Standards of Apprenticeship

Developed by

DES MOINES AREA COMMUNITY COLLEGE (DMACC)
ADVANCED MANUFACTURING

For the trade(s) of

MACHINIST

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DEVELOPED IN COOPERATION WITH THE
OFFICE OF APPRENTICESHIP
U.S. DEPARTMENT OF LABOR

Recognized as part of the National Apprenticeship Program in accordance with the basic standards of apprenticeship established by the Secretary of Labor.

APPROVED BY:

________________________

Terrence Benewich, Regional Director
U.S. Department of Labor, Office of Apprenticeship

DATE:
These DMACC Advanced Manufacturing Standards of Apprenticeship represent a fundamental change and a dramatic improvement in conducting and delivering apprenticeship training in the nation’s metalworking industry.

The competency-based approach provides the opportunity for the apprentice to move through the system at his/her own pace, benchmark the achievement of each set of Core Competencies, and build a portfolio of skills. This will provide a measured return-on-investment in training, and add value to competency-based training by awarding nationally recognized credentials with a “Certificate of Completion of Training” from the United States Department of Labor, Office of Apprenticeship. For the apprentice, this means a more flexible approach to training, an environment to validate the levels of achievement, recognition within the industry and a clear and defined pathway to college credits and an Associate of Arts Degree through a local community college.

In addition, companies may tailor an occupation to meet their own specific business requirements and local needs by adding company specific competencies to the Core Competency requirements. By most reports, companies who use this approach have found their apprentices more motivated and their products and services improved.

These Standards of Apprenticeship result from a highly deliberative process. That process commenced with the delineation of recommended Core Competencies by an Expert Panel drawn broadly from the metalworking industry and representing a wide range of occupations. The recommended competencies were subsequently validated through eight regional industry meetings held throughout the United States.
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DEFINITIONS

APPRENTICE: Any individual employed by the employer meeting the qualifications described in the Standards of Apprenticeship who has signed an Apprenticeship Agreement with the local Sponsor providing for training and related instruction under these Standards, and who is registered with the Registration Agency.

APPRENTICESHIP AGREEMENT: The written agreement between the apprentice and the Sponsor setting forth the responsibilities and obligations of all parties to the Apprenticeship Agreement with respect to the Apprentice’s employment and training under these Standards. Each Apprenticeship Agreement must be registered with the Registration Agency.

APPRENTICESHIP COMMITTEE: The Apprenticeship Committee established by the Program Sponsor under these Standards who will be charged with the operation of the program.

CERTIFICATE OF COMPLETION OF APPRENTICESHIP: The Certificate of Completion of Apprenticeship issued by the Registration Agency to those registered apprentices certified and documented as successfully completing all required Core Competencies outlined in these Standards of Apprenticeship.

COMPANY SPECIFIC COMPETENCIES: Competencies identified by an individual Sponsor that are necessary to meet the Sponsor’s specific business needs and are in addition to the required Core Competencies. All company specific competencies and required Core Competencies must be attained to successfully complete a Competency Based Apprenticeship Program registered by the Sponsor. (See Employer Registration Packet)

CORE COMPETENCIES: Competencies identified by the Expert Panel, validated across the metalworking industry, and field tested through a national pilot effort.

DICTIONARY OF OCCUPATIONAL TITLES (DOT): Provides basic occupational information including job definitions, detailed tasks to be performed, and a number indicating a range of time to prepare for average performance in the occupation.

EMPLOYER: Any organization or business who employs an apprentice under these Standards of Apprenticeship.

JOURNEYWORKER: A recognized level of competency as recognized within the industry. Use of the term may also refer to a mentor, technician, specialist or other skilled worker, or, an individual who has documented sufficient skills and knowledge of a trade, craft or occupation, either through formal apprenticeship or through practical on-the-job experience, and formal training. This individual is recognized by his/her employer as being fully qualified to perform the work of the trade, craft or occupation.

SKILL STANDARDS: Industry skill standards are benchmarks for performance and define the competencies for workers in the metalworking industry. Skill standards describe the common duties and the knowledge, skills, abilities, and related attributes needed to perform the duties well.

O*NET-SOC CODE: The Occupational Information Network (O*NET) codes and titles are based on the new Standard Occupational Classification (SOC) system mandated by the federal Office of Management and Budget for use in collecting statistical information on occupations. The O*NET classification, which replaces the DOT, uses an 8-digit O*NET-SOC code. Use of the SOC classification as a basis for the O*NET codes ensures that O*NET information can be readily linked to labor market information such as occupational employment and wage data at the national, State, and local levels.
ON-THE-JOB LEARNING (OJL): Competencies learned on the job in which the apprentice must become proficient before a completion certificate is awarded. The learning must be through structured, supervised work experience.

PROGRAM SPONSOR: The Sponsor in whose name the Standards of Apprenticeship will be registered, and will have the full responsibility for administration and operation of the apprenticeship program.

REGISTERED APPRENTICESHIP INFORMATION SYSTEM (RAIS): The Federal system which provides for the automated collection, retention, updating, retrieval and summarization of information related to apprentices and apprenticeship programs.

REGISTRATION AGENCY: The United States Department of Labor; Office of Apprenticeship 210 Walnut Street, Room 715, Des Moines IA 50309

RELATED INSTRUCTION: An organized and systematic form of instruction designed to provide the apprentice with knowledge of the theoretical and technical subjects related to his/her occupation.

STANDARDS OF APPRENTICESHIP: This entire document including all appendices and attachments hereto, and any future modifications or additions approved by the Registration Agency.

SUPERVISOR OF APPRENTICE(S): An individual designated by the employer to supervise or have charge and direction of an apprentice.
SECTION I. – PROGRAM ADMINISTRATION

The DMACC Advanced Manufacturing Apprenticeship Machinist Advisory Committee is responsible for the development of these Standards of Apprenticeship and having them certified by the United States Department of Labor, Office of Apprenticeship.

RESPONSIBILITIES OF THE APPRENTICESHIP COMMITTEE:

A. All communications with the United States Department of Labor, Office of Apprenticeship regarding these Standards of Apprenticeship.

B. Encouraging the metalworking industry to establish and register apprenticeship programs in accordance with these Standards of Apprenticeship.

C. Appointing metalworking industry members to the DMACC Apprenticeship Committee. The Committee shall be composed of at least six (6) members. The Committee shall meet bi-annually, but additional meetings may be scheduled when required. Any decisions made by the Committee shall be by majority vote and shall be final.

D. Continuously monitor, review, and adjust if necessary, the curriculum for accuracy, continuity, and state-of-the-art procedures and equipment to ensure it meets the requirements of the participating employers.

E. To periodically review these Standards and keep them consistent and updated with industry and Office of Apprenticeship practices.

F. Approval and selection of instructors to teach classes.

G. Manage the operational budget, and seek resource for future years.

H. To establish minimum qualifications apprentice applicants within the area covered by these Standards.

I. To be responsible for the successful operation of the approved standards by performing the duties herein listed.

J. Designate an Apprenticeship Program Manager/Coordinator to be responsible for all apprentices registered here under. The Program Manager shall maintain all required related training records, serve as a liaison between apprentices, employers, community colleges, the registration agency, and the Committee, and perform other duties relative to the apprenticeship program as may be assigned and delegated by the Committee.

K. Respond to the needs and requests of any local apprenticeship committee established within a participating business.

L. To implement approved standards of apprenticeship and to register such local standards with the appropriate registration agency.

M. To establish minimum standards of related instruction and on-the-job training required of apprentices, and to see these are adhered to both on the job and in the classroom.

N. To hear and resolve all complaints or violations of apprenticeship agreements. The employer or the apprentice may consult with the Apprenticeship Committee (regarding classroom curriculum) at any time for an interpretation of any provision of the standards over which differences may occur.
O. To insure that the apprenticeship program at all times remains in compliance with Federal, state and local requirements, as well as those of the registration agency.

Where a union is involved, each employer/bargaining unit is entitled and encouraged to have a local joint apprenticeship committee. That local committee shall be comprised of equal numbers of labor and management representatives and will be considered the sponsor of that individual apprenticeship program. The local committee shall only have jurisdiction over the program within their business.

RESPONSIBILITIES OF THE APPRENTICESHIP MANAGER/COORDINATOR

A. The Program Manager/Coordinator shall maintain a copy of all required training records, serve as a liaison between apprentices, employer, program sponsor, community college(s), the registration agency, and the committee, and perform other duties relative to the apprenticeship program as may be assigned and delegated by the Committee.

B. To see that all Apprentices are placed under an approved and properly executed written Apprenticeship Agreement and that it is submitted to the Office of Apprenticeship.

C. To establish a system of permanent records through the Office of Apprenticeship, reports and examinations that will provide means of determining the progress and conduct of each Apprentice in both the on-the-job training and related instruction requirements throughout his/her term of Apprenticeship.

D. To Notify the Office of Apprenticeship of all changes in Apprenticeship Status, including suspensions and cancellations of Apprenticeship Agreements and completion of Apprenticeship.

RESPONSIBILITIES OF THE EMPLOYER

A. The Employer shall maintain a copy of all required training records

B. To conduct, operate and administer this program in conformity with applicable provisions of 29 CFR Part 30, as amended.

C. To carry out the provisions of these standards and records are maintained as established herein and to complete and furnish the Program Sponsor and Registration Agency with the required forms for registration.

D. To pass on the qualifications of applicants for apprenticeship.

E. To see that all apprentices are placed under an approved and properly executed written Apprenticeship Agreement and that it is submitted to the Apprenticeship Coordinator

F. To see that the apprentices are rotated from job process to job process in accordance with the intent of these standards and in accordance with the schedule of work experience included herein.

G. To provide for continuous employment of apprentices insofar as possible.

H. All employers signatory to these standards shall be familiar with the terms of the same and shall maintain a copy on file at their place of business.

I. Ensure all applicants and apprentices read and/or are given a copy of these Standards.
RESPONSIBILITIES OF THE APPRENTICE

Apprentices, having read these Standards as formulated by the DMACC Advisory Committee and signed an Apprenticeship Agreement with the employer, agree to all the terms and conditions contained therein and agree to abide by the program sponsor and employer’s rules and policies, including any amendments, complete all on-the-job learning and related instruction, and to attain the required Core Competencies, and company specific competencies as the program sponsor and employer may deem necessary to develop a level of competency and proficiency equivalent to a journey worker level employee.

In signing the Apprenticeship Agreement, apprentices assume the following responsibilities and obligations under the apprenticeship program:

A. Perform diligently and faithfully the work of the occupation and other pertinent duties assigned by the employer in accordance with the provisions of these Standards.

B. Respect the property of the employer and abide by the working rules and regulations of the program sponsor and employer.

C. Attend and satisfactorily complete all required related instruction in subjects related to the occupation as provided under these Standards and employer.

D. Maintain and make available such records of work experience and training received on the job and in related instruction as may be required by the program sponsor and employer.

E. Develop and practice safe working habits and work in such a manner as to assure his/her personal safety and that of other workers.

F. The apprentice will be provided with a copy of the written rules and policies and will sign an acknowledgment receipt of same. This procedure will be followed whenever revisions or modifications are made to the rules and policies.

SECTION II. - EQUAL OPPORTUNITY PLEDGE - Title 29 CFR 29.5(b)(20) and 30.3(b)

The recruitment, selection, employment, and training of apprentices during their apprenticeship, will be without discrimination because of race, color, religion, national origin, or sex. The employer will take affirmative action to provide equal opportunity in apprenticeship and will operate the apprenticeship program as required under Title 29 of the Code of Federal Regulations (CFR), Part 30.

SECTION III. - AFFIRMATIVE ACTION PLAN – Title 29 CFR 29.5(b) and 30.4

If the Employer employs five or more apprentices, the Employer shall adopt and follow the procedures in the Affirmative Action Plan and Selection Procedures as required under Title 29, CFR Part 30. (Appendix E and F)

SECTION IV. - QUALIFICATIONS FOR APPRENTICESHIP – Title 29 CFR 29.5(b)(10)

Applicants will meet the following minimum qualifications:

A. AGE

All applicants must certify that they are least 18 years of age and legal to work in the United States.
B. **EDUCATION**

A high school diploma or GED equivalency is required. Applicant must provide an official transcript for high school and post high school education and training. All GED records must be submitted, if applicable.

Applicants must submit a DD-214 to verify military training and/or experience if they are a veteran and wish to receive consideration for such training/experience.

C. **PHYSICAL**

Applicants will be physically capable of performing the essential functions of the apprenticeship program, with or without a reasonable accommodation, and without posing a direct threat to the health and safety of the individual or others. Applicants may be subject to a physical examination, or screened for current illegal use of drugs, or both upon acceptance into the program and prior to being employed.

**SECTION V. - SELECTION OF APPRENTICES** – Title 29 CFR 30.5

Selection into the apprenticeship program will be in accordance with the selection procedures made a part of these Standards (Appendix F).

