your presentations.
- **Workbook** – Including an exercise for each lesson (24 in the machining center course and 28 in the turning center course).

The best part...

Instructor's materials are FREE with your school's initial order for student materials! Visit our website for details (www.cncci.com)

Favorite analogies

You can't have enough analogies in your basket of teaching tools. Analogies make it easier for students to understand complex topics by relating things to them that are familiar and easier-to-understand. In these discussions (which will be included in each issue of *Instructor Notes*), we will relate a few favorites. Note that these analogies are commonly incorporated right into the slide shows included with our curriculums.

Explaining the need to understand basic machining practice

An understanding of basic machining practice is the single-most important attribute a CNC person must possess. The level of required understanding is directly related to the CNC position. A CNC operator must understand, for example, blueprint reading, dimension and tolerance interpretation, shop math, gauging devices, and taking measurements. A CNC setup person must additionally understand workholding devices, cutting tools and the operations they perform, and cutting conditions. A CNC programmer must additionally understand how to develop a workable sequence of operations (process) that will correctly and efficiently machine a given workpiece.

And even basic machining practice

skills will vary, based upon the kind of CNC machine being used. The CNC person must understand the specific basic machining practice skills related to the CNC machine they will be working with. The basic machining practices related to turning centers, of course, vary from the practices related to machining centers – or turret punch presses – or wire EDM machines, and so on.

Early on in your course (it's the first thing we do in key concept number one of our CNC curriculums), students must be told just how important an understanding of basic machining practice is to proper CNC machine usage. While basic machining practice is beyond the scope of most CNC courses (it's a prerequisite in most technical schools), I like to relate those things a student should know about basic machining practice to be a good operator, setup person, or programmer. You may need this analogy even before your CNC course – while students are still learning basic machining practices. Most will be quite anxious to dig right in to CNC.

I'll begin by saying something like "If you want to learn how to fly an airplane, you probably won't be in the cockpit for a while. Prior to actually flying, your instructor will want to ensure that you understand the concepts related to aerodynamics and flight. These concepts will help you understand what an airplane is designed to do. In similar fashion, prior to starting to operate, setup, or program a CNC machine tool, you must understand the concepts related to performing machining operations. These concepts will help you understand what a CNC machine is designed to do."

Point out that with a good understanding of aerodynamics and flight, the future airplane pilot will know how an airplane works. When the student actually begins flight training, it will be a relatively simple matter of relating the concepts to the controls in the cockpit. In similar fashion, with a good understanding of basic machining practice, the future CNC operator, setup person, or programmer will know what a CNC is designed to do. It will be a relatively simple matter of learning how to tell the machine what they want it to

Two New Operator's Guides!

- ❖ Machining center operator's guide
- ❖ Turning center operator's guide

Instructors!

You may be getting requests from companies in your area to provide **operator training**. Many companies want people that can maintain production on CNCs, but they're not concerned with teaching them programming. These two operators guides will work nicely as your course text.

Visuals available! – Be sure to ask about the PowerPoint slideshows that act as your visuals. While we haven't (yet) developed complete curriculums, we have completed the slide shows to accompany these manuals.

Machining center operator's guide: 170 pgs
Turning center operator's guide: 230 pgs
\$29.00 each

For more info., visit www.cncci.com

do.

As with any good analogy, you can take this analogy a little further. Again, your students will probably be quite anxious to start working with the CNC machine/s, and they may be getting bored with the study of basic machining practice. Ask them if they would want to be in an airplane piloted by a person that doesn't understand aerodynamics and flight! There is, of course, a danger factor of danger related to a pilot's level of flight principles competency. Explain that the same danger factor is related to a CNC person's understanding of basic machining practices.

One more point. You can also use this analogy to explain the degree to which a CNC person must understand basic machining practices. An airplane pilot must, of course understand all facets of aerodynamics and flight. But to a lesser extent, a flight attendant – or anyone else that works on an airplane in flight – should be acquainted with aerodynamics. And to a lesser extent yet, aircraft maintenance personnel should be acquainted with the theory of flight. In similar fashion, the CNC programmer must be the most proficient with concepts related to basic machining practices. CNC setup people to a lesser extent. And CNC operators to a lesser extent yet.

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- Quick index for important topics
- Setup reduction principles
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Instructor Notes Newsletter Enclosed!

