

FANUC CNC Certified Education Program Description

The FANUC CNC Certified Education Program is centered on core processes, principles and interaction with real industrial equipment. Confidence is derived from repetition, practice and experience, developing hard skills, and application of theoretical processes. At FANUC we want students to have access to the same industry grade equipment that some of the world most advanced manufacturers are using today, but at an affordable price. For that reason, FANUC has discounted or produced products specifically for the learning environment, making them financially within the reach of academia. The whole certification is based on establishing a standard for school instructors and students, so that industry has confidence when looking to employ a student into their facility. Students will have the knowledge and skills required to set up and run some of the most advanced CNC systems available on the market, making them the commodity and more marketable in the workplace over students who do not have FANUC experience, and whom are not certified by FANUC. FANUC Certification establishes the competency level of students who follow the program and is based on 3 pillars:

1. The instructor
2. The student curriculum
3. The classroom equipment

The Instructor

Instructors must become certified by attending a live FANUC class on the operation and programming of the latest series of CNC controls. Beyond the basic training, instructors are encourage to further enhance their knowledge of FANUC CNC's and attend additional classes as they become available. FANUC training is open to both industry and academic customers, encouraging interaction between the parties exposes instructors to industry perspectives and practices.

30i/31i/32i/0i-D G-code programming & Operation (TRCNC40-396)

Explore the fundamentals of milling and turning for the 30iB & 0iD series control

- G-code programming and operation
- Navigation & control features
- Basic positioning and cutting commands
- Work and tool offsets
- Canned cycles (4 days)

The Student Curriculum

CNC Concepts / FANUC

FANUC CERTIFIED EDUCATION CNC Training materials are available to academia and industry & individuals, with discounts for academia. There are two curriculums - one for machining centers (mills) and the other for turning centers (lathes). The content covers manual programming (G code), getting a machine ready to run production (setup), and completing a production run (operation). Each curriculum has ten main modules called Key Concepts, which are further divided into 24 lessons for machining and 28 lessons for turning. Each lesson includes presentations and reading materials, and is verified with a test. Programming-related lessons

also include a coordinate sheet exercise or a programming activity. The first thirteen lessons additionally include NCGuide lab exercises, but exercises can easily be done on either NCGuide or the hardware simulator. Students with average aptitude will require about 30 hours to complete each curriculum of which there are two delivery options: online content and off-line hard-copy materials.

On-line delivery:

- All content is provided on-line (presentations, reading materials, tests, coordinate sheet exercises, programming activities, and NCGuide lab exercises). Tests are automatically graded and submitted. Exercises can be submitted by email.

Off-line delivery:

- Reading materials are included in a hard copy manual. Presentations are included on a presentations CD rom disc. This disc also includes the NCGuide lab exercises. Tests, coordinate sheet exercises, and programming activities are provided in a workbook. An answer book is provided (to the instructor) for grading.

Deliverables

- FANUC NCGuide control simulation software for the classroom (16 or 32 user license)
- FANUC NCGuide control simulation software for student (1 or 3 yr., single user license)
- FANUC Education hardware CNC simulator
- FANUC CNC control documentation (detailed manuals for setup, operation and troubleshooting)
- FANUC Screen display software
- FANUC program transfer tool software and manual
- FANUC G-code programming course
- CNC Concepts Online curriculum (Milling / Turning)
- CNC Concepts Offline curriculum (Milling / Turning)

The Classroom Equipment

Hardware Solutions

FANUC is the global leader in the supply of CNC controls, servo drives, and motors to more than 350 machines builders worldwide. The long established control platform is the controller of choice for many industries within the metal cutting world. Most common are milling and turning machines, but FANUC's control is also found on wood routing machines, water, plasma and laser cutting machines, punch press machines, grinding machines, wire EDM and injection molding. Any machine which requires precision control of axes in it process potentially can use a FANUC control, including some very unique special applications. FANUC controls are found in all industry sectors and are dominant in Automotive, Aerospace, Medical, Heavy industries, Energy, Job shop and now Education. FANUC has partnered with many machine builders in many industries over the past 60+ years and may be able to assist with the introduction of hardware integration into the classroom by connecting schools to industry leading machine builders using FANUC products. In addition, FANUC has partnered with Levil Technology Corp. to provide education training carts, real machines with a small portable footprint.

Education Training Cart from Levil Technology / FANUC

The FANUC Education Training Cart incorporates FANUC's latest industrially recognized CNC control platform, with AC servo motors and drives in a self-contained, portable milling or turning center. Take the training where you need it... on the plant floor, in the classroom, or even at a remote site. Use the Education Training Carts to teach students or employees how to program and operate a real CNC, in real time, in a safe, controlled environment.

Overall Benefits

- Industry standard components
- Teaching principles of CNC programming, setup and operation
- Compact and portable
- Affordable training solution

FANUC CNC Hardware Simulator

The FANUC CNC education simulator is designed specifically for educational purposes, ensuring affordable access to the latest FANUC CNC platform for students in a compact and portable frame, which can easily be integrated into any classroom.