Employers shall publish a notice about apprenticeship opportunities, the application requirements, and its equal opportunity policy, in accordance with its affirmative action plan and Title 29 of the Code of Federal Regulations, Part 30.4(c), at least 30 days in advance of the earliest date for application at each interval for accepting applications. In the event that applications are taken throughout the year, notice shall be given not less than semi-annually. Before being enrolled as an apprentice, qualified applicants may be subject to a physical examination and/or drug test as a condition of acceptance into the apprenticeship program. The cost of such examination and/or drug test shall be the responsibility of the apprenticeship committee or the employer.

In addition, selection procedures shall provide for admission, as appropriate, of qualified applicants, qualified transfers from other registered apprenticeship programs, and/or qualified U.S. Military Veterans or Job Corps graduates who may be preferred over other apprentice candidates in the pool.

**SECTION VI. - APPRENTICESHIP AGREEMENT** – Title 29 CFR 29.5(b) (11)

After an applicant for apprenticeship has been selected, but before employment as an apprentice or enrollment in related instruction, the apprentice will be covered by a written apprenticeship agreement (Appendix D) signed by the program sponsor, employer, and the apprentice, approved by and registered with the Registration Agency. Such agreement will contain a statement making the terms and conditions of these standards a part of the agreement as though expressly written therein. A copy of each Apprenticeship Agreement will be furnished to the apprentice, the program sponsor, and the Registration Agency, and the employer. An additional copy will be provided to the Veteran’s State Approving Agency for those veteran apprentices desiring access to any benefits to which they are entitled.

Prior to signing the Apprenticeship Agreement, each selected applicant will be given an opportunity to read and review these Standards, the employers written rules and policies, and the Apprenticeship Agreement.

The Registration Agency will be advised promptly of the execution of each Apprenticeship Agreement and will be given all the information required for registering the apprentice.
SECTION VII. - RATIO OF APPRENTICES TO JOURNEYWORKERS - Title 29 CFR 29.5(b)(7)

Only that number of apprentices shall be employed as can be given proper supervision and training and can be assured of reasonable opportunity for employment on the completion of the apprenticeship. The employer’s ratio of apprentices to journey workers shall be as stated on the applicable Occupational Schedule (Appendix A) attached to and made a part of these standards.

SECTION VIII. - TERM OF APPRENTICESHIP - Title 29 CFR 29.5(b)(2)

The term of apprenticeship will be defined in approximate years of structured on-the-job learning (OJL), supplemented by the required hours of related instruction, that will lead to successful completion of the required Core Competencies as stated in the Core Competency Requirements (Appendix A).

Full credit will be given for on-the-job learning evaluated as satisfactory and previous acquisition of the required competencies.

This is a competency-based apprenticeship program and is not constrained by time. The term of apprenticeship will provide sufficient on-the-job learning (OJL) to enable the apprentice to attain the required competencies for each registered occupation.

SECTION IX. - PROBATIONARY PERIOD – Title 29 CFR 29.5(b)(8), (b)(19)

All applicants selected for apprenticeship will serve a probationary period of not less than the six (6) months of on-the-job learning (OJL).

During the probationary period either the apprentice or the employer may terminate the Apprenticeship Agreement, without stated cause, by notifying the other party in writing. The records for each probationary apprentice will be reviewed prior to the end of the probationary period. Records may consist of periodic reports regarding progress made in attaining the required competencies, job performance, both the OJL and related instruction, and any disciplinary action taken during the probationary period.

Any probationary apprentice evaluated as satisfactory after a review of the probationary period will be given full credit for the probationary period and continue in the program.

After the probationary period the Apprenticeship Agreement may be canceled at the request of the apprentice, or may be suspended or canceled by the employer for reasonable cause after documented due notice to the apprentice and a reasonable opportunity for corrective action. In such cases, the employer will provide written notice to the apprentice, DMACC and to the Registration Agency of the final action taken.

SECTION X. - HOURS OF WORK

Apprentices will generally work the same hours as journey workers, except that no apprentice will be allowed to work overtime if it interferes with attendance in related instruction classes.

The time required for an apprentice to attain the required competencies may vary because of unforeseen circumstances or an individual’s speed of learning. Apprentices who do not complete the required competencies scheduled for a given Performance Review Cycle will have their on-the-job learning extended until the required competencies are attained.
SECTION XI. - APPRENTICE WAGE PROGRESSION – Title 29 CFR 29.5(b)(5)

Apprentices will be paid a progressive schedule of wages during their apprenticeship based on the attainment of required competencies and the subsequent improved job performance. Before an apprentice is advanced to the next wage step or to journey worker status, the employer will evaluate all progress to determine whether advancement has been earned by satisfactory performance in their on-the-job learning (OJL) and in related instruction. In determining whether satisfactory progress has been made, the employer will be guided by the competency, job performance, and related instruction records and reports.

Typically, the progressive wage schedule will be an increasing percentage of the journey worker wage rate. The percentages that will be applied to the applicable journey worker rate are shown on the attached (Appendix A.) In no case will the starting wages of apprentices be less than that required by any minimum wage law which may be applicable.

SECTION XII. - CREDIT FOR PREVIOUS EXPERIENCE – Title 29 CFR 29.5(b)(12) and 30.4(c)(8)

The employer may grant credit toward the term of apprenticeship to new apprentices who demonstrate previous acquisition of skills or knowledge equivalent to the required competencies.

Apprentice applicants seeking credit for previous experience gained outside the supervision of the Employer must submit the request at the time of application and furnish such, records, affidavits, and other documentation to substantiate the claim. Applicants requesting such credit who are selected into the apprenticeship program will start at the beginning wage rate. The request for credit will be evaluated and a determination made by the employer during the probationary period when actual on-the-job and related instruction performance can be examined. Prior to completion of the probationary period, the amount of credit to be awarded will be determined after review of the apprentice’s previous work and training/education record, and the evaluation of the apprentice’s performance and demonstrated skill and knowledge during the probationary period guided by the competency, job performance, and related instruction records and reports.

An apprentice granted credit will be advanced to the wage rate corresponding to the designated performance level for the period to which such credit accrues. The Registration Agency will be advised of any credit granted and the wage rate to which the apprentice is advanced. The granting of advanced standing will be uniformly applied to all apprentices.

SECTION XIII. - WORK EXPERIENCE – Title 29 CFR 29.5(b)(3) and 30.8

During the apprenticeship, the apprentice will receive the on-the-job learning (OJL) and related instruction that will lead to the successful completion of the Core Competencies, as stated in the Core Competency Requirements (Appendix B), to develop the level of job performance and proficiency of a skilled journey worker. The on-the-job learning will include the Core Competencies and the company specific competencies tailored to each individual company’s business needs. The on-the-job learning will be under the direction and guidance of the supervisor of apprentice(s).

SECTION XIV. - RELATED INSTRUCTION – Title 29 CFR 29.5(b)(4)

During each segment of structured on-the-job learning (OJL), each apprentice is required to participate in coursework related to the job that will lead to successful completion of the required Core Competencies as stated in the Core Competency Requirements (Appendix C). The recommended term of apprenticeship will include no less than 144 hours of related instruction for each year of the apprenticeship.
Apprentices will not be paid for hours spent attending related instruction classes.

Any apprentice who is absent from related instruction classes, unless officially excused, will satisfactorily complete all course work missed before being advanced to the next wage rate corresponding to the designated performance level for that period. In cases of failure of an apprentice to fulfill the obligations regarding related instruction, on-the-job learning (OJL), and/or the required competencies without due cause, the employer will take appropriate disciplinary action and may terminate the Apprenticeship Agreement after due notice to the apprentice and opportunity for corrective action.

To every extent possible, related instruction will be closely correlated with the practical experience and training received on the job and the required Core Competencies as stated in the Core Competency Requirements (Appendix C). DMACC will monitor and document the apprentice’s progress in related instruction classes.

DMACC will secure competent instructors who have the knowledge, experience, and ability to teach and deliver hands-on learning aligned with the Core Competency Requirements. The progress of the apprentices and the effectiveness of the instructors will be evaluated by reviewing the competency, job performance, and related instruction records and reports, and the success of individual instructors will be carefully examined and monitored. (Appendix C).

SECTION XV. - SAFETY AND HEALTH TRAINING – Title 29 CFR 29.5(b)(9)

All apprentices will receive instruction in safe and healthful work practices both on-the-job and in related instruction that are in compliance with the Occupational Safety and Health Standards promulgated by the Secretary of Labor under 29 U.S.C. 651 et seq., as amended, dated December 29, 1970, and subsequent amendments to that law, or State Standards that have been found to be at least as effective as the Federal Standards.

Apprentices will be taught that accident prevention is very largely a matter of education, vigilance, and cooperation and that they should strive at all times to conduct themselves in their work to ensure their own safety and that of their fellow workers.

SECTION XVI. - SUPERVISION OF APPRENTICES – Title 29 CFR 29.5(b)(14)

The employer will be responsible for the apprentice’s on-the-job learning (OJL) and related instruction. Apprentices will be under the general supervision of the employer and under the direct supervision of the journey worker to whom they are assigned. The supervisor of apprentice(s) designated by the employer will be responsible for the apprentice’s work assignments, ensuring the apprentice is working under the supervision of a skilled journey worker, job performance is monitored and evaluated, and progress reports are completed and submitted to the employer.

No apprentice will be allowed to work without journey worker supervision.

SECTION XVII. - RECORDS AND EXAMINATIONS – Title 29 CFR 29.5(b)(6)

Each apprentice will be responsible for maintaining an Apprenticeship Record of his/her on the job learning (OJL) in regard to the attainment of the Core Competencies and company specific competencies tailored to each company’s individual business needs.

DMACC will be responsible for maintaining an Apprenticeship Related Instruction Record and for having this record verified by the apprentice’s employer at the end of each term. The apprentice will authorize the release of records from the related instruction provider to the employer. The Apprenticeship Record
and all data, written records of progress evaluations, corrective and final actions pertaining to the apprenticeship, will be maintained by and be the property of the program sponsor and/or employer. This record will be included in each apprentice’s record file maintained by the employer.

Before each period of advancement, or at any other time when conditions warrant, the employer will evaluate the apprentice’s record to determine whether he/she has made satisfactory progress. If an apprentice’s related instruction or on-the-job progress is found to be unsatisfactory, and/or the required Core Competencies are not being attained, the employer may determine whether the apprentice will continue in a probationary status, and require the apprentice to repeat the appropriate competency or series of competencies before advancing to the wage rate corresponding to the designated performance level for the period. In such cases, the employer will initiate a performance improvement plan with the apprentice.

Should it be found that the apprentice does not have the ability or desire to continue the training to become a journey worker, the employer will, after the apprentice has been given adequate assistance and opportunity for corrective action, terminate the Apprenticeship Agreement.

SECTION XVIII. - MAINTENANCE OF RECORDS – Title 29 CFR 29.5(b)(22)

The employer will maintain for a period of five (5) years from the date of last action, all records relating to apprentice applications (whether selected or not), the employment and training of apprentices, and any other information relevant to the operation of the program. This includes, but is not limited to, records on the recruitment, application and selection of apprentices, and records on the apprentice’s job assignments, promotions, demotions, layoffs, terminations, rate of pay, or other forms of compensation, hours of work and training, evaluations, and other relevant data. The records will permit identification of minority and female (minority and non-minority) participants. These records will be made available on request to the Registration Agency and DMACC Advisory Committee.

SECTION XIX. - CERTIFICATE OF COMPLETION OF APPRENTICESHIP – Title 29 CFR 29.5(b)(15)

Upon satisfactory completion of the requirements of the apprenticeship program as established in these Standards, the program sponsor and employer will so certify in writing to the Registration Agency and request that a Certificate of Completion of Apprenticeship be awarded to the completing apprentice(s). Such requests will be accompanied by the appropriate documentation for the related instruction, and the attainment of the required Core Competencies as defined in the Core Competency Requirements (Appendix B and C), and any additional documentation as may be required by the Registration Agency. The Employer will require the apprentice(s) to demonstrate a level of competency and proficiency equivalent to a journey worker level employee.

SECTION XX. - NOTICE TO REGISTRATION AGENCY – Title 29 CFR 29.5(b)(18)

The Registration Agency will be notified promptly of all new apprentices to be registered, credit granted, suspensions for any reason, reinstatements, extensions, modifications, completions, cancellations, and terminations of Apprenticeship Agreements and causes.

The website for E-registration of Apprentices is: https://www.rais.doleta.gov/EFORM_appr/login.cfm. Recommend that ATC add the address to favorites or bookmark it. ATC will receive a reference number from the BAT Representative, which is the number the Sponsor and/or Employer will use to log on to the Register Apprenticeship Information System (RAIS).
SECTION XXI. - REGISTRATION/CANCELLATION/DEREGISTRATION - 29.5(b)(17)

These standards of apprenticeship shall, upon adoption by the employer, be promptly registered with, and copies thereof filed with, the registration agency.

