BID INVITATION FOR: MANUFACTURING EQUIPMENT & TRAINING PROGRAMS

Unless specifically amended or deleted by the Community College System of New Hampshire, the following General Terms and Conditions apply to this Bid and any resulting Purchase Order or Contract.

GENERAL CONDITIONS AND INSTRUCTIONS:
NATURE OF, AND ELIGIBILITY TO RESPOND. This bid invitation is submitted and the rules promulgated thereunder, and constitutes a firm and binding offer. A bid may not be withdrawn unless permission is obtained from the Community College System of NH (CCSNH).

Bids may be issued only by the Community College System of NH and are not transferable.

SAMPLES AND DEMONSTRATIONS. When samples are required they must be submitted free of costs and will not be returned.

Items left for demonstration or evaluation purposes shall be delivered and installed free of charge and shall be removed at no cost to the CCSNH. Demonstration units shall not be offered to the CCSNH as new equipment.

Bids. Bids must be received at the Community College System of NH before the date and time specified for the opening. Bids must be submitted on this bid form or exact copies and must be typed or clearly printed in ink. Corrections must be initialed. Bids are to be made less Federal Excise Tax and no charge for handling unless required by law.

Bids will be made available to the public after the time of award. Bid results will be given by mail only if requested in writing and accompanied by a self-addressed, stamped business size envelope.

SPECIFICATIONS. Vendors must submit on items as specified. Proposed changes must be submitted in writing and received at the Community College System of NH at least five (5) working days prior to the bid opening. Vendors shall be notified in writing if any changes to the specifications are made.

AWARD. The award will be made to the responsible Vendor submitting a conforming RFB meeting specifications at the lowest cost unless other criteria are noted in the RFB. Unless otherwise noted, the award may be made by individual items.

If there is a discrepancy between the unit price and the extension, the unit price will prevail.

When identical low bids are received the award will be made in accordance with the Administrative Rules.

Discounts will not be considered in making award but may be offered on the Invoice for earlier payment and will be applicable on the date of completion of delivery or receipt of Invoice, whichever is later. On orders specifying split deliveries, discounts will apply on the basis of each delivery or receipt of Invoice, whichever is later.

PATENT INFRINGEMENT. Any responding vendor who has reason to believe that any other responding vendor will violate a patent should such responding vendor be awarded the contract shall set forth in writing, prior to the date and time of opening, the grounds for his belief and a detailed description of the patent.

ASSIGNMENT PROVISION. The responding vendor hereby agrees to assign all causes of action that it may acquire under the antitrust laws of New Hampshire and the United States as the result of conspiracies, combinations, or contracts in restraint of trade which materially affect the price of goods or services obtained by the state under this contract if so requested by the State of New Hampshire.

FEDERAL FUNDS. The Community College System of NH shall assure the continuation or granting of federal funds or other assistance not otherwise provided for by law by following the Federal Procurement Standards.

CCSNH’S OPTIONS: The Community College System of NH reserves the right to reject or accept all or any part of any bid, to determine what constitutes a conforming bid, to award the bid solely as it deems to be in the best interest of the CCSNH, and to waive irregularities that it considers not material to the bid.

PUBLIC INFORMATION: The responding vendor hereby acknowledges that all information relating to this bid and any resulting order (Including but not limited to fees, contracts, agreements and prices) are subject to these laws of the State of New Hampshire regarding public information.

PERSONAL LIABILITY: The responding vendor agrees that in the preparation of this bid or the execution of any resulting contract or order, representatives of the Community College System of NH shall incur no liability of any kind.

PROOF OF COMPLIANCE. The responding vendor may be required to supply proof of compliance with proposal specifications. When requested, the responding vendor must immediately supply the Community College System of NH with certified test results or certificates of compliance. Where none are available, the CCSNH may require independent laboratory testing. All costs for such testing certified test results or certificate of compliance shall be the responsibility of the responding vendor.

FORM OF CONTRACT. The terms and conditions set forth in any additional Terms and Conditions by the Community College System of NH are part of the bid and will apply to any contract awarded the responding vendor unless specific exceptions are taken and accepted and will prevail over any contrary provisions in Terms and Conditions submitted by the responding vendor.

OFFER. The undersigned hereby offers to sell to the Community College System of NH the commodities or services indicated in the following page(s) of this Bid at the price(s) quoted in complete accordance with all conditions of this Bid.

Company Name: ____________________________
Address: __________________________________

Tel#: (local) ___________________ (Toll free) ____________
Fax#: ___________________________

Authorized Signature: _______________________

(TYPE OR PRINT NAME)

This document must be signed by a person who is authorized to legally obligate the responding vendor. A signature on this document indicates that all State of NH & Community College System of NH terms and conditions are accepted by the responding vendor and that any and all other terms and conditions submitted by the responding vendor are null and void, even if such terms and conditions have terminology to the contrary. The responding vendor shall also be subject to State of New Hampshire/CCSNH terms and conditions.
contract terms and conditions

1. The Community College System of NH (CCSNH), engages the firm or individual ("the Vendor") to perform the services and/or sale of goods, described in the attached CCSNH documents, if any, and the Vendor's bid or quotation, both of which are incorporated herein by reference.

2. Compliance by Vendor with Laws and Regulations. In connection with the performance of this agreement, the Vendor shall comply with all statutes, laws, regulations, and orders of federal, state, county or municipal authorities which shall impose any obligation or duty upon the Vendor, including, but not limited to civil rights and equal opportunity laws.

3. Term. The contract, and all obligations of the parties thereunder, shall become effective on a specified date and shall be completed in their entirety prior to a specified date. Any work undertaken by the Vendor prior to the effective date shall be at his sole risk and, in the event that the contract shall not become effective, the CCSNH shall be under no obligation to reimburse the Vendor for any such work.

4. Contract Price. The contract price, a payment schedule and a maximum limitation of price shall be as specified by the bid invitation and the Vendor's bid. All payments shall be conditioned upon receipt and approval by the CCSNH, of appropriate vouchers and upon satisfactory performance by the Vendor, as determined by the CCSNH. The payment by the CCSNH of the Contract Price shall constitute complete reimbursement to the Vendor for all expenses of any nature incurred by the Vendor in the performance by the Vendor and complete payment for the Services. The CCSNH shall have no other liability to the Vendor.

5. Delivery. If the vendor fails to furnish items and/or services in accordance with all requirements, including delivery, the CCSNH may re-purchase similar items from any other source without competitive bidding, and the original vendor may be liable to the CCSNH for any excess costs.

If a vendor is unable to complete delivery by the date specified, he must contact the CCSNH. However, the campus is not required to accept a delay to the original delivery dates. All deliveries are subject to inspection and receiving procedures as established by the receiving campus. Deliveries are not considered accepted until compliance with these rules has been established. State personnel signatures on shipping documents shall signify only the receipt of shipments.

All deliveries shall be FOB Destination.

6. invoicing. All invoices must show Order Number, Unit and Extension Prices and discounts allowed. A separate invoice shall be submitted for each order. Unless otherwise noted on the invitation to bid or purchase order, payment will not be due until thirty (30) days after all services have been completed, or all items have been delivered, inspected and accepted or the invoice has been received at the agency business office, whichever is later.

7. Personnel.

7.1. The Vendor shall disclose in writing the names of all owners (5% or more), directors, officers, employees, agents or subcontractors who are also officials or employees of the State of New Hampshire/CCSNH. Any change in this information shall be reported in writing within fifteen (15) days of their occurrence.

7.2. The person signing this agreement on behalf of the CCSNH, or his or her delegate ("Contracting Officer") shall be the CCSNH's representative for purposes of this agreement. In the event of any dispute concerning the interpretation of this agreement, the Contracting Officer's decision shall be final.

8. event of default; remedies.

8.1. Any one or more of the following acts or omissions of the Vendor shall constitute an event of default hereunder ("Events of Default"): 8.1.1. failure to deliver the goods or services satisfactorily or on schedule; or 8.1.2. failure to submit any report required hereunder; or 8.1.3. failure to perform any of the other covenants and conditions of this agreement.

8.2. Upon the occurrence of any Event of Default, the CCSNH may take any one, or more, or all, of the following actions:

8.2.1. give the Vendor a written notice specifying the Event of Default and requiring it to be remedied within, in the absence of a greater or lesser specification of time, thirty (30) days from the date of the notice; and if the Event of Default is not timely remedied, terminate this agreement, effective two (2) days after giving the Vendor notice of termination; and 8.2.2. give the Vendor a written notice specifying the Event of Default and suspending all payments to be made under this agreement and ordering that the portion of the Contract Price, which would otherwise accrue to the Vendor during the period from the date of such notice until such time as the CCSNH determines that the Vendor has cured the Event of Default, shall never be paid to the Vendor; and 8.2.3. set off against any other obligation the CCSNH may owe to the Vendor any damages the CCSNH suffers by reason of any Event of Default; and 8.2.4. treat the agreement as breached and pursue any of its remedies at law or in equity, or both.

9. Waiver of Breach. No failure by the CCSNH to enforce any provisions hereof after any Event of Default shall be deemed a waiver of its rights with regard to that Event, or any subsequent Event. No express failure of any Event of Default shall be deemed a waiver of any provision hereof. No such failure or waiver shall be deemed a waiver of the right of the State to enforce each and all of the provisions hereof upon any further or other default on the part of the Vendor.