Features:

- Switchable mill and lathe system in one simulator
- 3 axis milling / 2 axis turning system + 1 spindle
- Manual Guide i installed for conversational program creation and 3D simulation
- Inch / metric switchable
- 512kb part program storage, with 400 registered programs
- 32 Tool offset pairs
- Work piece coordinates G52 – G59 + 48 additional on mill
- 10.4" Color LCD
- Full QWERTY keyboard
- USB, Flash ATA and Ethernet connectivity
- Optional I/O link I and RS232 serial interface

Software Solutions

FANUC NCGuide

NC Guide Academic packages are authentic FANUC CNC software running on a PC, providing a realistic operation and part programming environment at a fraction of the cost of using a production machine tool. This translates into lower training costs. Comprehension and retention is enhanced as students perform repetitive hands-on exercises in an ergonomically friendly environment - away from the noise of the factory floor. Operators, programmers, and industrial maintenance students can all practice common procedures and develop optimized processes without risks to people, tooling, or machines.

NCGuide is ideal for operational training. All standard CNC operational screens can be selected and all standard procedures can be practiced. You can upload and download part programs, create and edit part programs, search for words and safe start blocks, and test for syntax and sequence of operations errors. Work

piece, tool geometry, and tool wear offsets can all be edited and their effects visualized to enhance understanding.

Students can expand their knowledge by learning the features available with newer controls - even if the real control is not available. For the most realistic and effective learning environment, each user can quickly setup configuration to emulate a particular machine's CNC.

NCGuide supports both conventional G-code part programming with tool path simulation, and the easy-to-use, yet powerful MANUAL GUIDE *i* conversational part programming with 3D tool path and part geometry visualization. You can create and edit machining center, lathe and compound machining part programs, generate cycle time estimates, and create and test Custom Macro subroutines. You can use tool path simulation to visually verify a part program, to see the effect of work piece and tool offsets, and to observe the effects of canned cycles and advanced interpolation modes.

MANUAL GUIDE *i* conversational part programs can be developed in NCGuide and then converted to conventional G-code to run on any FANUC CNC. Standard G-code part programs may be also executed in the MANUAL GUIDE *i* solid model simulation by adding information on the work piece and additional information on the tooling.

Functionality	NC Guide Academic package for Classroom	NC Guide Academic package for Classroom	NC Guide Academic package for Homework	NC Guide Academic package for Homework
Seats	32 seat, network license	16 seat, network license	1 seat, USB dongle	1 seat, USB dongle
License duration	Indefinite	Indefinite	36 months	12 months
CNCs Supported	Series 0i/MODEL D, Series 0i/MODEL F, Series 31i/MODEL A/B, Series 35i/MODEL B			
CNC Operation	✓			
CNC Part Programming	✓			
MANUAL GUIDE <i>i</i>	✓			
Axis	0i-D - Lathe: 2-axes Mill, 3-axes. 31i-B - Lathe: 4-axes Mill, 4-axes			
Paths	1			

Program Transfer Tool

PC Software for transferring programs between FANUC CNC and a PC. Simple and fast setup through the controls Ethernet connection allow easy program transfer between PC and CNC control. The windows based software shows the CNC's program memory and the allocated program storage folder on the PC, operation is then as simple as drag and drop.

Screen Display Function

PC Software that connects to the simulator and FANUC controlled machines* via the Ethernet port. Allows the viewing and operation of the machines screen and operator panel. Ideal for the classroom environment, allowing the instructor to lead the class from a PC and project onto a large screen.

* Machine tool may require optional function. Standard on education hardware simulator

Certification Process

FANUC Certification is available after (1) one instructor candidate successfully completes the following:

1. Candidate attends FANUC's live class for G-code programming. (Recommended that candidate also completes the CNC Concepts online curriculum prior to attendance)
2. Candidate uses the FANUC certified curriculum materials (milling & turning) supplied by CNC Concepts for student instruction
3. Classroom activities away from machines use FANUC's NCGuide simulation software or FANUC's CNC education hardware simulator to maximize control exposure
4. Students have access to training carts or other FANUC controlled CNC machine tools at least 50% of the time, and that at least (1) one machine tool is under 10 years old. (50% is determined by at least half the lab equipment utilizing FANUC controls, or 1 machine per every 5 students enrolled in the class)

Please note that FANUC may request random classroom visits to observe the presentation of FANUC related course materials. FANUC will insist that instructors keep current with our technology and are prepared to undertake continued training as applicable and when available.

Upon completing all the above requirements, qualified educational institutions will be entitled to the following:

- Qualified educational institutions will receive FANUC's logo to be printed on the student certificates
- Qualified educational institutions will receive a promotional banner and other materials
- FANUC will use social media and other marketing channels to promote the schools program / activities
- The certification is valid only while the instructor remains employed as a trainer at the school. If the instructor leaves and is no longer employed as a trainer, this certification is void. Certification is non-transferrable and cannot be used by another employee

Certification Process Chart