The employer reserves the right to discontinue participation at any time the apprenticeship program as set forth herein, including any modifications or amendments thereto. The registration agency and employers shall be notified promptly of any decision to cancel the entire program.

Deregistration of the apprenticeship program may be effected by the registration agency for failure of the program sponsor and/or employer(s) to abide by the provisions herein. Such deregistration will be in accordance with the registration agency’s regulations and procedures. Within fifteen (15) days of cancellation of the apprenticeship program (whether voluntary or involuntary), the program sponsor and/or employer shall notify each apprentice of the cancellation and the effect of it. This notification will conform to the requirements of Title 29, CFR Part 29.7

Participating Employers will, upon adoption of these Standards be submitted to the Registration Agency for approval and registration utilizing these Standards of Apprenticeship.

SECTION XXII. - AMENDMENTS OR MODIFICATIONS – Title 29 CFR 29.5(b)(17)

These Standards may be amended or modified at any time by the program sponsor provided that no amendment or modification adopted will alter any Apprenticeship Agreement in force at the time without the consent of all parties. Such amendment or modification will be submitted to the Registration Agency for approval and registration prior to being placed in effect. A copy of each amendment or modification adopted will be furnished to each apprentice to whom the amendment or modification applies.

SECTION XXIII. - ADJUSTING DIFFERENCES/COMPLAINT PROCEDURE - Title 29 CFR 29.5(b)(21) and 30(11)

The Apprenticeship Advisory Board will have full authority to supervise the enforcement of the Standards of Apprenticeship.

If an applicant or an apprentice believes an issue exists that adversely affects his/her participation in the apprenticeship program or violates the provisions of the Apprenticeship Agreement or Standards of Apprenticeship registered by the participating employer or program sponsor, relief may be sought through one or more of the following avenues, based on the nature of the issue:

Title 29 CFR 29.5 (b)(21)

The program sponsor will hear and resolve all complaints of violations concerning the Apprenticeship Agreement and the Registered Apprenticeship Standards, for which written notification is received within fifteen (15) days of violations. The program sponsor will make such rulings as it deems necessary in each individual case and within thirty (30) days of receiving the written notification. Either party to the Apprenticeship Agreement may consult with the Registration Agency for an interpretation of any provision of these Standards over which differences occur. The name and address of the appropriate authority to receive, process and make disposition of complaints is:

John F. Neumayer
2006 South Ankeny Boulevard, Bldg 3E
Ankeny, Iowa 50023-3993
515-964-6416 800-362-2127
Any apprentice or applicant for apprenticeship who believes that he/she has been discriminated against on the basis of race, color, religion, national origin, or sex, with regard to apprenticeship or that the equal opportunity standards with respect to his/her selection have not been followed in the operation of an apprenticeship program, may personally or through an authorized representative, file a complaint with the Registration Agency, or, at the apprentice or applicant’s election, with the private review body established by the program sponsor (if applicable).

The complaint will be in writing and will be signed by the complainant. It must include the name, address, and telephone number of the person allegedly discriminated against, the program sponsor and/or the employer involved, and a brief description of the circumstances of the failure to apply equal opportunity standards.

The complaint must be filed not later than one hundred eighty (180) days from the date of the alleged discrimination or specified failure to follow the equal opportunity standards, and in the case of complaints filed directly with the review body designated by the program sponsor to review such complaints, any referral of such complaint by the complainant to the Registration Agency must occur within the time limitation stated above or thirty (30) days from the final decision of such review body, whichever is later. The time may be extended by the Registration Agency for good cause shown.

Complaints of harassment in the apprenticeship program may be filed and processed under Title 29, CFR Part 30, and the procedures as set forth above.

The program sponsor and/or the employer will provide written notice of its complaint procedure to all applicants for apprenticeship and all apprentices.

The contact information for the Registration Agency is:
US Department of Labor/Office of Apprenticeship
210 Walnut, Room 715
Des Moines, IA  50023

**SECTION XXIV. - TRANSFER OF TRAINING OBLIGATION – Title 29 CFR 29.5(13)**

If the employer is unable to fulfill its training obligation due to lack of work or failure to conform to these Standards, efforts will be made by the employer to transfer an apprentice, with his/her consent, to another employer to provide the opportunity for continuous employment and to complete the required on-the-job learning experience in all aspects of the occupation.

**SECTION XXV. - TECHNICAL ASSISTANCE**

Technical Assistance such as that from the U.S. Department of Labor, Office of Apprenticeship may be requested to advise the program sponsor and/or employer.

The program sponsor and/or employer are encouraged to invite representatives from industry, education, business, private and/or public agencies to provide consultation and advice for the successful operation of their training program.
SECTION XXVI. - OFFICIAL ADOPTION OF STANDARDS OF APPRENTICESHIP:

The foregoing standards of apprenticeship are hereby officially adopted this __________day of __________, 2006.

DMACC Apprenticeship Committee

_____________________________________________  ______________________________
Signature of Authorized Representative  Title

_____________________________________________
Printed Name

_____________________________________________
Signature of Authorized Representative  Title

_____________________________________________
Printed Name  Date

_____________________________________________
Signature of Authorized Representative  Title

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Printed Name  Date

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Signature of Authorized Representative  Title

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Printed Name  Date

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Signature of Authorized Representative  Title

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Printed Name  Date

_____________________________________________
Signature of Authorized Representative  Title

_____________________________________________
Printed Name  Date
Appendix A

OCCUPATIONAL SCHEDULE

MACHINIST

DOT CODE: 600280022 O’NET/SOC CODE; 51-4041.00

This occupational schedule is attached to and a part of the apprenticeship standards for the above identified occupation.

1. TERM OF APPRENTICESHIP

The term of training for a Certified Machinist will include approximately 5600 hours of structured on-the-job learning (OJL), supplemented by the required hours of related instruction, that will lead to successful completion of the required Core Competencies as stated in the Core Competency Requirements (Appendix B). The term of apprenticeship for all Certified Machinists will include at minimum 2,000 hours of structured on-the-job learning. Full credit will be given for on-the-job learning evaluated as satisfactory and previous acquisition of the required competencies. This is a competency-based apprenticeship program and is not constrained by time. The term of apprenticeship will provide sufficient on-the-job learning (OJL) to enable the apprentice to attain the required competencies for each registered occupation.

2. RATIO OF APPRENTICES TO JOURNEY WORKERS

The maximum initial ratio allowable shall not exceed one (1) apprentice to one (1) journey worker steadily employed on a job site. Thereafter, one (1) additional apprentice may be added for each one (1) additional journey workers steadily employed on a job site.

3. APPRENTICE WAGE SCHEDULE

Wage increases will be granted upon the successful completion of both the on-the-job training and the related instruction. Apprentices shall be paid a progressively increasing schedule of wages based on the following schedule:

1st period - (1000 hrs) - ___% 5th period - (1000 hrs)- ___%
2nd period - (1000 hrs) - ___% 6th period - (600 hrs)- ___%
3rd period - (1000 hrs) - ___%
4th period - (1000 hrs) - ___%

Pre-Apprenticeship Wage =$______________________per hour.

Journey worker’s or completion hourly wage = $______________per hour.

Note: This Appendix shall be submitted by the Employer to DMACC; DMACC will forward to the Registration Agency along with the Employer Acceptance Agreement and Employer Information Sheet for consideration of program registration. This document shall accurately reflect such wage as presently instituted within the company. The Registration Agency will return (registered) forms to the program sponsor and to the Employer.

Disposition:
Original – [Employer]
Copies – DMACC and Registration Agency
Appendix B

WORK PROCESS CORE COMPETENCIES/ASSESSMENT FORM

MACHINIST

DOT CODE: 601260010      O*NET/SOC CODE: 51-4111.00        RAIS Code: 0296CB

APPRENTICE: NAME AND APPRENTICE ID NUMBER: ________________________________

SUPERVISOR: ___________________________ DEPARTMENT: ________________________

INSTRUCTIONS: Initial off-off each Core Competency as the apprentice demonstrates a level of proficiency that is equivalent to a journey worker level employee.

<table>
<thead>
<tr>
<th>APPRENTICE CORE COMPETENCIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>Identify and Demonstrate Use of Machine Safety and Personal Protective Equipment</td>
</tr>
<tr>
<td>Demonstrate Compliance with Lock-out/Tag-out Procedures and OSHA Requirements and Guidelines</td>
</tr>
<tr>
<td>Machine Operations and Material Handling, Hazardous Materials Handling and Storage, including EPA, Hazmat, and OSHA</td>
</tr>
<tr>
<td>Part Inspection</td>
</tr>
<tr>
<td>Process Control</td>
</tr>
<tr>
<td>Process Adjustment – Single Part Production</td>
</tr>
<tr>
<td>Participation in Processes Improvement</td>
</tr>
<tr>
<td>Manual Operations: Layout</td>
</tr>
<tr>
<td>Manual Operations: Benchwork</td>
</tr>
<tr>
<td>Sawing</td>
</tr>
<tr>
<td>Job Process Planning</td>
</tr>
<tr>
<td>Drilling Operations</td>
</tr>
<tr>
<td>Turning Operations: Turning Between Centers</td>
</tr>
<tr>
<td>Turning Operations: Chucking</td>
</tr>
<tr>
<td>Milling: Square Up a Block</td>
</tr>
<tr>
<td>Manual Milling: Vertical and Horizontal</td>
</tr>
<tr>
<td>Surface Grinding, Grinding Wheel Safety</td>
</tr>
<tr>
<td>Surface Grinding, Horizontal Spindle, Reciprocating Table</td>
</tr>
<tr>
<td>CNC Programming - Milling and / or CNC Programming - Turning</td>
</tr>
<tr>
<td>CNC: Write a Simple CNC Milling and / or CNC Turning Program and Review Tool Path</td>
</tr>
<tr>
<td>CNC: Operate a CNC Milling Machine and / or Operate a CNC Lathe</td>
</tr>
<tr>
<td>General Housekeeping &amp; Maintenance</td>
</tr>
<tr>
<td>Preventative Maintenance - Machine Tools</td>
</tr>
<tr>
<td>Tooling Maintenance</td>
</tr>
</tbody>
</table>

COMMENTS:

12
COMPETENCY BASED APPRENTICESHIP SYSTEM
CERTIFIED MACHINIST CORE COMPETENCY RECORD

APPRENTICE: ___________________________ EMPLOYEE NUMBER: ____________
SUPERVISOR: ___________________________ DEPARTMENT: ____________________

INSTRUCTIONS: Provide the Date the Training Started for each Core Competency, the Date the Core Competency was attained, and the Approximate Training Hours required for the apprentice to attain each Core Competency.

<table>
<thead>
<tr>
<th>CERTIFIED MACHINIST CORE COMPETENCIES</th>
<th>APPROXIMATE HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Identify and Demonstrate Usage of Machine Safety and Personal Protective Equipment</td>
<td>200</td>
</tr>
<tr>
<td>2. Demonstrate Compliance with Lock-out / Tag-out Procedures and OSHA Requirements and Guidelines</td>
<td>200</td>
</tr>
<tr>
<td>4. Part Inspection</td>
<td>200</td>
</tr>
<tr>
<td>5. Process Control</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>CERTIFIED MACHINIST CORE COMPETENCIES</td>
</tr>
<tr>
<td>---</td>
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</tr>
<tr>
<td>7.</td>
<td>Participation in Processes Improvement</td>
</tr>
<tr>
<td>10.</td>
<td>Sawing</td>
</tr>
<tr>
<td>11.</td>
<td>Job Process Planning</td>
</tr>
<tr>
<td>12.</td>
<td>Drilling Operations</td>
</tr>
<tr>
<td>13.</td>
<td>Turning Operations: Turning Between Centers - Level I Machining Skills</td>
</tr>
<tr>
<td>#</td>
<td>Skill Description</td>
</tr>
<tr>
<td>----</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>14</td>
<td>Turning Operations: Turning Between Centers - Level II Machining Skills</td>
</tr>
<tr>
<td>15</td>
<td>Turning Operations: Chucking - Level I Machining Skills</td>
</tr>
<tr>
<td>16</td>
<td>Turning Operations: Chucking - Level II Machining Skills</td>
</tr>
<tr>
<td>17</td>
<td>Milling: Square Up a Block</td>
</tr>
<tr>
<td>18</td>
<td>Manual Milling: Vertical and Horizontal - Level I Machining Skills</td>
</tr>
<tr>
<td>19</td>
<td>Manual Milling: Vertical and Horizontal - Level II Machining Skills</td>
</tr>
<tr>
<td>20</td>
<td>Surface Grinding, Grinding Wheel Safety</td>
</tr>
<tr>
<td>21</td>
<td>Surface Grinding, Horizontal Spindle, Reciprocating Table - Level I Machining Skills</td>
</tr>
</tbody>
</table>
### CERTIFIED MACHINIST CORE COMPETENCIES

<table>
<thead>
<tr>
<th>No.</th>
<th>Competency Description</th>
<th>Approximate Training Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>22.</td>
<td>Surface Grinding, Horizontal Spindle, Reciprocating Table - Level II Machining Skills</td>
<td>200</td>
</tr>
<tr>
<td>23.</td>
<td>CNC Programming - Milling and / or CNC Programming - Turning</td>
<td>200</td>
</tr>
<tr>
<td>24.</td>
<td>CNC: Write a Simple CNC Milling and / or CNC Turning Program and Review Tool Path</td>
<td>200</td>
</tr>
<tr>
<td>25.</td>
<td>CNC: Operate a CNC Milling Machine and / or Operate a CNC Lathe</td>
<td>200</td>
</tr>
<tr>
<td>26.</td>
<td>General Housekeeping &amp; Maintenance</td>
<td>200</td>
</tr>
<tr>
<td>27.</td>
<td>Preventative Maintenance - Machine Tools</td>
<td>200</td>
</tr>
<tr>
<td>28.</td>
<td>Tooling Maintenance</td>
<td>200</td>
</tr>
</tbody>
</table>
Core Competency
1. Identify and Demonstrate Use of Machine Safety and Personal Protective Equipment

DUTY & PERFORMANCE STANDARD

Duty: Carry out assigned responsibilities while adhering to safe practices in accordance with Occupational Safety and Health Administration (OSHA) requirements and guidelines. Document safety activities as required. Include appropriate personal protective equipment.