10. Vendor's Relation to the CCSNH. In the performance of this agreement the Vendor is in all respects an independent contractor, and is neither an agent nor an employee of the CCSNH. Neither the Vendor nor any of its officers, employees, agents or members shall have authority to bind the CCSNH nor are they entitled to any of the benefits, workmen's compensation or emoluments provided by the CCSNH to its employees.

11. Assignment and Subcontracts. The Vendor shall not assign, or otherwise transfer any interest in this agreement without the prior written consent of the CCSNH. No work required by this contract shall be subcontracted without the prior written consent of the CCSNH.

12. Indemnification. The contractor shall defend, indemnify and hold harmless the State, its officers and employees, from and against any and all losses suffered by the State, its officers and employees, and any and all claims, liabilities or penalties asserted against the State, its officers and employees, by or on behalf of any person, on account of, based on, resulting from, arising out of (or which may be claimed to arise out of) the acts or omissions of the Vendor. Notwithstanding the foregoing, nothing herein contained shall be deemed to constitute a waiver of the sovereign immunity of the State, which immunity is hereby reserved to the State. This covenant shall survive the termination of this agreement.

12.1 Patent Protection. The seller agrees to indemnify and defend the State of New Hampshire from all claims and losses resulting from alleged and actual patent infringements and further agrees to hold the CCSNH harmless from any liability arising under RSA 382: A-2: 312(3). (Uniform Commercial Code).

13. Toxic Substances. In compliance with RSA 277-A known as the Workers Right to Know Act, the vendor shall provide Material Safety Data Sheets with the delivery of any and all products covered by said law.

14. Notice. Any notice by a party hereto to the other party shall be deemed to have been duly delivered or given at the time of mailing by certified mail, postage prepaid, in a United States Post Office addressed to the parties at the addresses given below.

15. Amendment. This agreement may be amended, waived or discharged only by an instrument in writing signed by the parties hereto.

16. Construction of Agreement and Terms. This agreement shall be construed in accordance with the laws of the State of New Hampshire, and is binding upon and inures to the benefit of the parties and their respective successors and assigns.

17. Additional Provisions. The additional provisions (if any) have been set forth as Exhibit "A" hereto.

18. Entire Agreement. This agreement, which may be executed in a number of counterparts, each of which shall be deemed an original, constitutes the entire agreement and understanding between the parties, and supersedes all prior agreements and understandings relating hereto.
INSTRUCTIONS TO BIDDER:
Read the entire bid invitation prior to filling it out. Complete the pricing information in the “Offer” section (the unit price is the price for the unit of purchase required by this bid invitation {i.e. each, case, box, etc.) and all other required information on your offer. The extension is the unit price multiplied by the quantity required by this bid invitation. Also complete the “Bidder Contact Information” section. Finally, complete the company information on the “General Conditions and Instructions” page of this bid invitation, then sign the bid in the space provided on that page.

BID SUBMITAL:
All bids must be submitted on this form or an exact copy, must be typed or clearly printed in ink and must be received on or before the date and time specified on page 1 of this bid. Interested parties may submit a bid to the Community College System of NH, 26 College Dr, Concord NH 03301 by email to purchasing@ccsnh.edu or if needed, may fax to (603)271-2725. All bids must be clearly marked with bid number, date due and purchasing agent’s name.

The Community College System of NH is not responsible for proposals not received due to equipment failure, mail delays, etc. If you want to ensure your proposal was received please verify by calling Kimberly Brent at (603)230-3540.

GOVERNING TERMS AND CONDITIONS:
A responding bid that has been completed and signed by your representative will constitute your company’s acceptance of all State of New Hampshire/CCSNH terms and conditions and will legally obligate your company to these terms and conditions.

A signed response further signifies that any terms/or conditions that me be or have been submitted by the bidder are specifically null and void and are not a part of this bid invitation or any awarded purchase order, even if said terms and/or conditions contain language to the contrary.

PUBLIC DISCLOSURE:
Any information contained in the bid that a vendor considers confidential must be clearly designated. Marking of the entire bid or entire section of the bid (e.g. pricing) as confidential will neither be accepted nor honored. Notwithstanding any provision of this bid to the contrary, vendor pricing will be subject to public disclosure upon the effective date of all resulting contracts or purchase orders.

Generally, each bid shall become public information upon the effective date of all resulting contracts or purchase orders; however, to the extent consistent with applicable state and federal law and regulations, as determined by the State, including, but not limited to, RSA Chapter 91-A (Right to Know Law), the State/CCSNH shall endeavor to maintain the confidentiality of portions of the bid that is clearly and properly marked confidential. If a request is made to CCSNH to view portions of a bid that a vendor has properly and clearly marked as confidential, CCSNH will notify vendor of the request and of the date that CCSNH plans to release the records. By submitting a bid, vendors agree that unless the vendor obtains a court order, at its sole expense, enjoining the release of the requested information, CCSNH may release the requested information on the date specified in the CCSNH’s notice without liability to the vendors.

PURPOSE:
The purpose of this bid invitation is to establish contract in the form of a purchase order for supplying Community College System of NH with the item(s) indicated in the “Offer” section of this bid invitation, in accordance with the requirements of this bid invitation and any resulting order. This will be a one-time order with delivery required to the location indicated in the F.O.B. section of this bid invitation.
VENDOR CERTIFICATIONS:
All bidders must be duly registered as a vendor authorized to conduct business in the State of New Hampshire.

- The winning bidder must have a completed alternate W-9 on file with the Community College System of NH. If the winning bidder does not have a completed alternate W-9 on file, they will be required to completely fill the alternate W-9 and return to CCSNH before a purchase order will be issued.

- The vendor who is awarded the contract must comply with the terms of the purchase order and of the TAACCCT grant. Prospective bidders are encouraged to ensure they are able to comply with all applicable regulations. Compliance regulations are indicated further down in the document under the header COMPLIANCE BY BIDDER WITH LAWS AND REGULATIONS.

BID INQUIRIES:
Any questions must be submitted by an individual authorized to commit their organization to the Terms and Conditions of this bid. Submissions must clearly identify the Bid Number, the Vendor’s name and address and the name of the person submitting the question.

SPECIFICATION COMPLIANCE:
This bid must be submitted as a complete package. You may bid submit substitute’s with the exception of no substitutions on the software.

Unless otherwise specified by the Community College System of NH in this bid invitation document, all equipment offered by the bidder must be new; shall not be used, rebuilt, refurbished; shall not have been used as demonstration equipment, and shall not have been placed anywhere for evaluation purposes.

CHANGES:
Any requested changes to this bid invitation by the bidder must be received in writing at the Community College System of NH no later than 4:30 PM on the fifth Community College System of NH business day prior to the date of the bid opening.

ADDENDUM:
In the event it becomes necessary to add or revise any part of this bid prior to the schedules submittal date, CCSNH will post on our website any addenda. Before your submission, always check the site for any addenda or other materials that may have been issued affecting the bid. The website address is www.ccsnh.edu/open-bids

BID PRICES:
Bid prices must be in US dollars and must include delivery and all other costs required by this bid invitation. Bid prices should result in prices that are no higher than those charged to the bidder’s best/preferred customer. Special charges, surcharges, or fuel charges of any kind (by whatever name) may not be added on at any time. Any and all charges must be built into your bid price at the time of the bid.

WARRANTY REQUIREMENTS:
Successful bidder shall be required to warranty all of the equipment awarded to him for a period of not less than the manufacturer’s standard period of time, from the date the items are received, inspected and accepted by the Community College System of New Hampshire. The warranty shall cover 100% of all parts, shipping, labor, travel, lodging and expenses.

COMPLIANCE BY BIDDER WITH LAWS AND REGULATIONS:
In connection with the performance of the purchase order, the winning bidder shall comply with all statutes, laws, regulations, and orders of federal, state, county or municipal authorities which impose any obligation or duty upon the Contractor, including, but not limited to, civil rights and equal opportunity laws.

In addition, the winning bidder shall comply with all applicable copyright laws.

During the term of any purchase order, the winning bidder shall not discriminate against employees or applicants for employment because of race, color, religion, creed, age, sex, handicap, sexual orientation, or national origin and will take affirmative action to prevent such discrimination.

If the purchase is funded in any part by monies of the United States, the Contractor shall comply with all the provisions of Executive Order No. 11246 of September 24, 1965 entitled “Equal Employment Opportunity”, as amended by Executive Order
11375 of October 13, 1967 and as supplemented in Department of Labor regulations (41C.F.R. Part 60) and with any rules, regulations and guidelines as the State of New Hampshire or the United States shall issue to implement these regulations.

The winning bidder shall allow access by the grantee, the sub-grantee, the Federal agency, the Comptroller General of the United States, or any of the their duly authorized representatives to any books, documents, papers, and records of the bidder which are directly pertinent to that specific contract for the purpose of making audits, examinations, excerpts, and transcripts.

The winning bidder agrees to retain all pertinent records for three years after CCSNH makes final payment and all other pending matters are closed.

**BID AWARD:**
The award of the bid will be based upon the total net low bid from the listing of the items indicated in the "Offer" section of this bid invitation. If an award is made it will be in total, in the form of a Community College System of NH Purchase Order.

If upon the award of any bid of multiple items (awarded by line item) it is determined that an order for any particular item would be $500.00 or less, and said item would be the only item on a purchase order, the state reserves the right to award that item to a bidder already receiving an award for multiple items.