Tips for teaching CNC courses from CNC Concepts, Inc.

Machining Center Course!

CNC Instructors!

If you're using one of our proven curriculums to teach CNC machine tool usage, be sure your students know that your course is also available on a reasonably priced CD-rom disk. They'll already have the manual and workbook, so they'll only have to purchase the courseware (\$149.00 for six hour presentation).

As a CNC instructor, *you* may want to make this courseware available for students that miss a lesson or want to review material you present.

Do you feel at all weak in your CNC skills?

With our CNC curriculums, we provide audio guidance for each lesson to help instructors know how to present our courses. This is sufficient for instructors that are quite familiar

see below



New computer based training course! CD-ROM disk: over 6 hours!

CNC Machining Center Programming, Setup, and Operation

Affordable courseware for CNC machining centers!

A very popular CNC machine type!

CNC machining centers are among the most popular types of CNC machine tools. Most companies that have any CNC machines have at least one. Unfortunately, companies are finding it more and more difficult to find and hire qualified CNC people. Many are realizing that they must provide extensive training to new hires and provide at least some continuing training to established employees.

A proven method

This affordable courseware makes it possible to train CNC people from scratch. While we assume the student has some basic machining practice experience, we assume nothing about their previous CNC skills. Using our proven *key concepts approach*, we bring students up to speed gradually – constantly building upon previously presented information – and we stress the reasons *why* things are done as importantly as *how* they're done. Six of the ten key concepts are most related to programming, and four are related to setup and operation.

24 lessons!

We further divide the key concepts into twenty-four lessons. Lessons range from under five minutes to just over twenty minutes in length (total course presentation time is just over six hours on one CD-rom).

The most popular control!

All examples are shown in the format for the most popular control in the industry – the Fanuc control. Note that many control manufacturers claim to be Fanuc-compatible.

What you get!

The CD-rom disk is jam-packed with over six hours of information about CNC machining centers. By itself, it makes formidable training tool. It's price is \$149.00. When purchased with the workbook answer combination (\$30.00), you'll be able to confirm that you truly understand the material (24 exercises, one for each lesson). When purchased with the optional student manual (\$60.00), you'll have a way to easily review information after you finish the course. If all items are purchased (total: \$239.00), we include a one-year subscription to our newsletter, The Optional Stop.



The price for unlimited training? ... \$149.00 (courseware only)
Companion manual: \$60.00, workbook/answer combination: \$30.00
Contact CNC Concepts, Inc. (847-639-8847) to order!



New computer based training course! CD-ROM disk: 5.8 hours!

CNC Turning Center Programming, Setup, and Operation

Affordable courseware for CNC turning centers!

A very popular CNC machine type!

CNC turning centers are among the most popular types of CNC machine tools. Most companies that have any CNC machines have at least one. Unfortunately, companies are finding it more and more difficult to find and hire qualified CNC people. Many are realizing that they must provide extensive training to new hires and provide at least some continuing training to established employees.

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28 lessons!

We further divide the key concepts into twenty-eight lessons. Lessons range from under five minutes to just over twenty minutes in length (total course presentation time is five hours fifty-two minutes on one CD-rom).

The most popular control!

All examples are shown in the format for the most popular control in the industry – the Fanuc control. Note that many control manufacturers claim to be Fanuc-compatible.

What you get!

The CD-rom disk is jam-packed with 5 hours, 52 minutes of information about CNC turning centers. By itself, it makes formidable training tool. It's price is \$149.00. When purchased with the workbook answer combination (\$30.00), you'll be able to confirm that you truly understand the material (28 exercises, one for each lesson). When purchased with the optional student manual (\$60.00), you'll have a way to easily review information after you finish the course. If all items are purchased, we include a one-year subscription to our newsletter, The Optional Stop.



The price for unlimited training? ... \$149.00 (courseware only)
Companion manual: \$60.00, workbook/answer combination: \$30.00

Turning Center Course!

with CNC. For those instructors that may feel a little weak with their CNC skills, or for those who may be trying to teach a different machine type, these concise courses let you bone up on subject matter as quickly as possible.

Each course follows its companion curriculum to the letter (ten key concepts, number of lessons, presentation method, graphics, etc). In fact, we use the same manual and workbook in the courseware that you use with our curriculums! So if you're already using our curriculums, all you need is the courseware.