Performance Standard: Given written and verbal safety instructions and checklists based on OSHA requirements and guidelines, demonstrate safe workplace practices in material handling, machine operations, handling of tooling, and handling and application of coolants, cutting fluids and lubricants. Orally explain the actions taken which directly or indirectly bear upon safe practice in the execution of assigned duties.

PERFORMANCE OBJECTIVES: (What an apprentice must know and/or do to perform the work competently.)

Given instruction/demonstration and reading, and reviewing assignments, the apprentice will:

   a. Identify areas in plant that require hearing devices and safety glasses.
   b. Identify proper clothing required on the job to include shoes, gloves, sleeve and pant length, jewelry items, hair length, and personal cleanliness.
   c. The apprentice will demonstrate OSHA lifting techniques, proper air gun usage and identification, and safe chip handling techniques.
   d. The apprentice will identify all pinch points on primary and supportive machine tools and the proper placements of guards.
   e. The apprentice will demonstrate both emergency and standard shut down of all required equipment.
   f. The apprentice will demonstrate the proper use of hand tools to include hammer, wrenches, screwdrivers, punches and pliers.

Core Competency
2. Demonstrate Compliance with Lock-out and Tag-out Procedures and OSHA Requirements and Guidelines

DUTY & PERFORMANCE STANDARD

Duty: Carry out assigned responsibilities while adhering to safe practices in accordance with OSHA requirements and guidelines. Document safety activities as required.

Performance Standard: Given written and verbal safety instructions and checklists based on OSHA requirements and guidelines, demonstrate safe workplace practices in material handling, machine operations, handling of tooling, and handling and application of coolants, cutting fluids and lubricants. Orally explain the actions taken which directly or indirectly bear upon safe practice in the execution of assigned responsibilities.

NOTE:
Lock-out/tag-out and right-to-know will be accounted for in Industrial Safety and Environmental Protection. Material handling here means handling of shafts and overhead cranes, etc., and personal protection. The apprentice should recognize pinch points, cutting points, and control points.

Core Competency

DUTY & PERFORMANCE STANDARD

Duty: Handle and store hazardous materials as assigned while adhering to safe practices in accordance with OSHA and EPA requirements and guidelines. Document safety activities as required.

Performance Standard: Given written and verbal safety instructions detailing the handling and storage of hazardous materials in compliance with OSHA and EPA requirements and guidelines, demonstrate safe workplace practices in the identification, handling, and storage of hazardous materials.
Core Competency
4. Part Inspection

DUTY & PERFORMANCE STANDARD

Duty: Develop an inspection plan and inspect simple parts using precision tools and techniques. Prepare reports on the compliance of the parts.

Performance Standard: Given the necessary job process sheets for a part and verbal instructions, identify and select the required measuring instruments and conduct the required inspection procedure(s). Complete required written inspection report and make a decision to accept or reject component parts. Provide brief verbal explanation of inspection procedures, results, and decisions.

PERFORMANCE OBJECTIVES: (What an apprentice must know and/or do to perform the work competently)
Verify calibrations and sizes of all measuring devices. Take measurements to an accuracy of 1/64 for fractions, .002 for decimals and ½ degree for angles. Read standard orthographic prints and understand types of lines, title block information, revision levels, abbreviations, symbols, and tolerances. Identify surface defects, burrs and any adverse conditions such as flat or torn threads, out of round conditions, eccentricity, etc.

Core Competency
5. Process Control

DUTY & PERFORMANCE STANDARD

Duty: Follow a sampling plan. Inspect the samples for the required data. Enter the data on appropriate charts. Graph the data. Respond to the warning conditions indicated by the process charts.

Performance Standard: Given the necessary job process sheets for a part, verbal instructions, and the necessary charts and inspection tools, inspect parts according to the sampling plan, collecting the data required for the process control chart. Working with the supplied control and warning limits, place the data, produce new data as needed, graph the data, and take the Stop or Go actions as indicated by the results of producing the process control chart. Provide brief verbal explanation regarding the decision taken.

Core Competency
6. Process Adjustment—Single Part Production

DUTY & PERFORMANCE STANDARD

Duty: Analyze the performance of a single-part production process. Formulate process adjustments or improvements where appropriate. Where appropriate, notify supervision of the proposed adjustment and/or improvement. Where authorized, carry out the strategies for process adjustment and/or improvement.

Performance Standard: Given a process plan, part print, inspection process plan, verbal instructions, the necessary tools and equipment, and a part having routine problems being processed, analyze the problem(s), propose a remedy(ies), having been given authorization to implement the process improvement(s), carry it out. Explain the corrective actions and the reasoning used to perform the diagnosis.

Core Competency
7. Participation in Process Improvement

DUTY & PERFORMANCE STANDARD

Duty: As a member of a process team, analyze the performance of a production process. With the team formulate process adjustments or improvements where appropriate. Where appropriate, notify supervision of the proposed adjustments and/or improvement. Where authorized, carry out the strategies for process adjustment and/or improvement.

Performance Standard: Given a process plan, part print, inspection process plan, verbal instructions, the necessary tools and equipment, and a routine production process having a problem(s), as a team member, analyze the problem(s), propose a remedy(ies), having been given authorization to implement the process improvement(s), carry it out. Carry out the cause and effect analysis by participating in the development of the appropriate Q.C. methodology with the team, i.e., fishbone diagram. Explain the Q.C. tool, the corrective actions and the reasoning connecting the root cause analysis to the remedial actions taken.

Core Competency

DUTY & PERFORMANCE STANDARD

Duty: Layout the location of hole centers and surfaces within an accuracy of +/-.015 inch.
Performance Standard: Given a surfac e plate, surface gauge, layout height gauge, combination set, scriber, layout ink, prick punch, ball peen hammer, process plan, and part print, layout hole locations, radii, and surfaces matching the specifications.

PERFORMANCE OBJECTIVES: (What an apprentice must know and/or do to perform the work competently.)

a. Given instruction/demonstration and reading assignments, the apprentice will demonstrate knowledge and understanding of blueprint reading, and understand orthographic projections in order to perform all machining tasks.

b. Given a part print, surface plate and all the required layout tools, the apprentice will select proper tools, and use correct procedure, to layout a part including the location of hole centers and surfaces within the accuracy of +/- .015 inch.

Core Competency

DUTY & PERFORMANCE STANDARD

Duty: Using aluminum or mild steel, hand drill and hand tap holes. Use hand drills, hand taps, tap wrench, files, scrapers, and coated abrasives to deburr parts. Use arbor presses to perform press fits. Use bench vises and hand tools appropriately.

Performance Standard: Given a process plan, blueprint, and access to hand tools, produce a part with two holes prepared for hand tapping, a hole prepared (reamed) for the press fit of a bushing, and a stud for one of the tapped holes. Deburr the part, hand drill and hand tap the holes, press in the bushing, and install the stud.

PERFORMANCE OBJECTIVES: (What an apprentice must know and/or do to perform the work competently.)

a. Given instruction/demonstration and reading assignments, the apprentice will demonstrate knowledge of blueprint reading, and the identification of bandsaw parts and their function.

b. Given a part print, surface plate and all the required layout tools, the apprentice will select proper tools, and use correct procedure, to layout a part including the location of hole centers and surfaces within the accuracy of +/- .015 inch.

c. Given instruction/demonstration, reading assignment, information sheets, and reference charts, the apprentice will select the correct tap drills to achieve a minimum of 75% thread in the required tapped holes, and the correct pre-drill hole for reaming operations to achieve tolerances specified on the part print.

d. Given instruction/demonstration, reading assignment, information sheets, and reference charts, the apprentice will calculate cutting speeds required to perform benchwork-machining operations.

e. Given instruction/demonstration, reading assignment, information sheets, and reference charts, the apprentice will calculate dimensions required for a press fit, and use an arbor to perform press fit operations.

f. Given instruction/demonstration on the procedure used for hand filing, drilling, and reaming, the apprentice will perform filing, drilling, and reaming operations within the specified tolerances on the part print.

g. Given instruction/demonstration on the proper tap selection and the procedure used for hand tapping, the apprentice will perform tapping operations within the specified tolerances on the part print.

Core Competency
10. Sawing

DUTY & PERFORMANCE STANDARD

Duty: Set-up and perform sawing to a layout. Choose and mount appropriate blades; weld, break, and re-weld blades as necessary.

Performance Standards: Given a part with a finished layout and access to an appropriate bandsaw and blades, finish saw the part to the layout.

PERFORMANCE OBJECTIVES: (What an apprentice must know and/or do to perform the work competently.)

a. Given instruction/demonstration and reading assignments, the apprentice will demonstrate knowledge of bandsaw safety procedures, and the identification of bandsaw parts and their function.
b. Given instruction/demonstration on the proper selection, mounting, set-up, and usage procedure for necessary work-holding devices on the bandsaw, the apprentice will select, mount, set-up, hold, and align work using work holding devices on the bandsaw to perform the required sawing operations.

c. Given instruction/demonstration, reading assignment, information sheets, and reference charts, the apprentice will choose the correct blade for specific sawing operations, and calculate cutting speeds and apply these calculations while performing required sawing operations on the bandsaw.

d. Given instruction/demonstration, reading assignment, and the correct bandsaw blade material to perform a specific sawing operation, the apprentice will properly weld and mount the finished blade on the bandsaw.

e. Given a bandsaw, process plan, part print, part with finished layout, bandsaw blade, hand tools, bandsaw accessories, instruction/demonstration on the proper set-up, and procedures used for sawing, the apprentice will perform the sawing operations on the part according to the layout specified on the part print.

Core Competency
11. Job Process Planning

DUTY & PERFORMANCE STANDARD

Duty: Develop a process plan for a part requiring milling, drilling, turning, or grinding. Fill out an operation sheet detailing the process plan and required speeds and feeds.

Performance Standard: Given a print detailing a part requiring milling, drilling, turning, and grinding, verbal instructions, and appropriate references, formulate a set of strategies to manufacture the part and fill out an operation sheet reflecting the chosen strategies including the required speeds and feeds.

Identify all major components and functions of the machine tools, and all major hand tools, measuring tools, tools and fixtures, and work materials. Provide the rationale for the speeds and feeds selected.

PERFORMANCE OBJECTIVES: +/- (What an apprentice must know and/or do to perform the work competently.)

a. The apprentice will be able to choose the most appropriate location for the origin on the part, and establish a method for defining that location during set-up.

b. The apprentice will be able to select appropriate work holding devices for various work pieces.

c. The apprentice will be able to select appropriate tooling and tool holders for various operations and materials.

d. The apprentice will be able to calculate speeds and feeds for proper tool-life and surface finish.

Core Competency
12. Drilling Operations

DUTY & PERFORMANCE STANDARD

Duty: Set-up and operate machine tools to perform routine drilling operations.

Performance Standard: Given a semi-finished part, process plan, part print, and hand precision, and cutting tools, as well as access to a drill press and its accessories, produce a part matching the process plan and the blueprint specifications. The part specified will be in the semi-finished state, having been squared up and the outer surfaces completed with five center-drilled locations. Finishing the part will require the finishing of the five center-drilled locations. Each hole must have at least two secondary operations. The secondary operations will consist of reaming, spot facing, countersinking, counterboring, and counterdrilling. At least one hole must be a blind hole and one a through hole. At least one hole will be power tapped.