**BID RESULTS:**
Bid results may be viewed when available, once the award has been made, on our web site only at: www.ccsnh.edu/closed-bids

For Vendors wishing to attend the bid opening: **Only the names of the Vendors submitting responses will be made public.**

**TERMINATION:**
The Community College System of NH shall have the right to terminate the purchase contract at any time by giving the successful bidder a thirty (30) day written notice.

**F.O.B.:**
The F.O.B. shall be destination to the following delivery point:

Lakes Region Community College  
379 Belmont Rd  
Laconia NH 03249

**REQUISITION NO.:** R0065769

**RETURNED GOODS:**
The successful bidder must resolve all order and invoice discrepancies within five business days from notification. Products returned due to quality issues, duplicate shipments, over-shipments, etc. must be picked up by the successful bidder within five business days of notification with no restocking or freight charges, and must be replaced with specified products or the agency will be refunded/credited for the full purchase price. Unauthorized substitutions for any products are not allowed.

Standard stock products ordered in error by the Community College System of NH must be returned for full credit within fifteen days of receipt. Products must be in re-saleable condition (original container, unused) and there will be no restocking fee charged for these products. The using campus will be responsible for any freight charges to return these items to the successful bidder.
OFFER:
Successful bidder hereby offers to sell the required items to the Community College System of NH at the following price(s):

The following specifications are for a turn-key integrated laboratory for a new advanced manufacturing certificate program to be offered by Lakes Region Community College. The equipment, supplies, software, furniture and instructional support materials are designed to provide a turnkey package to support the course structure of the advanced manufacturing program and therefore are to be awarded as a lump sum award.

DELIVERED PRICES

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Manufacturing Processes
Manufacturing Processes training program to support e-learning content in Measurement Tools, Gauging and Manual Machine Tools to include:

1 EA MANUAL MACHINE TOOL STATION: the manual machine tool station shall include workstation, drill press, band saw, vise, sander and tooling. These components shall meet the below minimum specifications:

- **Mobile Technology Workstation**: shall consist of a welded tubular steel frame with four (4) heavy-duty casters (2 locking type), and a solid hard-maple work surface. The minimum dimensions shall be 26”H x 30”W x 72”L.

MAKE:________________________
MODEL:________________________
ITEM #:_______________________
Please enclose product literature and specifications of your substitution

- **Drill Press**: maintenance grade, bench type, 12-inch drill depth, ½-inch cast iron drilling capacity, table working surface 10.3 x 8.8 inches, 5 spindle speeds, 2/3 hp, minimum dimensions 11” W x 33 ½”H. 115 VAC, 60 Hz.

MAKE:________________________
MODEL:________________________
ITEM #:_______________________
Please enclose product literature and specifications of your substitution

- **Band Saw**: Vertical bench type, 3 speeds: 80/150/200 RPM, 1hp, minimum dimensions 22” W x 39 ½” H, max blade width 1-inch, max blade length 1 ¾”, max thickness of cut 11 inches, 115 VAC, 60 Hz.

MAKE:________________________
MODEL:________________________
ITEM #:_______________________
Please enclose product literature and specifications of your substitution
OFFER CONTINUED:

DELIVERED PRICES

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<td>MANUAL MACHINE TOOL STATION CONTINUED:</td>
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<td>• Vise: Bench type, 1/8” to 2 ½” pipe capacity, 5 ½” jaw capacity, jaw width 4 ½”.</td>
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<td>• Belt Sander: Bench type, disk size 6-inch, disk speed 3450 rpm, belt size 2 x 42 and 1 x 42, minimum dimensions 14 ½” W x 23” H, tilt angle 45°, belt speed 4500 rpm, 115 VAC, 60 Hz.</td>
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<td>• Tooling: Shall include assorted drill bits, drill press vise, sander belts, band saw blades to support curriculum.</td>
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PACKAGE PRICE TO INCLUDE ALL OF THE ABOVE LISTED ITEMS

$______________

1 EA CNC MILL RAW MATERIAL PACKAGE (METAL): Shall include:
(48) aluminum rectangular stock, 1-in x 1-in x 1-in
(24) aluminum rectangular stock, 4-in x 2-7/8-in x 11/16-in.

$______________

1 EA DRILL PRESS RAW MATERIALS KIT: Shall include: bar stock 50-ft, 1-in x 2-in aluminum

$______________

1 EA MEASUREMENT TOOLS UNIT: Shall include: standard parts set, precision measurement tools, digital caliper, computer interface, data management software, table-top workstation, student curriculum, and instructor’s guide. The components shall meet the following minimum specifications:

• Workstation: The training system shall have an angled console with all measurement components rigidly mounted on the front panel for ease of inventory tracking. The panel is to be 18 gauge painted steel with the name of each component clearly silkscreened. The console size shall be a minimum of 24” L x 18” H x 6” W.

MAKE:________________________ MODEL:________________________ ITEM #:_______________________
Please enclose product literature and specifications of your substitution
**MEASUREMENT TOOLS UNIT CONTINUED:**

- **Standard Parts Set:** The standard parts package shall include:
  - (3) rectangular plates,
  - (3) disks with machined lips which have various defects that allow students to learn proper gaging methods.
  - (10) shafts of dimensions varying around nominal dimensions of 3.75 inches and 0.500
  
  All parts are to be made of stainless steel for durability.

  **MAKE:** ______________________  
  **MODEL:** ______________________  
  **ITEM #:** ______________________ 
  
  Please enclose product literature and specifications of your substitution

- **Precision Measurement Tool Set 1:** Shall include:  
  - (1) dial caliper 6”
  - (1) outside micrometer with 3”-4” reading
  - (3) steel rules, metric, fraction imperial, decimal imperial;
  - (1) tape measure

  **MAKE:** ______________________  
  **MODEL:** ______________________  
  **ITEM #:** ______________________ 
  
  Please enclose product literature and specifications of your substitution

- **Precision Measurement Tool Set 2:** Shall include:  
  - (1) dial indicator with magnetic base, outside micrometer 0-25 mm
  - (2) gauge blocks, small hole gauge (set of 4)
  - (1) mobile leveling base

  **MAKE:** ______________________  
  **MODEL:** ______________________  
  **ITEM #:** ______________________ 
  
  Please enclose product literature and specifications of your substitution

- **Computer Interface:** Enables interface of this software running on a PC to a digital indicator or other measurement device with an RS422 port. The interface shall be a self-contained unit, which plugs into the digital indicator via an RS422 cable and to the serial port of a PC via an RS232 cable.

  **MAKE:** ______________________  
  **MODEL:** ______________________  
  **ITEM #:** ______________________ 
  
  Please enclose product literature and specifications of your substitution
OFFER CONTINUED:

MEASUREMENT TOOLS UNIT CONTINUED:

- **Data Management Software**: Shall be a windows-based software that can collect data in real time from digital gauges using RS-232 and shall include flexible setting of limits.

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MAKE: __________________________  MODEL: __________________________  ITEM #: __________________________

Please enclose product literature and specifications of your substitution

- **Student Curriculum**: Shall consist of (2) sets of 3 Learning Activity Packets in print-based format. The student curriculum teaches industry skills in the following topics: Metric/English conversion, metric rule, tape measure, decimal rule, fractions rule, dial caliper, micrometer, dial indicators, hole gauges, gauge blocks, and gauging techniques. The curriculum shall be designed in a skill-based format that focuses on teaching industry-relevant tasks. This curriculum shall be designed for use in a self-directed student learning environment. Each Learning Activity Packet shall be organized into multiple segments. All learning material needed shall be contained in the packets including text material and hands-on tutorials. No external text sources shall be required. The specific cognitive skills taught by each text passage shall be identified next to the passage. Each lab activity shall be identified by the industrial task taught. A self-review of five to ten questions shall be provided after each segment. Shall also support e-learning instruction.

MAKE: __________________________  MODEL: __________________________  ITEM #: __________________________

Please enclose product literature and specifications of your substitution

PACKAGE PRICE TO INCLUDE ALL OF THE ABOVE LISTED ITEMS  

$ __________

1 EA **MOBILE TECHNOLOGY WORKSTATION**: Shall consist of a welded tubular steel frame with four (4) heavy duty casters (2 locking type), and white laminated work surface. The minimum dimensions shall be 30"H x 30"W x 72"L

MAKE: __________________________  MODEL: __________________________  ITEM #: __________________________

Please enclose product literature and specifications of your substitution

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<tr>
<td>1</td>
<td>EA</td>
<td><strong>ASSESSMENT GUIDE, MACHINE TOOLS 1:</strong> A teacher’s assessment guide shall be provided. It shall contain student data sheets, data sheet solutions, self-review answers, quizzes, quiz answers, student skill record sheets, and authentic assessment. A quiz shall be provided for each packet. A question shall be provided in each quiz for each cognitive objective taught. All tasks listed in the packet shall be listed on personalized student record sheets. The teacher’s assessment guide shall include directions for authentic skill assessment</td>
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Please enclose product literature and specifications of your substitution

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| 1   | EA   | **ASSESSMENT GUIDE, MACHINE TOOLS 2:** A teacher’s assessment guide shall be provided. It shall contain student data sheets, data sheet solutions, self-review answers, quizzes, quiz answers, student skill record sheets, and authentic assessment. A quiz shall be provided for each packet. A question shall be provided in each quiz for each cognitive objective taught. All tasks listed in the packet shall be listed on personalized student record sheets. The teacher’s assessment guide shall include directions for authentic skill assessment |      |           |