PERFORMANCE OBJECTIVES: (What an apprentice must know and/or do to perform the work competently.)

a. Given instruction/demonstration and reading assignments, the apprentice will demonstrate knowledge of drill press safety procedures, and the identification of drill press and radial drill press parts and their function.

b. Given instruction/demonstration on the proper selection, mounting, set-up, and usage procedure for necessary work-holding devices on the drill press, the apprentice will select, mount, set-up, hold, and align work using work holding devices on the drill press to perform the required drill press operations.

c. Given instruction/demonstration on the proper selection, mounting, set-up, and usage procedure for necessary tool-holding devices on the drill press, the apprentice will select, mount, set-up, and align tool-holding devices on the drill press to perform the required drill press operations.
d. Given instruction/demonstration, reading assignment, information sheets, and reference charts, the apprentice will calculate cutting speeds and feeds and apply these calculations while performing required machining operations on the drill press.

e. Given a drill press, process plan, part print, semi-finished part, cutting tools, hand tools, drill press accessories, and instruction/demonstration on the proper set-up and procedures used for drilling, tapping, reaming, spot facing, countersinking, and counterboring, the apprentice will perform these secondary operations on the semi-finished part to within the tolerances specified on the part print.

Core Competency

13. Turning Operations: Turning Between Centers, Level I Machining Skills

DUTY & PERFORMANCE STANDARD

Duty: Set-up and carry out between centers turning operations for straight turning.

Performance Standard: Given raw material, process plan, part print, and hand, precision, and cutting tools, as well as access to an appropriate turning machine and its accessories, produce a part matching the process plan and the part print specifications using appropriate trade techniques and speeds and feeds. The part specified should have at least three diameters within +/-0.002 inch, one UNC external thread, one UNF external thread, and require an end-for-end swap.

Core Competency

14. Turning Operations: Turning Between Centers, Level II Machining Skills

DUTY & PERFORMANCE STANDARD

Duty: Set-up and perform between centers turning for straight and tapered turning by offsetting the tailstock.

Performance Standard: Given raw material, process plan, part print, and hand, precision, and cutting tools, as well as access to an appropriate turning machine and its accessories, produce a part matching the process plan and the part print specifications using appropriate trade techniques and speeds and feeds. The part specified should have at least two straight diameters within +/-0.001 inch, an appropriate taper at each end of the part, and require an end-for-end reversal of the part.

PERFORMANCE OBJECTIVES: (What an apprentice must know and/or do to perform the work competently.)

a. Given instruction/demonstration and reading assignments, the apprentice will demonstrate knowledge of engine lathe safety procedures, and the identification of engine lathe parts and their function.

b. Given instruction/demonstration by a qualified individual on cutting tool geometry and the proper procedure used for grinding lathe tool bits on the off-hand grinder, the apprentice will perform grinding operations and produce all the required tool bits necessary to perform all required turning operations within the specified tolerances on a part print.

c. Given instruction/demonstration on cutting tool geometry and inserted tooling, the apprentice will demonstrate the proper insert and tool holder selection, necessary to perform all required turning operations within the specified tolerances on a blueprint.

d. Given instruction/demonstration, reading assignment, information sheets, and reference charts, the apprentice will calculate cutting speeds and feeds and apply these calculations while performing required various turning operations on the engine lathe.

e. Given instruction/demonstration on the proper selection, mounting, set-up, and usage procedure for the four specified work-holding devices (3-jaw chuck, 4-jaw chuck, face plate and dog, and draw-in collet chuck), the apprentice will select, mount, set-up, hold, and align work using work holding devices on the engine lathe to perform the required turning operations.

f. Given instruction/demonstration on the proper set-up and procedures used for drilling and center drilling on the engine lathe, the apprentice will perform drilling and center drilling operations within the tolerances specified on a part print.

g. Given instruction/demonstration on the proper procedure used for turning, facing, necking, and grooving operations on the engine lathe, the apprentice will perform turning, facing, necking, and grooving operations within the specified tolerances on the part print.
h. Given instruction/demonstration on the proper procedure used for performing shouldering operations on the engine lathe, the apprentice will perform square, angular, and filleted shouldering operations within the tolerances specified on a part print.

i. Given instruction/demonstration on the proper set-up procedure used for knurling on the engine lathe, the apprentice will set-up the machine and perform knurling operations within the tolerances specified on the part print.

j. Given instruction/demonstration on Unified National Thread nomenclature, formulas and the proper set-up procedure used for cutting threads on the engine lathe, the apprentice will cut an external U.N. thread within the tolerances specified on the part print.

k. Given a blueprint, instruction/demonstration on taper calculations, and the proper set-up procedure used for cutting internal and external tapers on the engine lathe, the apprentice will cut a taper on the engine lathe using the tailstock set-over method, compound rest, and a taper attachment to within the tolerances specified on a part print.

Core Competency
15. Turning Operations: Chucking: Level I Machining Skills

DUTY & PERFORMANCE STANDARDS

Duty: Set-up and carry out chucking operations for turning.

Standard: Given raw material, process plan, part print, and hand, precision and cutting tools, as well as access to an appropriate turning machine and its accessories, produce a part matching the process plan and the part print specifications using appropriate trade techniques and speeds and feeds. The part specified should have at least three diameters within +/-0.005 inch, two bores within +/-0.005 inch, one UNC external thread, and require at least two chuckings or other work holding set-up.

Core Competency
16. Turning Operations: Chucking: Level II Machining Skills

DUTY & PERFORMANCE STANDARDS

Duty: Set-up and perform tapered boring and turning using a taper attachment.

Standard: Given raw material, process plan, part print, and hand, precision, and cutting tools, as well as access to an appropriate turning machine with a taper attachment and its accessories, produce a part matching the process plan and the part print specifications using appropriate trade techniques and speeds and feeds. The part specified should have at least two diameters within +/-0.002 inch, one bore within +/-0.002 inch, one external and one internal taper, and require at least two chuckings or other work holding set-up.

PERFORMANCE OBJECTIVES: (What an apprentice must know and/or do to perform the work competently.)

a. Given instruction/demonstration and reading assignments, the apprentice will demonstrate knowledge of engine lathe safety procedures, and the identification of engine lathe parts and their function.

b. Given instruction/demonstration on cutting tool geometry and the proper procedure used for grinding lathe tool bits on the off-hand grinder by a qualified individual, the apprentice will perform grinding operations and produce all the required tool bits necessary to perform all required turning and boring operations within the specified tolerances on a part print.

c. Given instruction/demonstration on cutting tool geometry and inserted tooling, the apprentice will demonstrate the proper insert and tool holder selection necessary to perform all required turning and boring operations within the specified tolerances on a part print.

d. Given instruction/demonstration, reading assignment, information sheets, and reference charts, the apprentice will calculate cutting speeds and feeds and apply these calculations while performing various required turning operations on the engine lathe.

e. Given instruction/demonstration on the proper selection, mounting, set-up, and usage procedure for the four specified work-holding devices (3-jaw chuck, 4-jaw chuck, face plate and dog, and draw-in collet chuck), the apprentice will select, mount, set-up, hold, and align work using work holding devices on the engine lathe to perform the required turning operations.

f. Given instruction/demonstration on the proper set-up and procedures used for drilling and center drilling on the engine lathe, the apprentice will perform drilling and center drilling operations within the tolerances specified on a part print.
g. Given instruction/demonstration on the proper procedure used for turning, facing, necking, and grooving operations on the engine lathe, the apprentice will perform turning, facing, necking, boring, and grooving operations within the specified tolerances on the part print.

h. Given instruction/demonstration on the proper procedure used for performing shouldering operations on the engine lathe, the apprentice will perform square, angular, and filleted shouldering operations within the tolerances specified on a part print.

i. Given instruction/demonstration on Unified National Thread nomenclature, formulas, and the proper setup procedure used for cutting threads on the engine lathe, the apprentice will cut an external and internal U.N. thread within the tolerances specified on the part print.

j. Given a blueprint, instruction/demonstration on taper calculations, and the proper setup procedure used for cutting tapers on the engine lathe, the apprentice will cut an external and internal taper on the engine lathe using the tailstock set-over method, compound rest, and a taper attachment to within the tolerances specified on a part print.

Core Competency

17. Milling: Square Up a Block

DUTY & PERFORMANCE STANDARD

Duty: Set-up and perform squaring up the six surfaces of a block to within +/- 0.002 inch and 0.002 inch over 4.5 inches squarness.

Performance Standard: Given raw material, process plan, part print, and hand, precision, and cutting tools, as well as access to an appropriate milling machine and its accessories, produce a part matching the process plan and the part print specifications. The part will require squaring up from its raw state.

PERFORMANCE OBJECTIVES: (What an apprentice must know and/or do to perform the work competently.)

a. Given instruction/demonstration and reading assignments, the apprentice will demonstrate knowledge of milling machine safety procedures, as well as the identification of milling machine parts and their function.

b. Given instruction/demonstration on cutting tool geometry for High Speed Steel milling cutters, the apprentice will perform proper cutting tool selection necessary to perform all required milling operations within the specified tolerances on a part print.

c. Given instruction/demonstration on cutting tool geometry and inserted tooling, the apprentice will demonstrate the proper insert and tool holder selection necessary to perform all required milling operations within the specified tolerances on a blueprint.

d. Given instruction/demonstration, reading assignment, information sheets, and reference charts, the apprentice will calculate cutting speeds and feeds and apply these calculations while performing required milling operations on the milling machine.

e. Given instruction/demonstration on the proper selection, mounting, set-up, usage procedure for work-holding devices, and an understanding of climb and conventional milling, the apprentice will select, mount, set-up, hold, and align work using work holding devices on the milling machine to perform the required milling and squaring operations.

f. Given instruction/demonstration on the proper set-up and procedures used to perform the squaring up operation, the apprentice will square up six primary surfaces of a raw cut block within the tolerance of ±0.002 inch maintaining parallelism and perpendicularity measurement with a TIR of 0.002 inch over 4.5 inches.

Core Competency

18. Manual Milling: Vertical and Horizontal, Level I Machining Skills

DUTY & PERFORMANCE STANDARD

Duty: Vertical Milling

Set-up and operate vertical milling machines. Perform routine milling and locate hole centers within +/- 0.005 inch.

Performance Standard: Vertical Milling

Given raw material, process plan, print, and hand, precision, and cutting tools, as well as access to an appropriate vertical milling machine and its accessories, produce a part matching the process plan and the blueprint specifications using appropriate trade techniques and speeds and feeds. The part specified should
require squaring up from the raw state, have at least one milled slot, require the location of at least two drilled and reamed holes within +/- .005 inch, and have three steps controlled by tolerances of +/- .005 inch.

Core Competency
19. Manual Milling: Vertical and Horizontal, Level II Machining Skills

DUTIES & PERFORMANCE STANDARDS

Duty: Vertical Mill - Precision Location of Holes
Set-up and perform boring for location, size, and finish.

Performance Standard: Vertical Mill - Precision Location of Holes
Produce three bores to specification. The holes will be between ¾ inch and 1-1/2 inches and their locations are to be held within +/- .001 inch and diameters within +/- .0005 inch. One hole is to be counterbored to a decimal depth holding within +/- .002 inch and counterbore diameter within +/- .005 inch.

Duty: Milling Keyseats
Set-up and perform milling keyseats on a shaft.

Performance Standard: Milling Keyseats
Given raw material, process plan, part print, and hand, precision, and cutting tools, as well as access to an appropriate milling machine and its accessories, produce a part matching the process plan and the part print specifications using appropriate trade techniques and speeds and feeds. The part specified will require milling two keyseats whose characteristics match the ANSI B17.1 keys and keyseat standards.

Duty: Milling - Cut a Deep Slot
Set-up and perform the cutting of a deep slot.

Performance Standard: Milling - Cut a Deep Slot
Given raw material, process plan, part print, and hand, precision, and cutting tools, as well as access to an appropriate milling machine and its accessories, produce a part matching the process plan and the part print specifications. The part specified will require the milling of three deep slots-two parallel to one another, the third at right angles to the first two.