MAKE: ___________________________  MODEL: ___________________________  ITEM #: ___________________________

Please enclose product literature and specifications of your substitution

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| 1   | EA   | **ASSESSMENT GUIDE, MACHINE TOOLS 3:** A teacher’s assessment guide shall be provided. It shall contain student data sheets, data sheet solutions, self-review answers, quizzes, quiz answers, student skill record sheets, and authentic assessment. A quiz shall be provided for each packet. A question shall be provided in each quiz for each cognitive objective taught. All tasks listed in the packet shall be listed on personalized student record sheets. The teacher’s assessment guide shall include directions for authentic skill assessment |      |           |

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<td>1</td>
<td>EA</td>
<td>BLUE PRINT READING &amp; SOLID MODELING: Provides</td>
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<td>training program to support e-learning content in</td>
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<td>Print Reading and Solid Modeling to include:</td>
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<td>• Assessment Guide, Print Reading 1: A teacher’s</td>
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<td>assessment guide shall be provided. It shall</td>
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<td>contain student data sheets, data sheet solutions</td>
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<td>, self-review answers, quizzes, quiz answers,</td>
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<td>student skill record sheets, and authentic</td>
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<td>assessment. A quiz shall be provided for each</td>
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<td>packet. A question shall be provided in each</td>
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<td>quiz for each cognitive objective taught. All</td>
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<td>tasks listed in the packet shall be listed on</td>
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<td>personalized student record sheets. The teacher’s</td>
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<td>assessment guide shall include directions for</td>
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<td>authentic skill assessment</td>
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MAKE:________________________  MODEL:________________________  ITEM #:________________________

Please enclose product literature and specifications of your substitution

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1   EA   NO SUBSTITUTE: Solid Works 20 seat license with one additional teacher seat for a total of 21 seats, current version

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1   EA   NO SUBSTITUTE: Assessment Guide, Computer Aided Design 1- SolidWorks: A teacher’s assessment guide shall be provided. It shall contain student data sheets, data sheet solutions, self-review answers, quizzes, quiz answers, student skill record sheets, and authentic assessment. A quiz shall be provided for each packet. A question shall be provided in each quiz for each cognitive objective taught. All tasks listed in the packet shall be listed on personalized student record sheets. The teacher’s assessment guide shall include directions for authentic skill assessment

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1   EA   NO SUBSTITUTE: Assessment Guide, Computer Aided Drafting 2 – SolidWorks: A teacher’s assessment guide shall be provided. It shall contain student data sheets, data sheet solutions, self-review answers, quizzes, quiz answers, student skill record sheets, and authentic assessment. A quiz shall be provided for each packet. A question shall be provided in each quiz for each cognitive objective taught. All tasks listed in the packet shall be listed on personalized student record sheets. The teacher’s assessment guide shall include directions for authentic skill assessment

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<tr>
<td>1</td>
<td>EA</td>
<td>CNC MACHINES I: Provides training program to support e-learning content in Level 1 CNC Machining to include:</td>
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- **Axis CNC Machine:** This unit shall include a table-top CNC milling machine with programming software and user’s guide. This mill shall be a full 3-axis CNC mill, programmed using the industrial standard FANUC series OM format, utilizing 2D or 3D Full Color Toolpath Graphics. The software shall incorporate all the major functions and facilities used on industrial controllers with the further option

- **Milling Machine:**
  Minimum specifications are:
  - Table to spindle, 8 inches
  - Throat,  3.437 inches
  - Travel X axis, 9 inches
  - Travel Y axis, 5.125 inches
  - Travel Z axis, 6.5 inches
  - Hole through spindle, 405 inches
  - Spindle nose thread, 3/4 16 TPI
  - Spindle taper, #1 MT
  - Table size, 2.75 inches x 13.5 inches
  - Spindle speed,  0-3000 RPM
  - Repeatability, 0.0005 inches
  - Resolution, 0.0001 inches
  - Machine length, 27 inches
  - Machine width, 25.5 inches
  - Machine height, 27 inches

**MAKE:** __________________________  **MODEL:** __________________________  **ITEM #:** __________________________

Please enclose product literature and specifications of your substitution

- **Programming Software:** shall include the following features:
  - Fanuc format programming through a standard qwerty keyboard or optional desk-top keypad
  - Simultaneous 3-axis contour control
  - Full circular and linear interpolation
  - Inch or metric programming
  - Subprogram with repeat facility/program call
  - Tool radius compensation
  - Manual and programmable machine stops
  - Floating datum facility
  - Tool offset for 16 tools
  - Ability to load, save and edit multiple tool offsets
  - Hard home
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<th>CNC MACHINES I CONTINUED:</th>
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<tr>
<td><strong>Programming Software:</strong> shall include the following features:</td>
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<td>• Programmable dwell</td>
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<td>• Auxiliary inputs and outputs</td>
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<td>• Program offset giving dry run facility</td>
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<td>• Full G and M code listings with help instructions, context sensitive</td>
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<td>• Single step or continuous program execution</td>
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<td>• Axes jog on all axes with variable feed rate</td>
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<td>• Programmable feedrate 762 mm/min (30”) 508 mm/min (20”) on Z axis</td>
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<td>• Rapid traverse 30 IPM (762mm/min)</td>
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<td>• Comprehensive toolpath graphics including 2-D and 3-D simulation</td>
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<td>• Tool animation</td>
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<td>• Zoomed or sectioned views with rotation</td>
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<td>• Directory listings</td>
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<td>• Program merge facility</td>
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<td>• Full edit mode allowing alter, delete, and insert</td>
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<td>• Programs stored on floppy, hard, or network drive</td>
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<td>• Automatic error checking with messages</td>
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<td>• Cycle start, cycle stop</td>
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<td>• Control can be integrated into local area networks allowing access to shared/group program data</td>
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<td>• Control text can be loaded into word processor for translation into different languages</td>
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<td>• Block skip function</td>
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<td>• Continuous and incremental jog modes</td>
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<td>• Screen axes display gives absolute and distance to go values</td>
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<td>• D.N.C. facility for both drip feed or full program data transfer offers limitless program size</td>
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<td>• On-board controller diagnostics</td>
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<td>• CAD/CAM compatible</td>
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<td>• Fanuc OM compatible editor</td>
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<td>• ISO standard G &amp; M codes, 30 G-codes, 28 M-codes</td>
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<td>• Feedrate override</td>
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<td>CNC MACHINES I CONTINUED:</td>
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<td>• Safety Features: The unit shall be designed in such a way to provide safe operation. The minimum features listed below shall be provided.</td>
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<td></td>
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<td>• Ergonomically placed emergency stop button</td>
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<td>• Full program stop from keyboard</td>
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<td>• Toolpath graphics to verify programs prior to machining</td>
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<td>• Illuminated key operated power switch</td>
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<td>• Totally enclosed steel cabinet</td>
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<td>• Interlocked guard</td>
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MAKE:________________________ MODEL:________________________ ITEM #:________________________

Please enclose product literature and specifications of your substitution

PACKAGE PRICE TO INCLUDE ALL OF THE ABOVE LISTED ITEMS $______________

1 EA CNC MACHINES I LEARNING SYSTEM: Shall include CNC mill tooling package, student curriculum, and teacher’s assessment guide. These components shall meet the minimum specifications listed below:

• **CNC Mill Tooling Package:** Shall include the following components:
  • (1) Quick change tool holder
  • (2) End mill 1/8”, 3/8” shank
  • (2) End mill 5/16”, 3/8” shank
  • (1) End mill, 12mm, 3/8” shank
  • (1) Offset edge finder
  • (1) Large vise
  • (2) Step blocks
  • (2) Clamping blocks
  • (1) Parallels, 1”
  • (2) T-nuts, 10-32
  • (1) Drill chuck and key
  • (1) Vise mounting hardware kit
  • (4) Washer, 1” OD
  • (1) Spanner wrench

MAKE:________________________ MODEL:________________________ ITEM #:________________________

Please enclose product literature and specifications of your substitution
OFFER CONTINUED:

CNC MACHINES 1 LEARNING SYSTEM CONTINUED:

- **Interactive CDROM Curriculum CNC Machine Tools 1**: To include a minimum of 10 hours of interactive computer-based instruction in CDROM format with both theory and hands-on tutorials consisting of text, digital video, voice, online self-review tests, interactive simulations, color diagrams and color photos. Each CDROM based topic shall follow the Learning Activity Packet style format including the series of objectives and skills. Students shall be able to navigate to a specific page by using a pull down table of contents and by selecting specific sections via a button-based table of contents. The software shall include a glossary with definitions of technical words and terms that shall be accessible from a tool bar and from hot text imbedded in the computer-based instruction. The software shall be able to access certain related software directly from buttons within the instruction so students can open other software without leaving the computer-based instruction.

The curriculum shall be designed in a skill-based format that focuses on teaching industry relevant tasks. This curriculum shall be designed for use in a self-directed student learning environment. Each Learning Activity Packet shall be organized into three or more segments. All learning materials needed shall be contained in the packets including text material and hands-on tutorials. No external text sources shall be required. A self-review of five to ten questions shall be provided after each segment. Shall consist of 3 titles on CDROM. All curriculum shall be supplied on a secured CD. Shall also support e-learning.

**Student Curriculum**: Shall consist of (2) sets of 3 Learning Activity Packets in print-based format and one set of interactive CDROM curriculum disks. The student curriculum shall contain at least 16 industry skills in CNC machine operations covering the following topics: introduction to CNC mill programming, basic CNC mill programming and circular interpolation. The curriculum shall cover operation, safety and setup according to international machine tool standards with step-by-step instructions. Shall also support e-learning.
OFFER CONTINUED:

CNC MACHINES 1 LEARNING SYSTEM CONTINUED:

- **Teacher’s Assessment Guide:** A teacher’s assessment guide shall be provided. It shall contain student data sheets, data sheet solutions, self-review answers, quizzes, quiz answers, student skill record sheets, and authentic assessment. A quiz shall be provided for each packet. A question shall be provided in each quiz for each cognitive objective taught. All tasks listed in the packet shall be listed on personalized student record sheets. The teacher’s assessment guide shall include directions for authentic skill assessment.

MAKE:________________________  MODEL:________________________  ITEM #:________________________

Please enclose product literature and specifications of your substitution

PACKAGE PRICE TO INCLUDE ALL OF THE ABOVE LISTED ITEMS $______________

1  EA  CNC MILL PLASTIC MATERIAL PACKAGE: Shall include:
- (12) plastic rectangular stock, 90-mm x 65-mm x 6-mm,
- (150) two-color plastic rectangular stock, 63-mm x 38-mm x 1.5 mm

MAKE:________________________  MODEL:________________________  ITEM #:________________________

Please enclose product literature and specifications of your substitution

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1  EA  CNC MILL RAW MATERIAL PACKAGE (METAL): Shall include:
- (48) aluminum rectangular stock, 1-in x 1-in x 1-in
- (24) aluminum rectangular stock, 4-in x 2-7/8-in x 11/16-in.

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Please enclose product literature and specifications of your substitution

- Combined VR CNC Milling & VR CNC Turning (Site Licence)
  VR CNC Mill software shall include the features listed below:
  - Fanuc format programming through a standard qwerty keyboard
  - Simultaneous 3-axis contour control
  - Full circular and linear interpolation
  - Inch or metric programming
  - Subprogram with repeat facility/program call
  - Tool radius compensation
  - Manual and programmable machine stops
  - Floating datum facility
  - Tool offset for 16 tools
  - Ability to load, save and edit multiple tool offsets
  - Hard home
  - Programmable dwell
  - Auxiliay inputs and outputs
  - Program offset giving dry run facility
  - Full G and M code listings with help instructions, context sensitive
  - Single step or continuous program execution
  - Axes jog on all axes with variable feedrate
  - Programmable feedrate 762 mm/min (30") 508 mm/min (20") on Z axis
  - Rapid traverse 30 IPM (762mm/min)
  - Comprehensive toolpath graphics including 2-D and 3-D simulation
  - Tool animation
  - Zoomed or sectioned views with rotation
  - Directory listings
  - Program merge facility
  - Full edit mode allowing alter, delete, and insert
  - Programs stored on floppy, hard, or network drive
  - Automatic error checking with messages
  - Cycle start, cycle stop
  - Control can be integrated into local area networks allowing access to shared/group program data
  - Control text can be loaded into word processor for translation into different languages
  - Block skip function
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<td>Combined VR CNC Milling &amp; VR CNC Turning (Site License) Continued:</td>
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<td>● Continuous and incremental jog modes</td>
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<td>● Screen axes display gives absolute and distance to go values</td>
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<td>● D.N.C. facility for both drip feed or full program data transfer offers limitless program size</td>
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<td>● On-board controller diagnostics</td>
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<td>● CAD/CAM compatible</td>
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<td>● Feed rate override</td>
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Please enclose product literature and specifications of your substitution

VR CNC TURNING SOFTWARE: shall be designed to run on a PC and provide the following functions via a standard QWERTY keyboard keypad:

● Simultaneously controlled axes X and Z
● Full Circular Interpolation
● Combined use of Absolute and Incremental in same block
● Internal/External screwcutting with angular exit of thread
● Inch or Metric programming with mixing
● Diameter or Radius Programming
● Subprogram with repeat facility
● Multiple repetitive cycles
● Rough and Finish Cycles
● Output to printer and punch tape
● Tool offsets for 16 tools
● Dry Run Facility
● Single Block and Auto Execution
● Chamfer/Corner Rounding
● Datum Shift
● Color Graphic Simulation with choice of tool representation for solid material removal or tool mapping and 3-D dynamic visualization
● Zoomed Views
● Edit and Simulate Mode
● Directory Listing
● Program Merge Facility
● Program Storage on Floppy or Hard Disk
● Up to 6000 G codes in Editor
● Context Sensitive Help for instant on screen help
OFFER CONTINUED:

VR CNC TURNING SOFTWARE CONTINUED:

- Comprehensive Error Messages
- Cycle Start, Feed, Hold
- Programming using I.S.O. Standard G and M codes
- Overtravel Limits and Emergency Stop
- Tool Wear Compensation
- Constant Surface Speed
- Programmable spindle speed 50-5000 rpm
- 2 axis linear interpolation with vectorially correcting feed rates
- Manual and programmable stop
- Two way scroll CNC editor with help screen
- Full edit facilities include add, delete, insert, help, and insertion of comments
- Feed and Speed overrides
- RS 232C interface for DNC link to machine tool
- Multi-function display of machine status during run cycle
- Axis Jog on both axis with variable feedrate and 0.01 mm jog
- Programmable feedrate 0-1000 mm/min. on X axis and 0-1500 mm/min. on Z axis
- Canned cycles, repeat canned cycles for turning, facing, grooving, drilling.
- Program comments, component info and tool information all stored on disk.
- Programmable dwell 0-99 seconds.
- 64 K editor memory (5000 plus lines of code)
- Programmable scale facility allowing for the component to be reduced or enlarged before simulation.
- Programmable feedrate, 0-47”/min.
- Link up to computer to printer, plotter and paper tape punch readers.
- Line by line input with immediate tool path plot.

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<td>VR CNC TURNING SOFTWARE CONTINUED:</td>
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Please enclose product literature and specifications of your substitution
OFFER CONTINUED:

CNC SOFTWARE: The CNC software shall include interactive tutorial capabilities, global and context sensitive help screens available throughout the program. The unit shall have line by line input with immediate toolpath plot. Full graphic simulation of the part including tool-definition and 3-D graphical part representation.

All programs shall be displayed in color with different colors for program comments and help screens. Tool path graphics are to be shown in color enhancing the tool definition, work holding and component shape. Components can also be shown in full 3D dynamic color visualization.

The software shall provide the following programming codes, which mimic Fanuc controls:
- G00 Fast Traverse
- G01 Linear Traverse
- G02 Clockwise Circular Interpolation
- G03 Counter Clockwise Circular Interpolation
- G04 Dwell
- G20 Inch Units
- G21 Metric Units
- G28 Goto Reference
- G40 Tool Compensation Cancel
- G41 Tool Compensation Left
- G42 Tool Compensation Right
- G50 Work Coordinate Setting/Max. Spindle Speed Setting
- G70 Finishing Cycle
- G71 Multiple Turning
- G72 Multiple Facing
- G73 Pattern Repeating
- G74 Pecking Cycle
- G76 Multiple Thread
- G81 Drilling Cycle
- G90 Turning Cycle
- G92 Threading Cycle
- G94 Facing Cycle
- G96 Constant Surface Speed
- G97 Cancel Constant Surface Speed
- G98 Feed Per Minute
- G99 Feed Per Revolution
- M00 Program Stop
- M01 Program End 4
- M02 End of Program
- M03 Spindle Forward
- M04 Spindle Reverse
- M05 Spindle Stop
- M06 Tool Change
- M08 Coolant On
- M09 Coolant Off
- M10 Chuck Open
- M11 Chuck Close
- M13 Coolant On, Spindle Forward
- M14 Coolant On, Spindle Reverse
- M25 Quill Extend
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<td>M26 Quill Retract</td>
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<td>M30 Program End</td>
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<td>M38 Door Open</td>
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<td>M39 Door Close</td>
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<td>M62 Output 1 On</td>
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<td>M63 Output 2 On</td>
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<td>M64 Output 1 Off</td>
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<td>M65 Output 2 Off</td>
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<td></td>
<td>M66 Wait Input 1 On</td>
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<td>M67 Wait Input 2 On</td>
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<td>M76 Wait Input 1 Off</td>
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<td>M77 Wait Input 2 Off</td>
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<td></td>
<td>M98 Subprogram Call</td>
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<td></td>
<td></td>
<td>M99 Subprogram Exit</td>
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MAKE:________________________
MODEL:________________________
ITEM #:________________________

Please enclose product literature and specifications of your substitution

PACKAGE PRICE TO INCLUDE ALL OF THE ABOVE LISTED ITEMS $______________

1 EA CNC LATHE: This system shall include a table-top CNC lathe, programming software and user’s guide. The CNC lathe shall be a full 2-axis CNC lathe, programmed using Fanuc series OT format, utilizing 2D or 3D full color tool path graphics. The software shall incorporate all the major functions and facilities used on industrial controllers with the further option of linking to CAD/CAM.