PERFORMANCE OBJECTIVES: (What an apprentice must know and/or do to perform the work competently.)

a. Given instruction/demonstration and reading assignments, the apprentice will demonstrate knowledge of milling machine safety procedures, and the identification of milling machine parts and their function.

b. Given instruction/demonstration on cutting tool geometry for High Speed Steel milling cutters, the apprentice will perform proper cutting tool selection necessary to perform all required milling operations within the specified tolerances on a part print.

c. Given instruction/demonstration on cutting tool geometry and inserted tooling, the apprentice will demonstrate the proper insert and tool holder selection necessary to perform all required milling operations within the specified tolerances on a blueprint.

d. Given instruction/demonstration, reading assignment, information sheets, and reference charts, the apprentice will calculate cutting speeds and feeds and apply these calculations while performing required milling, drilling, and boring operations on the milling machine.

e. Given instruction/demonstration on the proper selection, mounting, set-up, usage procedure for work-holding devices, and an understanding of climb and conventional milling, the apprentice will select, mount, set-up, hold, and align work using work holding devices on the milling machine to perform the required milling and squaring operations.

f. Given required hand and precision tools, instruction/demonstration on the proper set-up and procedures used to perform tramming operations on the vertical milling machine, and the process used to indicate a vise, the apprentice will adjust the milling machine head perpendicular to the table within +/- .001 inch, and indicate a vise maintaining parallelism and perpendicularity measurement of .002 inch over 4.5 inches.
g. Given instruction/demonstration on the proper set-up and procedures used to perform the squaring up operation, the apprentice will square up six primary surfaces of a raw cut block within the tolerance of ± .002 inch maintaining parallelism and perpendicularity measurement with a TIR of .002 inch over 4.5 inches.

h. Given raw material, process plan, print, and hand, precision, and cutting tools, as well as access to an appropriate vertical milling machine and its accessories, produce a part matching the process plan and the blueprint specifications using appropriate trade techniques and speeds and feeds. The part specified should require squaring up from the raw state, have at least one milled slot, require the location of at least two drilled and reamed holes within +/- .005 inch, and have three steps controlled by tolerances of +/- .005 inch.

i. Given raw material, process plan, part print, and hand, precision, and cutting tools, as well as access to an appropriate milling machine and its accessories, produce three bores to specification. The holes will be between ¾ inch and 1-1/2 inches and their locations are to be held within +/- .005 inch and diameters within +/- .0005 inch. One hole is to be counterbored to a decimal depth holding within +/- .002 inch and counterbore diameter within +/- .005 inch.

j. Given raw material, process plan, part print, and hand, precision, and cutting tools, as well as access to an appropriate milling machine and its accessories, produce a part matching the process plan and the part print specifications using appropriate trade techniques and speeds and feeds. The part specified would require milling two keyseats whose characteristics match the ANSI B17.1 keys and keyseat standards.

k. Given raw material, process plan, part print, and hand, precision, and cutting tools, as well as access to an appropriate milling machine and its accessories, produce a part matching the process plan and the part print specifications using appropriate trade techniques and speeds and feeds. The part specified would require milling two keyseats whose characteristics match the ANSI B17.1 keys and keyseat standards.

Core Competency
20. Surface Grinding: Grinding Wheel Safety, Level I Machining Skills

DUTY & PERFORMANCE STANDARD

Duty: Ring test grinding wheels, perform visual safety inspection, mount and dress a grinding wheel in preparation for surface grinding.

Performance Standard: Given a selection of wheels in various conditions, determine which are suitable for use, mount one on the spindle, and dress it in preparations for surface grinding. Include the understanding of the grinding wheel code.

PERFORMANCE STANDARD: (What an apprentice must know and/or do to perform the work competently.)

a. Given instruction/demonstration and reading assignments on grinding wheel selection and the standard wheel marking system, the apprentice will determine the proper wheel selection to perform all grinding tasks from information obtained from the part print and process plan.

b. Given instruction/demonstration and reading assignments, the apprentice will demonstrate the proper procedure used for visual safety inspection of the grinding wheel, and perform a ring testing to determine the wheel’s soundness prior to mounting.

c. Given instruction/demonstration and reading assignments, the apprentice will demonstrate the proper procedure used for balancing (where applicable), mounting, and dressing the grinding wheel on the surface grinder to perform required grinding operations.

Core Competency
21. Surface Grinding: Horizontal Spindle, Reciprocating Table, Level I Machining Skills

DUTY & PERFORMANCE STANDARD


Performance Standard: Given a block squared up on a mill, a process plan, part print, and hand and precision tools, and choice of a grinding wheel, as well as access to a surface grinder and its accessories, dress the wheel, and produce a part matching the process plan and the part print specifications using appropriate trade techniques. The part specified will be in the semi-finished state, having been squared up. Finishing the part will require the precision finishing of the six faces of the block to tolerances common to precision grinding for squareness, size, and surface finish characteristics.
Core Competency
22. Surface Grinding: Horizontal Spindle, Reciprocating Table, Level II Machining Skills

DUTIES & PERFORMANCE STANDARDS

Duty: Finish Flats to +/-0.0005

Grind a block’s six faces to finished dimensions having tolerances of +/-0.0005 inch and squareness of 0.0005 inch over 4 inches, and 32 micro inch surface finish. Dress the wheel as necessary.

Performance Standard: Finish Flats to +/-0.0005

Given a block squared up on a mill, hardened to 55 to 60 RC, a process plan, part print, and hand, and precision tools, and choice of grinding wheels, as well as access to a surface grinder and its accessories, dress the wheel, produce a part matching the process plan and the part print specifications using appropriate trade techniques. The part specified will be in the semi-finished state, having been squared up. Finishing the part will require the precision finishing of the six faces of the block to tolerances common to precision grinding for squareness, size, and surface finish characteristics.

Duty: Finish Flats at Simple Angles and Grind Contour Radii

Set-up and perform the finish surface grinding of flat surfaces at simple angles with respect to one another. Dress the wheel as necessary.

Performance Standard: Finish Flats at Simple Angles and Grind Contour Radii

Given a block roughed out on a mill, a process plan, part print, and hand, and precision tools, and choice of grinding wheels, as well as access to a surface grinder and its accessories, dress the wheel, grind the specified radii, and angled surfaces to a finish matching the process plan and the part print specifications using appropriate trade techniques. The part specified will be in the semi-finished state, having been roughed out. Finishing the part will require the precision finishing of the specified surfaces of the block to tolerances common to precision grinding for squareness, size, and surface finish characteristics.

Duty: Grinding Wheel Preparation and Balancing

Set-up and perform the preparation and balancing of a grinding wheel 14 inches in diameter or greater. Place the wheel into service.

Performance Standard: Grinding Wheel Preparation and Balancing

Given a wheel and appropriate equipment, prepare the wheel to go into service. Mount the wheel. Produce a surface finish of 32 micro-inches or better on a cylinder or flat surface of CRS.

PERFORMANCE OBJECTIVES: (What an apprentice must know and/or do to perform the work competently.)

a. Given instruction/demonstration and reading assignments on grinding wheel selection and the standard wheel marking system, the apprentice will determine the proper wheel selection to perform all grinding tasks from information obtained from the part print and process plan.

b. Given instruction/demonstration and reading assignments, the apprentice will demonstrate the proper procedure used for visual safety inspection of the grinding wheel, and perform a ring testing to determine the wheels soundness prior to mounting.

c. Given instruction/demonstration and reading assignments, the apprentice will demonstrate the proper procedure used for balancing a wheel (14 inches or greater), mounting, and dressing the grinding wheel on the surface grinder to perform required grinding operations.

d. Given instruction/demonstration and reading assignments, the apprentice will demonstrate knowledge of surface grinder safety procedures, and the identification of surface grinder parts and their function.

e. Given instruction/demonstration on the proper selection, mounting, set-up, and usage procedure for necessary work-holding devices on the surface grinder, the apprentice will select, mount, set-up, hold, and align work using work holding devices on the surface grinder to perform the required grinding operations.

f. Given instruction/demonstration, a block squared up on a mill hardened to 55 to 60 RC, a process plan, part print, precision tools, choice of grinding wheels, and access to a surface grinder and its accessories, choose the appropriate wheel, dress a wheel, and produce a part matching the process plan and the part print specifications using the appropriate techniques. Grind a block’s six faces to finished dimensions having a tolerance of ±0.0005 inches and perpendicularity TIR of 0.0005 inches over 4 inches holding a surface finish of 32 micro inches or better.
g. Given instruction/demonstration, a block squared upon a surface grinder, a process plan, part print, precision measuring tools, a choice of grinding wheels, and access to a surface grinder and its accessories, set a radius dresser, dress the wheel, grind the specified radii, angled surfaces and slot to a finish matching the process plan and print specifications using appropriate grinding techniques. Use the appropriate work holding devices to grind all surfaces, angles and contours.

h. Given instruction/demonstration, the apprentice will dress and grind an internal or external radius tangent to an angle other than 90° or 0° holding tolerances correlated to the credentialing print for Machining – Level II Surface Grinding.

Core Competency

23. CNC Programming - Milling

DUTY & PERFORMANCE STANDARD

Duty: Using the principles of Cartesian coordinates, develop a program for the manufacture of a simple part.

Performance Standard: Given a computer and a basic CNC software program, and a blueprint for part comparison, apply the principles of three dimensional coordinate planes in the development of a simple program for the production of the part on a CNC milling machine.

PERFORMANCE OBJECTIVES: (What an apprentice must know and/or do to perform the work competently.)

a. The apprentice will be able to describe the functions and use of basic G and M codes.

b. The apprentice will be able to identify coordinates on a blueprint with respect to an origin.

c. The apprentice will be able to implement linear interpolation into a program to cut straight lines between two points.

d. The apprentice will be able to implement circular interpolation into a program to cut true arcs and circles, using I & J (arc vector) and R (radius value) methods.

e. The apprentice will be able to write a program using the appropriate format for a particular machine control, and work from a process plan to get guidance for sequences, steps, procedures, machining parameters, etc., that will be used.

CNC Programming - Turning

DUTY & PERFORMANCE STANDARD

Duty: Using the principles of Cartesian coordinates develop a program for the manufacture of a simple part.

Performance Standard: Given a computer and a basic CNC software program, and a blueprint for part comparison, apply the principles of two-dimensional coordinate planes in the development of a simple program for the production of the part on a CNC lathe or CNC turning center.

PERFORMANCE OBJECTIVES: (What an apprentice must know and/or do to perform the work competently.)

a. The apprentice will be able to describe the functions and use of basic G and M codes.

b. The apprentice will be able to identify coordinates on a blueprint with respect to an origin.

c. The apprentice will be able to implement linear interpolation into a program to cut straight lines between two points.

d. The apprentice will be able to implement circular interpolation into a program to cut true arcs and circles, using I & J (arc vector) and R (radius value) methods.

e. The apprentice will be able to write a program using the appropriate format for a particular machine control, and work from a process plan to get guidance for sequences, steps, procedures, machining parameters, etc., that will be used.

Core Competency

24. CNC: Write a Simple CNC Milling Program and Review Tool Path

DUTY & PERFORMANCE STANDARD
Duty: Using a computer and editor software, write simple CNC programs using M and G codes from the *Machinery's Handbook*. Simple programs are single plane, cutter centerline, linear and circular interpolation, and single cutter, with no canned cycles as specified on the print.

Performance Standard: Given a part print with the tool path shown, and computer with editor software, write a program, including speeds and feeds, to drive an end mill through a continuous path around three sides of a part requiring the development of a linear interpolation tool path as well as circular interpolation. Store the program on computer media.

PERFORMANCE OBJECTIVES: (What an apprentice must know and/or do to perform the work competently.)

a. The apprentice will be able to describe the functions and use of basic G and M codes.

b. The apprentice will be able to identify coordinates on a blueprint with respect to an origin.

c. The apprentice will be able to calculate and implement speeds and feeds for proper tool life and surface finish.

d. The apprentice will be able to implement linear interpolation into a program to cut straight lines between two points.

e. The apprentice will be able to implement circular interpolation into a program to cut straight lines between two points.

f. The apprentice will be able to write a program using the appropriate format for a particular machine control, and work from a process plan to get guidance for sequences, steps, procedures, machining parameters, etc., that will be used.

CNC: Write a Simple CNC Turning Program and Review Tool Path

DUTY & PERFORMANCE STANDARD

Duty: Using a computer and editor software write simple CNC programs using M and G codes from the *Machinery's Handbook*. Simple programs are single plane, cutter centerline, linear and circular interpolation, and single cutter, with no canned cycles as specified on the print.

Performance Standard: Given a part print with the tool path shown, and computer with editor software, write a program, including speeds and feeds, to drive a cutting tool through a continuous path following the geometry of a part requiring the development of a linear interpolation tool path as well as circular interpolation. Store the program on computer media.

PERFORMANCE OBJECTIVES: (What an apprentice must know and/or do to perform the work competently.)

a. The apprentice will be able to describe the functions and use of basic G and M codes.

b. The apprentice will be able to identify coordinates on a blueprint with respect to an origin.

c. The apprentice will be able to calculate and implement speeds and feeds for proper tool life and surface finish.

d. The apprentice will be able to implement linear interpolation into a program to cut straight lines between two points.

e. The apprentice will be able to implement circular interpolation into a program to cut true arcs and circles, using the I & J (arc vector) and R (radius value) methods.

f. The apprentice will be able to write a program using the appropriate format for a particular machine control, and work from a process plan to get guidance for sequences, steps, procedures, machining parameters, etc., that will be used.
a. The apprentice will be able to describe the functions and use of basic G and M codes.
b. The apprentice will be able to identify coordinates on a blueprint with respect to an origin.
c. The apprentice will be able to calculate and implement speeds and feeds for proper tool life and surface finish.
d. The apprentice will be able to write a program using the appropriate format for a particular machine control, and work from a process plan to get guidance for sequences, steps, procedures, machining parameters, etc., that will be used.
e. The apprentice will be able to install and qualify the required tooling for the program.
f. The apprentice will be able to mount, locate, and set the origin of the workpiece on a CNC milling machine.
g. The apprentice will be able to load a program, create a DNC-link, or enter a program via control keyboard into a CNC milling machine control.
h. The apprentice will be able to safely execute a program for its first run (debugging).