- **Turning Center:**
  - The machine shall be of heavy construction with "V" way bed design with flame hardened and ground ways.
  - The drive screws shall be precision recirculating ballscrews.
  - The lead screw shall have a telescoping guard for protection from chips.
  - The headstock design shall be of a one piece cast iron cartridge resistant to vibration and heat.
  - The spindle shall be supported by 2 self-opposed angular contact bearings at the front and a deep groove support bearing at the rear.
  - Swing Over Bed: 6-1/4"
  - Swing Over Cross slide:3-1/8"
  - Distance Between Centers: 10-3/4"
  - Chuck: 3 jaw self-centering 3.25"
  - Spindle Bore: 13/16"
  - Spindle Speeds (stepless): 0-3500 RPM
  - Spindle Taper: #3MT
OFFER CONTINUED:

DELIVERED PRICES

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<td></td>
<td></td>
<td><strong>Turning Center Continued:</strong></td>
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<tr>
<td></td>
<td></td>
<td>• Tailstock Taper: #2MT</td>
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<tr>
<td></td>
<td></td>
<td>• Ground Bed X axis Ballscrew: 16mm diameter,</td>
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<td></td>
<td></td>
<td>5 mm pitch</td>
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<tr>
<td></td>
<td></td>
<td>• Z axis Ballscrew: 16mm diameter, 5mm pitch</td>
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<tr>
<td></td>
<td></td>
<td>• Feedrates: 0 to 1200 mm/min</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• System resolution: 0.0004”</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>• Length: 28”</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Width: 27”</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Height: 22”</td>
<td></td>
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<td></td>
<td></td>
<td>• Main Supply: 50/60Hz, 1 phase 220/240 VAC</td>
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<tr>
<td></td>
<td></td>
<td>(supplied with 110/220 step-up transformer)</td>
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<tr>
<td></td>
<td></td>
<td>• Spindle Motor: 1.6HP DC Permanent Magnet</td>
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<tr>
<td></td>
<td></td>
<td>• Axes Motors: Stepper Motors 200 steps/rev D.C.</td>
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<tr>
<td></td>
<td></td>
<td>• Interlocked Guard</td>
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<tr>
<td></td>
<td></td>
<td>• Manual 3 Jaw Self Centering Chuck</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Quick Change Tool post with 1 holder</td>
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</table>

**Safety Features:** The unit shall be designed in such a way to provide safe operation. The following minimum features shall be provided:

- Ergonomically placed emergency stop button
- Interlocked guard
- Axes limit switches
- See through safety guard
- Key operated emergency stop button
- Micro switch on axis to prevent headstock crashing
- Tool path graphics to verify programs prior to matching

MAKE:________________________ MODEL:________________________ ITEM #:________________________

Please enclose product literature and specifications of your substitution

**Programming Software:** The software supplied shall be designed to run on a PC and provide the following functions via a standard QWERTY keyboard:

- Simultaneously controlled axes X and Z.
- Full Circular Interpolation.
- Combined use of Absolute and Incremental in same block.
- Internal/External screw cutting with angular exit of thread.
- Inch or Metric programming with mixing.
OFFER CONTINUED:

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</table>

- **Programming Software Continued:**
  - Diameter or Radius Programming
  - Subprogram with repeat facility
  - Multiple repetitive cycles
  - Output to printer and punch tape
  - Tool offsets for 16 tools
  - Dry run facility
  - Single block and auto execution
  - Chamfer/corner rounding
  - Datum shift
  - Color Graphics Simulation with choice of tool representation for solid material removal or tool mapping and 3-D dynamic visualization.
  - Zoomed Views
  - Edit Simulate Mode
  - Directory Listing
  - Program Merge Facility
  - Program Storage on Floppy or Hard Disk
  - UP to 6000 G coded in editor
  - Context Sensitive Help for instant on screen help
  - Comprehensive Error Messages
  - Cycle Start, Feed, Hold
  - Programming using I.S.O. Standard G and M codes
  - Over travel Limits and Emergency Stop
  - Tool Wear Compensation
  - Constant Surface Speed.
  - Programmable spindle speed 50-5000 rpm.
  - 2 axis linear interpolation with vectorially correcting feed rates
  - Manual and programmable stop.
  - Two way scroll CNC editor with help screen.
  - Full edit facilities include add, delete, insert, help, and insertion of comments
  - Feed and Speed overrides.
  - RS 232C interface for DNC link to machine tool.
  - Multi-function display of machine status during run cycle
  - Axis Jog on both axis with variable feedrate and 0.01 mm jog
  - Programmable feedrate 0-1000 mm/min. on X axis and 0-1500 mm/min. on Z axis
  - Canned cycles, repeat canned cycles for turning, facing, grooving, drilling
  - Program comments, component info and tool information all stored on disk
  - Programmable dwell 0-99 seconds
OFFER CONTINUED:

**Programming Software Continued:**
- 64 K editor memory (5000 plus lines of code)
- Programmable scale facility allowing for the component to be reduced or enlarged before simulation
- Programmable feedrate, 0-47”/min
- Link up to computer to printer, plotter and paper tape punch readers
- Line by line input with immediate tool path plot.

---

**CNC Software:** To enhance educational benefits of the machine, the CNC software shall include interactive tutorial capabilities, global and context sensitive help screens available throughout the program. The unit shall have line by line input with immediate toolpath plot. Full graphic simulation of the part including tool-definition and 3-D graphical part representation.

All programs shall be displayed in color with different colors for program comments and help screens. Tool path graphics are to be shown in color enhancing the tool definition, work holding and component shape. Components can also be shown in full 3D dynamic color visualization.

The software shall provide the following programming codes, which mimic Fanuc controls:
- G00 Fast Traverse
- G01 Linear Traverse
- G02 Clockwise Circular Interpolation
- G03 Counter Clockwise Circular Interpolation
- G04 Dwell
- G20 Inch Units
- G21 Metric Units
- G28 Goto Reference
- G40 Tool Compensation Cancel
- G41 Tool Compensation Left
- G42 Tool Compensation Right
- G50 Work Coordinate Setting/Max. Spindle Speed Setting
- G70 Finishing Cycle
- G71 Multiple Turning
- G72 Multiple Facing
- G73 Pattern Repeating

Please enclose product literature and specifications of your substitution.
### CNC Software Continued:

<table>
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<tr>
<th>QTY</th>
<th>UNIT</th>
<th>DESCRIPTION</th>
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<tr>
<td></td>
<td></td>
<td><strong>G74</strong> Pecking Cycle</td>
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<td></td>
<td></td>
<td><strong>G76</strong> Multiple Thread</td>
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<td></td>
<td></td>
<td><strong>G81</strong> Drilling Cycle</td>
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<tr>
<td></td>
<td></td>
<td><strong>G90</strong> Turning Cycle</td>
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<tr>
<td></td>
<td></td>
<td><strong>G92</strong> Threading Cycle</td>
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<tr>
<td></td>
<td></td>
<td><strong>G94</strong> Facing Cycle</td>
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<tr>
<td></td>
<td></td>
<td><strong>G96</strong> Constant Surface Speed</td>
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<tr>
<td></td>
<td></td>
<td><strong>G97</strong> Cancel Constant Surface Speed</td>
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<tr>
<td></td>
<td></td>
<td><strong>G98</strong> Feed Per Minute</td>
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<tr>
<td></td>
<td></td>
<td><strong>G99</strong> Feed Per Revolution</td>
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<tr>
<td></td>
<td></td>
<td><strong>M00</strong> Program Stop</td>
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<tr>
<td></td>
<td></td>
<td><strong>M01</strong> Program End 4</td>
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<tr>
<td></td>
<td></td>
<td><strong>M02</strong> End of Program</td>
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<tr>
<td></td>
<td></td>
<td><strong>M03</strong> Spindle Forward</td>
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<td></td>
<td></td>
<td><strong>M04</strong> Spindle Reverse</td>
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<td></td>
<td></td>
<td><strong>M05</strong> Spindle Stop</td>
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<tr>
<td></td>
<td></td>
<td><strong>M06</strong> Tool Change</td>
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<td></td>
<td></td>
<td><strong>M08</strong> Coolant On</td>
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<td></td>
<td></td>
<td><strong>M09</strong> Coolant Off</td>
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<td></td>
<td></td>
<td><strong>M10</strong> Chuck Open</td>
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<td></td>
<td></td>
<td><strong>M11</strong> Chuck Close</td>
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<td></td>
<td></td>
<td><strong>M13</strong> Coolant On, Spindle Forward</td>
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<td></td>
<td></td>
<td><strong>M14</strong> Coolant On, Spindle Reverse</td>
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<tr>
<td></td>
<td></td>
<td><strong>M25</strong> Quill Extend</td>
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<tr>
<td></td>
<td></td>
<td><strong>M26</strong> Quill Retract</td>
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<td></td>
<td></td>
<td><strong>M30</strong> Program End</td>
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<td><strong>M38</strong> Door Open</td>
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<td><strong>M39</strong> Door Close</td>
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<td><strong>M62</strong> Output 1 On</td>
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<td><strong>M66</strong> Wait Input 1 On</td>
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<td><strong>M76</strong> Wait Input 1 Off</td>
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<td><strong>M77</strong> Wait Input 2 Off</td>
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<td></td>
<td><strong>M98</strong> Subprogram Call</td>
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<td><strong>M99</strong> Subprogram Exit</td>
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</tbody>
</table>

MAKE: __________________________  MODEL: __________________________  ITEM #: __________________________

Please enclose product literature and specifications of your substitution

**PACKAGE PRICE TO INCLUDE ALL OF THE ABOVE LISTED ITEMS**  $_______________
OFFER CONTINUED:

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<tr>
<th>QTY</th>
<th>UNIT</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>1</td>
<td>EA</td>
<td>CNC MACHINES 3 LEARNING SYSTEM: Shall include CNC lathe tooling package, student curriculum, and teacher’s assessment guide. These components shall meet the minimum specifications listed below.</td>
</tr>
</tbody>
</table>

- **Tooling Package:** Used with the CNC lathe to perform machining activities. To include:
  - (2) Right-Hand Roughing Tools
  - (2) Left-Hand Roughing Tools
  - (2) 60 Degree Neutral Tools,
  - (2) Cutoff Tool
  - (1) Right-Hand 90 Degree Boring Bar,
  - (1) 1/4” Stub Drill w/Drill Bushing

MAKE:________________________ MODEL:________________________ ITEM #:________________________

Please enclose product literature and specifications of your substitution

- **Student Curriculum:** Shall consist of (2) sets of 2 Learning Activity Packets in print-based format and one set of interactive CDROM curriculum disks. The student curriculum shall contain at least 7 industry skills including: machine keypad programming, lathe operation and coordinate determination, linear and circular interpolation, G and M code utilization, and positioning. The student curriculum shall contain at least 7 industry skills. Shall also support e-learning.

MAKE:________________________ MODEL:________________________ ITEM #:________________________

Please enclose product literature and specifications of your substitution

- **Interactive CDROM Curriculum: CNC Machine Tools 3:** Shall include a minimum of 8 hours of interactive computer-based instruction in CDROM format with both theory and hands-on tutorials consisting of text, digital video, voice, online self-review tests, interactive simulations, color diagrams and color photos. Each CDROM based topic shall follow the Learning Activity Packet style format including the series of objectives and skills. Students shall be able to navigate to a specific page by using a pull down table of contents and by selecting specific sections via a button-based table of contents. The software shall include a glossary with definitions of technical words and terms that shall be accessible from a tool bar and from hot text imbedded in the computer-based instruction. The software shall be able to access certain related software
**OFFER CONTINUED:**

**Interactive CDROM Curriculum: CNC Machine Tools 3 Continued:**
directly from buttons within the instruction so students can open other software without leaving the computer-based instruction. Shall also support e-learning.

The curriculum shall be designed in a skill-based format that focuses on teaching industry-relevant tasks. This curriculum shall be designed for use in a self-directed student learning environment. Each Learning Activity Packet shall be organized into three or more segments. All learning material needed shall be contained in the packets including text material and hands-on tutorials. No external text sources shall be required. The specific cognitive skills taught by each text passage shall be identified next to the passage. Each lab activity shall be identified by the industrial task taught. A self-review of five to ten questions shall be provided after each segment.

Shall consist of 2 skill based Learning Activity Packets with at least 7 industry skills including: machine keypad programming, lathe operation and coordinate determination, linear and circular interpolation, G and M code utilization, and positioning. All LAPs shall be supplied on secured CDs. This software shall be provided as a one seat license. Shall also support e-learning.

**MAKE:________________________**
**MODEL:________________________**
**ITEM #:________________________**

Please enclose product literature and specifications of your substitution

**PACKAGE PRICE TO INCLUDE ALL OF THE ABOVE LISTED ITEMS**

$______________

1 EA **CNC LATHE RAW METAL MATERIAL KIT:** Shall include:
3 aluminum round stock, ¾-in x 37-in.

**MAKE:________________________**
**MODEL:________________________**
**ITEM #:________________________**

Please enclose product literature and specifications of your substitution

$______________

1 EA **CNC Machines II:** Provides training program to support e-learning content in Level 2 CNC Machining and Computer Aided Manufacturing to include:

**CNC Machines 2 Learning System** shall include tooling package, interactive CDROM curriculum, student curriculum and teacher’s assessment guide. These components shall meet the minimum specifications listed below:
OFFER CONTINUED:

- **Tooling Package**: Used with the CNC mill to perform machining activities. To include the components listed below:
  - Drill: stub, #7
  - End Mill: 5/16”, 3/8” shank
  - End Mill: ¼”

Please enclose product literature and specifications of your substitution.

- **Interactive CDROM Curriculum: CNC Machine Tools 2**: To include a minimum of 10 hours of interactive computer-based instruction in CDROM format with both theory and hands-on tutorials consisting of text, digital video, voice, online self-review tests, interactive simulations, color diagrams and color photos. Each CDROM based topic shall follow the Learning Activity Packet style format including the series of objectives and skills. Students shall be able to navigate to a specific page by using a pull down table of contents and by selecting specific sections via a button-based table of contents. The software shall include a glossary with definitions of technical words and terms that shall be accessible from a tool bar and from hot text imbedded in the computer-based instruction. The software shall be able to access certain related software directly from buttons within the instruction so students can open other software without leaving the computer-based instruction.

The curriculum shall be designed in a skill-based format that focuses on teaching industry relevant tasks. This curriculum shall be designed for use in a self-directed student learning environment. Each Learning Activity Packet shall be organized into three or more segments. All learning materials needed shall be contained in the packets including text material and hands-on tutorials. No external text sources shall be required. The specific cognitive skills taught by each text passage shall be identified next to the passage. Each lab activity shall be identified by the industrial task taught. A self-review of five to ten questions shall be provided after each segment. Shall consist of 3 titles on CDROM. All curriculum shall be supplied on a secure CD and shall support e-learning.

Please enclose product literature and specifications of your substitution.
OFFER CONTINUED:

DELIVERED PRICES

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<tr>
<td></td>
<td></td>
<td><strong>CNC Machines II Continued:</strong></td>
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<td>• <strong>Student Curriculum:</strong> Shall consist of (2) sets of 3 Learning Activity Packets in print-based format and one set of interactive CDROM curriculum disks. The student curriculum shall contain at least 11 industry skills in manual machine tools including: spindle speeds, feed rates, cycle times, types of cycles such as peck drill canned, subprograms, cutter compensation, and mirroring. The curriculum shall cover operation, safety and setup according to international machine tool standards with step-by-step instructions and shall support e-learning.</td>
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<td>Please enclose product literature and specifications of your substitution</td>
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• **Teacher’s Assessment/ Portfolio Guide:** A teacher’s assessment guide shall be provided. It shall contain student data sheets, data sheet solutions, self-review answers, quizzes, quiz answers, student skill record sheets, and authentic assessment. A quiz shall be provided for each packet. A question shall be provided in each quiz for each cognitive objective taught. All tasks listed in the packet shall be listed on personalized student record sheets. The teacher’s assessment guide shall include directions for authentic skill assessment.

MAKE:________________________ | MODEL:________________________ | ITEM #:____________________ |
| Please enclose product literature and specifications of your substitution |

 PACKAGE PRICE TO INCLUDE ALL OF THE ABOVE LISTED ITEMS $_____________

1 EA **COMPUTER-AIDED MANUFACTURING 1 LEARNING SYSTEM:** Shall include 1-station CAM software license, CAM supplemental disk, tensile specimen fixture kit and adapter plate, endmills, student curriculum, interactive CDROM curriculum and teacher’s assessment guide. The components shall meet the below minimum specifications:

• **NO SUBSTITUTE CAM Software:** To include a 1-station license for Windows-based MASTERCAM CAM software. It shall permit the user to design parts on computer using menu driven selections or input an IGIS or DFX CAD file and then create a generic cutter path file. The systems shall also include post processors for the system to be compatible with the CNC equipment supplied. These post processors shall be capable of creating a CNC code program from the cutter path file. The software shall also be able to reverse
**OFFER CONTINUED:**

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<td><strong>NO SUBSTITUTE CAM Software Continued:</strong></td>
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- Post process a CNC file. Minimum features are listed below:
  - Full 3-D system
  - Each geometric entity does not have to be labeled
  - The analyzed feature displays information (angle, start-point, center-point, length, X&Y distances, radii diameter) about any line, point or arc with a few simple key strokes
  - Graphics driven: lines and arcs are selected with a mouse
  - System use of color graphics makes separate entities of geometry easy to view
  - Graphics and text can be viewed on the monitor at the same time
  - Post process to multiple controls with original NC program
  - Geometry capability: 3484 points, 3584 lines, 2978 arcs
  - Ruled Surface Tool Path - blended up to ten different contours together in three different planes.
  - Surface of Revolution Tool Path - revolve a bottle shape about an axis.
  - Swept Surface Tool Path - define an XY profile and a general cross section
  - The back-plotting command displays tool paths in three dimensions
  - Pocketing Tool Path
  - Contour Tool Path 2D/3D
  - Drill Tool Path
  - Letters Creation Tool Path
  - Time study calculates elapsed time for each cutting cycle for the given feed rate.
  - Ellipse generation from the given width, height, and incremental angle
  - Projection of contours or pockets onto tilted plane, cylinder or cone
  - Links to CAD programs using CADL, DXF, IGES and NFL conversion. *Input data generated from Basic, Fortran or Pascal programs using ASCII files.
  - Geometry files transferred to and from CADKEY, AUTOCAD, VERSACAD & ANVIL
  - Mouse compatible
  - Output for both mill and lathe