CNC: Operate a CNC Lathe

DUTY & PERFORMANCE STANDARD
Duty: Operate a CNC Lathe
Performance Standard: Given a CNC lathe create a qualified CNC program, set-up and operate the lathe, change tool values as necessary, and replace and qualify tooling as necessary.

PERFORMANCE OBJECTIVES: (What an apprentice must know and/or do to perform the work competently.)

a. The apprentice will be able to describe the functions and use of basic G and M codes.
b. The apprentice will be able to identify coordinates on a blueprint with respect to an origin.
c. The apprentice will be able to calculate and implement speeds and feeds for proper tool life and surface finish.
d. The apprentice will be able to write a program using the appropriate format for a particular machine control, and work from a process plan to get guidance for sequences, steps, procedures, machining parameters, etc., that will be used.
e. The apprentice will be able to install and qualify the required tooling for the program.
f. The apprentice will be able to mount, locate, and set the origin of the workpiece on a CNC lathe.
g. The apprentice will be able to load a program, create a DNC-link, or enter a program via control keyboard into a CNC lathe control.
h. The apprentice will be able to safely execute a program for its first run (debugging).

Core Competency
26. General Housekeeping and Maintenance

DUTY & PERFORMANCE STANDARD
Duty: Keep the duty station clean and safe for work. Keep the tools, workbenches, and manual equipment clean, maintained, and safe for work.

Performance Standard: Given maintenance, cleaning, and housekeeping checklists, as well as verbal instructions, clean, maintain, and respond appropriately to safety hazards on all benchwork tools and conventional and CNC machine tools. Maintain the cleanliness of the general work area.

Core Competency
27. Preventative Maintenance - Machine Tools

DUTY & PERFORMANCE STANDARD
Duty: Inspect and assess the general condition of an assigned machine tool. Make routine adjustments as necessary and as authorized. Report problems to supervision which are beyond the scope of authority. Carry out daily, weekly, and/or monthly routine upkeep chores cited on checklists for a given machine tool.

Performance Standard: Given the preventive maintenance procedures and schedules for a given machine tool, as well as sufficient instruction and experience to recognize maintenance problems, carry out routine
Core Competency
28. Tooling Maintenance

DUTY & PERFORMANCE STANDARD

Duty: Inspect and assess the condition of tooling. Refurbish tooling where appropriate. Refer tooling for repair or regrind where appropriate.

Performance Standard: Given samples of tooling in various conditions, diagnose the tooling and take the correct steps to put the tooling back in service. The sample tooling should include turning, milling, and drilling tools. These tools should be both insert tooling as well as conventional tooling. The apprentice must demonstrate the offhand grinding of a drill between the diameter of .125 inch and 1.000 inch. The offhand regrinding of a turning tool and the correct rotation and replacement of inserts in an insert style milling cutter body must be demonstrated. The apprentice must demonstrate the ability to recognize when a cutter should be referred to a tool and cutter grinder.

PERFORMANCE OBJECTIVES: (What an apprentice must know and/or do to perform the work competently.)

General Housekeeping and Maintenance

Given maintenance, cleaning, and housekeeping checklist as well as verbal instructions, clean, maintain, and respond appropriately to safety hazards on all benchwork tools and conventional and CNC machine tools. Maintain the cleanliness of the general work area.

Preventative Maintenance - Machine Tools

Given a specific machine tool, the learner will locate, check, and fill all applicable lubrication reservoirs, check for proper oil pressure, and check that all lubrication points are functioning properly. Check the general condition of the equipment and make routine adjustments as stated in the maintenance schedule.

Tooling Maintenance

a. Diagnose tooling in various conditions and take the correct steps to put the tooling back in service.
b. Perform cutter-sharpening operations.
c. Understand insert identification nomenclature and index or change inserts.
### Appendix C
**RELATED INSTRUCTION FOR MACHINIST**

**DOT CODE:** 601260010  
**O*NET/SOC CODE:** 51-4111.00  
**RAIS Code:** 0296CB

#### Year 1

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<thead>
<tr>
<th>#</th>
<th>Course Name</th>
<th>Hours</th>
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<tbody>
<tr>
<td>1</td>
<td>Identify and Demonstrate Usage of Machine Safety and Personal Protective Equipment</td>
<td>5</td>
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<tr>
<td>2</td>
<td>Demonstrate Compliance with Lock-out/Tag-out Procedure and OSHA Requirements and Guidelines</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>Machine Operations and Material Handling, Hazardous Materials Handling and Storage, including EPA, Hazmat, and OSHA</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>Part Inspection</td>
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<tr>
<td>5</td>
<td>Process Control/Adjustment/Improvement</td>
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<tr>
<td>6</td>
<td>Manual Operations: Layout</td>
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<tr>
<td>7</td>
<td>Manual Operations: Bench work</td>
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<tr>
<td>8</td>
<td>Sawing</td>
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</tr>
<tr>
<td>9</td>
<td>Shop Math</td>
<td>40</td>
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<td>10</td>
<td>Measurements</td>
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<tr>
<td>11</td>
<td>Job Process Planning</td>
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<tr>
<td>12</td>
<td>Turning Operations: Chucking - Level II Machining Skills (1/2 tool 462 tool 461)</td>
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<td>13</td>
<td>Manual Milling: Vertical and Horizontal - Level II Machining Skills (tool 463 &amp; tool 464)</td>
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<td>14</td>
<td>Blueprint Reading I</td>
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**TOTAL HOURS 325**
### Year 2

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</tr>
<tr>
<td>2. Geometric Dimensioning and Tolerance</td>
<td>40</td>
</tr>
<tr>
<td>3. Drilling Operations</td>
<td>15</td>
</tr>
<tr>
<td>4. Shop Math</td>
<td>40</td>
</tr>
<tr>
<td>5. Turning Operations: Chucking - Level II Machining Skills (1/2 tool 471 tool 470)</td>
<td>20</td>
</tr>
<tr>
<td>6. Milling: Square Up a Block (part of tool 473 &amp; tool 472)</td>
<td>5</td>
</tr>
<tr>
<td>8. Surface Grinding, Grinding Wheel Safety (part of tool 493)</td>
<td>2</td>
</tr>
<tr>
<td>9. Surface Grinding, Horizontal Spindle, Reciprocating Table - Level I Machining Skills (1/2 of tool 492 &amp; 493)</td>
<td>14</td>
</tr>
<tr>
<td>10. CNC: Write a Simple CNC Milling and / or CNC Turning Program and Review Tool Path - Level I (tool 494 &amp; 496)</td>
<td>55</td>
</tr>
<tr>
<td>11. CNC: Operate a CNC Milling Machine and / or Operate a CNC Lathe - Level I Machining Skills (tool 495 &amp; 499)</td>
<td>40</td>
</tr>
<tr>
<td>12. Heat Treatment</td>
<td>15</td>
</tr>
<tr>
<td>13. General Housekeeping &amp; Maintenance</td>
<td>3</td>
</tr>
<tr>
<td>15. Tooling Maintenance</td>
<td>3</td>
</tr>
</tbody>
</table>

**TOTAL HOURS 325**
APPENDIX D 671

Copy of Apprenticeship Agreement
Appendix E

AFFIRMATIVE ACTION PLAN

ADOPTED BY

NAME OF THE EMPLOYER

AS REQUIRED UNDER TITLE 29, CODE OF FEDERAL REGULATIONS, PART 30
AMENDED MAY 12, 1978

DEVELOPED IN COOPERATION WITH THE
U.S. DEPARTMENT OF LABOR
BUREAU OF APPRENTICESHIP AND TRAINING

APPROVED BY: ____________________________________________
REGISTRATION AGENCY

DATE APPROVED: __________________________________________
SECTION I - INTRODUCTION

The Employer enters this plan with good faith for the purpose of promoting equality of opportunity into its registered apprenticeship program. The Employer seeks to increase the recruitment of qualified women and minorities for possible selection into the apprenticeship program in the event females and/or minorities are underutilized in the apprenticeship program. The Employer hereby adopts the following nondiscriminatory pledge and affirmative action plan.

This plan is a supplement to the apprenticeship standards. Any changes made by the employer shall become part of this written plan, once approved by the registration agency.

SECTION II - EQUAL OPPORTUNITY PLEDGE

The Employer commits to the following Equal Opportunity Pledge:

“The recruitment, selection, employment, and training of apprentices during their apprenticeship, shall be without discrimination because of race, color, religion, national origin, or sex. The employer will take affirmative action to provide equal opportunity in apprenticeship and will operate the apprenticeship program as required under Title 29 of the Code of Federal Regulations, Part 30.”

SECTION III - UTILIZATION AND ANALYSIS, GOALS AND TIMETABLES

In order to allow positive recruitment and full utilization of minorities and women in the apprenticeship program, the Employer pledges to identify outreach efforts under Section IV that will be undertaken. The purpose of the analysis is to determine the minority and women’s labor force in the Employer’s labor market area. Once the labor force is determined, the Employer can determine if deficiencies exist in terms of underutilization of minorities and/or women in the occupations registered with the registration agency.

SECTION IV - OUTREACH AND POSITIVE RECRUITMENT

The Employer affirmative action plan includes the following “checked” outreach and positive recruitment efforts that would reasonably be expected to increase minority and women’s participation in apprenticeship by expanding the opportunity of minorities and women to become eligible for apprenticeship selection. Once those efforts have been checked, the Employer shall set forth the specific steps they intend to take under each identified effort. The Employer will identify a significant number of activities in order to enable it to meet its obligation under Title 29, CFR Part 30.4(c).

A. An announcement of apprenticeship openings must be disseminated thirty (30) days in advance of the earliest date for application at each interval to the following agencies/organizations:
- Registration Agency
- Women’s Organizations/Centers
- Local Schools
- Employment Service Centers
- One Stop Centers
- Vocational Education Schools
- Other Organizations/Centers (which can effectively reach minorities and women)
- Newspapers (which are circulated in the minority community and among women)

The announcement shall include the nature of the apprenticeship, requirements for admission to apprenticeship, availability of apprenticeship opportunities, sources of apprenticeship applications, and the Employer equal opportunity policy. Applications will be taken for no less than a two (2) week period.

B. Participation in annual workshops conducted by employment service agencies for the purpose of familiarizing school, employment service and other appropriate personnel with the apprenticeship program and current opportunities.

C. Cooperation with local school boards and vocational educational systems to develop programs for preparing students to meet the standards and criteria required to qualify for entry into the apprenticeship program.

D. Internal communication of the Employer equal opportunity policy should be conducted in such a manner to foster understanding, acceptance, and support among the employer’s various officers, supervisors, employees, and members and to encourage such persons to take the necessary action to aid the Employer in meetings its obligation under Title 29, CFR Part 30.

E. Engaging in programs such as outreach for the positive recruitment and preparation of potential applicants for apprenticeships; where appropriate and feasible, such programs shall provide for pre-testing experience and training. In initiating and conducting these programs, the Employer may be required to work with other employers and appropriate community organizations. The Employer shall also initiate programs to prepare women and encourage women to enter traditionally male programs.

F. Encouraging the establishment and utilization of programs of pre-apprenticeship, preparatory occupational training, or others designed to afford related work experience or prepare candidates for apprenticeship, the Employer shall make appropriate provisions in its affirmative action plan to assure that those who complete such programs are afforded full and equal opportunity for admission into the apprenticeship program.

G. Utilizing journey workers to assist in the implementation of affirmative action in the apprenticeship program.
H. Granting advance standing or credit on the basis of previously acquired experience, training, skills, or aptitude for all applicants equally.

I. Other appropriate action to ensure that the recruitment, selection, employment, and training of apprentices during their apprenticeship shall be without discrimination because of race, color, religion, national origin, or sex (e.g., general publication of apprenticeship opportunities and advantages in advertisements, industry reports, articles, etc.; use of present minority and female apprentices and journey workers as recruiters; career counseling; development of reasonable procedures to ensure employment opportunity, including reporting systems, on-site reviews, briefing sessions).

FOR EACH BOX CHECKED IN SECTION IV, LIST EACH SPECIFIC STEP THAT THE EMPLOYER WILL UNDERTAKE TO FULFILL THAT OUTREACH AND RECRUITMENT STEP

(Identify Action(s))

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
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______________________________________________________________________________
______________________________________________________________________________
SECTION V - ANNUAL REVIEW OF AFFIRMATIVE ACTION PLAN

The Employer will make an annual review of its current affirmative action plan and its overall effectiveness and institute any revisions or modifications warranted. The review shall analyze (independently and collectively) the affirmative action steps taken by the employer for evaluating the positive impact, as well as the adverse impact in the areas of outreach and recruitment, selection, employment, and training. They will work diligently to identify the cause and affect that result from their affirmative action measures. The Employer will continually monitor these processes in order to identify the need for a new affirmative action effort and/or deletion of ineffective existing activities. All changes to the affirmative action plan must be submitted to the registration agency for registration. The Employer will continually monitor the participation rates of minorities and women in the apprenticeship program in an effort to identify any type of underutilization. If underutilization exists, corrective action will be immediately implemented.