**DELRIVERED PRICES**
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<tr>
<td></td>
<td></td>
<td><strong>NO SUBSTITUTE CAM Software Continued:</strong></td>
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<tr>
<td></td>
<td></td>
<td>• IBM Compatible format, mouse driven</td>
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<td>• <strong>CAM SUPPLEMENTAL DISK:</strong> Shall contain a variety of complete and partially complete files that will be used during training to enable students to analyze and modify CAM designs.</td>
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<td><strong>STUDENT CURRICULUM:</strong> Shall consist of (2) sets of 4 Learning Activity Packets in print-based format and one set of interactive CDROM curriculum disks. The student curriculum shall contain at least 23 industrial skills in the following topics: CAD/CAM part geometry; CAM-Mill process; introduction to contouring; cycle time estimation; tool and material selection; cutter compensation; parameter pages; roughing and finishing; contour applications; the drill toolpath and the pocket toolpath.</td>
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<td>The curriculum shall be designed in a skill-based format that focuses on teaching industry relevant tasks. This curriculum shall be designed for use in a self-directed student learning environment. Each Learning Activity Packet shall be organized</td>
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Please enclose product literature and specifications of your substitution
OFFER CONTINUED:

**STUDENT CURRICULUM Continued:**
into three or more segments. All learning materials needed shall be contained in the packets including text material and hands-on tutorials. No external text sources shall be required and shall support e-learning. The specific cognitive skills taught by each text passage shall be identified next to the passage. Each lab activity shall be identified by the industrial task taught. A self-review of five to ten questions shall be provided after each segment.

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**INTERACTIVE CDROM CURRICULUM:**

**COMPUTER-AIDED MANUFACTURING 1:** Shall include a minimum of 12 hours of interactive computer-based instruction in CDROM format with both theory and hands-on tutorials consisting of text, digital video, voice, online self-review tests, interactive simulations, color diagrams and color photos. Each CDROM based topic shall follow the Learning Activity Packet style format including the series of objectives and skills. Students shall be able to navigate to a specific page by using a pull down table of contents and by selecting specific sections via a button-based table of contents. The software shall include a glossary with definitions of technical words and terms that shall be accessible from a tool bar and from hot text imbedded in the computer-based instruction. The software shall be able to access certain related software directly from buttons within the instruction so students can open other software without leaving the computer-based instruction. Shall consist of 4 titles on CDROM. All curriculum shall be supplied on a secured CD and shall support elearning.

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- TEACHER’S ASSESSMENT/PORTFOLIO GUIDE:
  A teacher’s assessment guide shall be provided. It shall contain student data sheets, data sheet solutions, self-review answers, quizzes, quiz answers, student skill record sheets, and authentic assessment. A quiz shall be provided for each packet. A question shall be provided in each quiz for each cognitive objective taught. All tasks listed in the packet shall be listed on personalized student record sheets. The teacher’s assessment guide shall include directions for authentic skill assessment.

MAKE:________________________ MODEL:________________________ ITEM #:__________________________
Please enclose product literature and specifications of your substitution

PACKAGE PRICE TO INCLUDE ALL OF THE ABOVE LISTED ITEMS $______________

1 EA CAM RAW MATERIAL PACKAGE: Shall include
   (1) aluminum 1” x 1/8” x 36”
   (1) plastic ¼” x 2 ½” x 3 ½” stock

MAKE:________________________ MODEL:________________________ ITEM #:__________________________
Please enclose product literature and specifications of your substitution

$______________

1 EA NO SUBSTITUTE: MasterCAM Mill and Lathe 20 seat license plus one instructor seat, current version $______________

10 EA CAD/CNC/CAM CLASSROOM FURNITURE: 10 two student and 1 instructor computer work stations with center grommet dips located over the chase cavity as described below.

Frame specifications:
All frames are to be constructed of 1” square, 16-gauge steel tubing finished with epoxy powdercoat paint. The steel tubing is to be assembled through the use of a patented connection system. This system allows frames to be assembled by placing cast connectors with ABS plastic sleeves; frames are assembled by placing the steel tubing over the connector and twisting the tube one-quarter turn to lock into place.

Work surfaces are supported by horizontal frame members or by cantilever support originating from the vertical frame members.

Panel inserts are to be held in place by a patented panel-molding system. This system allows for the easy removal and replacement of panel inserts without disturbing wires or cables and without disassembling the furniture.
OFFER CONTINUED:

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<td>CAD/CNC/CAM CLASSROOM FURNITURE CONTINUED:</td>
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Panel insert specifications:
Melamine panel inserts are to be constructed of a 3/4” thick, high-density particleboard core with a two-sided thermally fused melamine covering. This thermal-fuse process must exceed the performance standards set by the American National Standards Institute (ANSI).

Worksurface specifications:
Worksurfaces are to be constructed of 1.125” thick, high-density particleboard with a writing surface of a 1/16” high-pressure laminate and a balancing laminate backer sheet on the underside of the worksurface. Worksurfaces include 1” radius front and side corners with vinyl edge molding to complement the laminate color. Dips or grommets in back of the worksurfaces allow for cabling into the Chase system.

Worksurface support included with all worksurfaces must meet or exceed Business Institutional Furniture Manufacturer’s Association (BIFMA) load requirements.

Worksurfaces are to be attached to metal framing members with a locking 14-gauge steel die-cut slot tab. Slot tabs are inserted and locked into the framing, while the worksurface is attached to the slot tab with #10 Phillips pan-head screws. Several options can be used for worksurface height adjustments to meet Americans with Disabilities Act (ADA) guidelines and requirements.

Chase™ system specifications
The Chase system provides an interconnecting passageway that links workstation-to-workstation.

The Chase system is a wire management and electrical raceway below the work-surface with a height of 13” (suspended) or 25” (full-height) and an inside width of 5” (single work-stations) or 11” (back-to-back workstations).

The Chase is provided with sliding doors to facilitate wire and cable access. Chase doors are constructed of a 1/4” thermally fused melamine-covered medium-density fiberboard (MDF) to match the frame finish. If desired, a solid panel insert can be provided in lieu of sliding doors. The suspended version of the Chase is provided with an extruded plastic bottom deck to prevent wires from dropping to the floor.

Electrical specifications visit the UL website and search for Interior Concepts: http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/geosrch.html
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DELIVERED PRICES

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CAD/CNC/CAM CLASSROOM FURNITURE CONTINUED:

**Electrical:**
Eight-wire electrical system must consist of four 125-volt, 20-amp power circuits. The system is to provide two safety grounds and two neutral conductors. This provides one safety ground and neutral conductor for general-purpose equipment, and one safety ground and neutral conductor for use with voltage-transient sensitive equipment such as computers. The electrical Chase™ system can accommodate up to 13 pluggable duplex receptacle inserts per circuit. The system must permit a total of 52 duplex receptacles at 1.5 amps each per power feed. Each receptacle block should be considered as two duplex receptacles even if they are unused at the initial installation, to allow for future needs.

**Keyboard Tray Specifications:**
Keyboard tray will have a lift and lock adjustable keyboard mechanism with slider tray for mouse, no knobs or levers, just lift and lock with a mouse tray can be used on right or left side. Keyboard tray will be provided with an ergonomically friendly gel wrist rest. 6 1/4" height adjustment with 1 1/4" above track to 5" below track and a 360 degree swivel with a 21 5/8" track length.

**CPU Mount Specifications:**
The CPU Holder has heavy-duty construction and will easily accommodate oversized CPUs, it will equally protect mini units from workplace hazards. It adjusts to fit CPUs 3.5in wide and up and 13.25in to 19.25in tall. Made from cold-rolled, powder-coated steel. Designed to easily support CPUs weighing up to 70 lbs. Slides easily and smoothly on nylon glides in 16in track. » Rotates a full 360° for complete access to cables and ports. Easy-grasp handle facilitates access. Installed dimensions, Width: CPU width + 3.5in, Height:CPU height + 4.5in. Mount on glide or directly onto the work surface. Lifetime Warranty.

MAKE: __________________________  MODEL: __________________________  ITEM #: __________________________

Please enclose product literature and specifications of your substitution

$___________  $___________

1 EA  ON-SITE INSTALLATION, PLACEMENT OF EQUIPMENT & TURNKEY OPERATION VERIFIED AND APPROVED BY LRCC BEFORE VENDOR LEAVES THE SITE  $___________

1 EA  TRAINING FOR FACULTY: 40 HOURS  $___________
DISCOUNT: If there is an educational discount, please apply:

TOTAL BID SUBMISSION $______________

BIDDER CONTACT INFORMATION:
The following information is for this office to be able to contact a person knowledgeable of your bid response, and who can answer questions regarding it:

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<tr>
<th>Contact Person</th>
<th>Local Telephone Number</th>
<th>Toll Free Telephone Number</th>
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DELIVERY TIME:
Note: Delivery is to be accomplished no later 90 days ARO. However delivery will be accepted sooner.

BID RESULTS:
Bid results may be viewed on our web site at: http://www.ccsnh.edu/closed-bids click on the Closed Bids Tab. Bid results will be mailed to you if you include a self-addressed envelope with the correct amount of postage on it. Bid results will not be given by telephone.

ATTACHMENTS:
The following attachments are an integral part of this bid invitation:

There are no attachments

Note: To be considered, bid must be signed on front cover sheet in the space provided.