The goals and timetables also will be reviewed annually and updated where necessary.

SECTION VI - OFFICIAL ADOPTION

This affirmative action plan is officially adopted by the Employer;

Signature of Authorized Representative ____________________________

Title ____________________________

______________________________

Printed Name ____________________________

Date ____________________________
MACHINIST

(EMPLOYER MUST COMPLETE A WORKSHEET FOR EACH REGISTERED OCCUPATION)

AFFIRMATIVE ACTION PLAN
ANALYSIS WORKSHEET

Occupational Title: Machinist RAIS Code: 0296CB
Employer: DOT Code: 600280022
Address: O*NET Code: 51-4041.00
City: State: Zip:
Phone: Type of selection method used:
Labor Market Area:

LABOR MARKET AREA DATA

Total Labor Force in Labor Market Area: _______

<table>
<thead>
<tr>
<th>Number Women: _____</th>
<th>% of Labor Force</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number Minority: ____</td>
<td>% of Labor Force</td>
</tr>
</tbody>
</table>

Working Age Population in Labor Market Area: _______

<table>
<thead>
<tr>
<th>Number Women: _____</th>
<th>% of working age population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number Minority: ____</td>
<td>% of working age population</td>
</tr>
</tbody>
</table>

The General Availability of Minorities and Women with the Present or Potential Capacity for Apprenticeship.

<table>
<thead>
<tr>
<th>Number Women: _____</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number Minority: ____</td>
</tr>
</tbody>
</table>

EMPLOYER’S WORKFORCE DATA

Journeyworkers: _______

<table>
<thead>
<tr>
<th>Number Women: _____</th>
<th>% of Journeyworkers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number Minority: ____</td>
<td>% of Journeyworkers</td>
</tr>
</tbody>
</table>

Apprentices: _______

<table>
<thead>
<tr>
<th>Number Women: _____</th>
<th>% of Apprentices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number Minority: ____</td>
<td>% of Apprentices</td>
</tr>
</tbody>
</table>
DETERMINATION OF UTILIZATION

Minority Underutilization:  Yes_____   No
Female Underutilization: Yes_____   No

(Note: all factors need not be weighted equally.)

EMPLOYER’S GOALS:

The employer agrees to make good faith efforts to attain the goal of selecting ____ % minorities and ____% women during the next year or hiring period. These goals shall not be used to discriminate against any qualified applicant on the basis of race, color, religion, national origin or sex.

Estimated Number of new apprentices to be hired during the next year: ______________________

EMPLOYER’S SIGNATURE ____________________________  DATE ____________________________
QUALIFICATIONS AND SELECTION PROCEDURES

ADOPTED BY

NAME OF THE EMPLOYER

DEVELOPED IN COOPERATION WITH THE U.S. DEPARTMENT OF LABOR BUREAU OF APPRENTICESHIP AND TRAINING

APPROVED BY: ________________________________
REGISTRATION AGENCY

DATE APPROVED: ______________________________

The certification of this selection procedure is not a determination that, when implemented, the selection procedure meets the requirements of the Uniform Guidelines on Employee Selection Procedures (41 CFR part 60-3) or Title 29 CFR Part 30.
SECTION I - MINIMUM QUALIFICATIONS

Applicants accepted and registered as apprentices must meet the following minimum qualifications:

A. AGE

All applicants must certify that they are least 18 years of age and legal to work in the United States.

B. EDUCATION

A high school diploma or GED equivalency is required. Applicant must provide an official transcript for high school and post high school education and training. All GED records must be submitted, if applicable.

Applicants must submit a DD-214 to verify military training and/or experience if they are a veteran and wish to receive consideration for such training/experience.

C. PHYSICAL

Applicants will be physically capable of performing the essential functions of the apprenticeship program, with or without a reasonable accommodation, and without posing a direct threat to the health and safety of the individual or others. Applicants may be subject to a physical examination, or screened for current illegal use of drugs, or both upon acceptance into the program and prior to being employed.

SECTION II - APPLICATION PROCEDURES

A. All persons requesting an application shall have one made available upon signing the applicant log.

B. All applications shall be identical in form and requirements. The application form shall be numbered in sequence corresponding with the number appearing on the applicant log so that all applications can be accounted for. Columns will be provided on the applicant log to show race/ethnic and sex identification and the progress by dates and final disposition of each application.

C. Before completing the application, each applicant will be required to review the apprenticeship standards and will be provided information about the program. If the applicant has any additional questions on the qualifications or needs additional information to complete the application, it will be provided by the Employer.

D. Receipt of the properly completed application form, along with required supporting documents (proof of age - driver’s license, birth certificate or other acceptable documentation) will constitute the completed application.

E. Completed applications will be checked for minimum qualification. Applicants deficient in one or more qualifications or requirements or making false statements on their application will be notified in writing of their disqualification. The applicant will also be
notified of the appeals right available to them. No further processing of the application will be taken.

F. Applicants meeting the minimum qualifications and submitting the required documents will be notified where and when to appear for the interview.

SECTION III - SELECTION PROCEDURES

A. The employer shall schedule the interview and evaluation session. All applicants who have met the basic qualifications and have submitted the required documents must be notified of the date, time, and place to appear.

B. The interviewer(s) will rate each applicant during the interview on each of the factors on the Applicant Rating Form taking into account the information on the application, required documents, if applicable, and the judgment derived from the interview.

C. After completing the interview and evaluation of the applicants, the individual rating scores of the interviewer(s) will be added together and averaged to determine the applicant’s final rating.

D. Applicants will be placed on a “Ranking List” according to their scores at the evaluation session, with the name of the applicant having the highest score at the top of the list, and all applicants then listed in descending order based on score.

E. As openings for the registration of new apprentices occur, the highest ranked applicant will be notified of selection by telephone. It shall be the responsibility of the applicant to keep the employer informed of their current mailing address and phone number.

F. Selected applicants must respond to the notice of selection within forty-eight (48) hours of notice. If applicants cannot be reached by telephone, their names will be passed and notice sent to their address by “Certified Mail-Return Receipt Requested,” to determine if the applicants are still interested. If no response is received in fifteen (15) working days from the written notice, the applicant’s name will be removed from the list. Only one certified notice will be mailed.

G. Qualified applicants remaining on a preceding ranking list will automatically be carried forward on the new ranking list and slotted in wherever their rating score placed them for a period of two (2) years, unless the applicant has been removed from the list by their own written request or following failure to respond to an apprentice opening. Applicants who were not placed during the two (2) year period they were on the ranking list will be required to reapply.

A. During the two-year period, applicants who feel that their qualifications have improved since their original rating may submit documented evidence of such additional experience or training and request reevaluation and rating at the next regular processing cycle.

B. Youth who complete a Job Corps training program in any occupation covered in the Apprenticeship Standards, who meet the minimum qualification of the apprenticeship program, may be admitted directly into the program, or if no apprentice opening is
available, the Job Corps graduate may be placed at the top of the current applicant ranking list and be given first opportunity for placement. The employer shall evaluate the Job Corps training received for granting appropriate credit on the term of apprenticeship. Entry of Job Corps graduates shall be done without regard to race, color, religion, national origin, or gender.

C. Veterans who completed military technical training school and participated in a registered apprenticeship program while in the military in the Plumbing, Heating and Cooling Industry may be given direct entry into the apprenticeship program. The employer shall evaluate the military training received for granting appropriate credit on the term of apprenticeship and the appropriate wage rate. The employer will determine what training requirements they need to meet to ensure that they receive all necessary training for completion of the apprenticeship program. Entry of military veterans shall be done without regard to race, color, religion, national origin, or sex.

SECTION IV - COMPLAINT PROCEDURE

Any apprentice or applicant for apprenticeship who believes that he or she has been discriminated against on the basis of race, color, religion, national origin, or sex, with regard to apprenticeship or that the equal opportunity standards with respect to his or her selection have not been followed in the operation of an apprenticeship program, may personally or through an authorized representative, file a complaint with the U. S. Department of Labor or, at the apprentice or applicant’s election, with the private review body established by the program sponsor and/or employer (if applicable).

The complaint shall be in writing and shall be signed by the complainant. It must include the name, address, and telephone number of the person allegedly discriminated against, the employer involved, and a brief description of the circumstances of the failure to apply equal opportunity standards.

The complaint must be filed not later than 180 days from the date of the alleged discrimination or specified failure to follow the equal opportunity standards, and, in the case of complaints filed directly with the review bodies designated by the employer to review such complaints, any referral of such complaint by the complainant to the Department of Labor must occur within the time limitation stated above or 30 days from the final decision of such review body, whichever is later. The Department of Labor for good cause shown may extend the time.

Complaints of sexual harassment in the workplace may be filed and processed under Title 29, CFR Part 30, and the procedures as set forth above.

The Employer will provide written notice of their complaint procedure to all applicants for apprenticeship and all apprentices.
SECTION V - MAINTENANCE OF RECORDS

The Employer will keep adequate records including a summary of the qualifications of each applicant, the basis for evaluation and for selection or rejection of each applicant, the records pertaining to interviews of applicants, the original application for each applicant, information relative to the operation of the apprenticeship program, including but not limited to job assignment, promotion, demotion, layoff or termination, rate of pay or other forms of compensation or conditions of work, hours including hours of work and, separately, hours of training provided, and any other records pertinent to a determination of compliance with these regulations, as may be required by the Department of Labor. The records pertaining to individual applicants, selected or rejected, shall be maintained in such a manner as to permit the identification of minority and all female participants.

In addition to the above requirements, adequate records shall include a brief summary of each interview and the conclusions on each of the specific factors, e.g., motivation, ambition, and willingness to accept direction. Records shall be maintained for 5 years from the date of last action and made available upon request to the Department of Labor or other authorized representative.

SECTION VI - OFFICIAL ADOPTION OF SELECTION PROCEDURES

The foregoing selection procedure is hereby officially adopted by Employer.

________________________________________  ______________
Signature of Authorized Representative          Title

________________________________________  ______________
Printed Name                                  Date
Appendix G

EMPLOYER ACCEPTANCE AGREEMENT

The foregoing undersigned employer hereby subscribes to the provisions of the Apprenticeship Standards formulated and approved by the DMACC Advanced Manufacturing Apprenticeship Committee. The Employer agrees to adopt and carry out the intent and purpose of said Standards and to abide by the rules and decisions of the Apprenticeship Committee established under these Apprenticeship Standards.

The Employer acknowledges they have been furnished a true copy of the Standards and have read and understood them, and do hereby request registration/certification to train apprentices under the provisions of these Standards, with all attendant rights and benefits thereof, until cancelled voluntarily or revoked by the Program Sponsor, Employer or Registration Agency. On-the-job, the apprentice is hereby guaranteed assignment to a skilled and competent journeyperson and is guaranteed that the work assigned to the apprentice will be rotated so as to ensure training in all phases of work.

Employer: ______________________________ Date: ______________
Title: ______________________________
Name of Company: ______________________________
Address: ______________________________
City/State/Zip Code: ______________________________
Phone Number: ______________________________ FAX: ____________
E-Mail: ______________________________
Signed: ______________________________ Date: ____________

DMACC:
Signed: ______________________________ Date: ____________
Title: ______________________________

OA
Signed: ______________________________ Date: ____________
Title: ______________________________

Registration # ______________________________

Note: This Appendix shall be submitted by the Employer to DMACC; DMACC will forward to the Registration Agency along with the Employer Information Sheet and Occupation Schedule for consideration of program registration. The Registration Agency will return (registered) forms to the program sponsor and to the Employer.

Disposition:
Original – [Employer]
Copies – DMACC and Registration Agency
## DMACC ADVANCED MANUFACTURING

### EMPLOYER INFORMATION SHEET

*Required one per Occupation*

<table>
<thead>
<tr>
<th>EMPLOYER</th>
<th>Program Type: 1=INJ, 2=IJ, 3=GJ, 4=GNJ</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Name of Company/Organization:</td>
<td></td>
</tr>
<tr>
<td>2. Address:</td>
<td></td>
</tr>
</tbody>
</table>

### PROGRAM-RELATED EMPLOYER CONTACT INFORMATION

| 12. Employer Contact/Coordinator: | |
| 13. Phone #: | 14. Ext. | 15. FAX #: |
| 16. E-Mail Address: | |
| 17. SIC Code: | |
| 18. SIC Category: | 19. Products/Services: |

### OCCUPATION INFORMATION

| 21c. Occupational Title: Machinist | |

### JOURNEYWORKERS EMPLOYED

| 26. Female: | 27. Total: |
| 28. Minority: | 29. Youth: |

### APPRENTICES EMPLOYED

| 30. Female: | 31. Total: |
| 32. Minority: | 33. Youth: |

### SELECTION METHOD: 4
### WAGE RECORD

<table>
<thead>
<tr>
<th>Wage Schedule</th>
<th>34. Increment Type</th>
<th>35. Start Date (MM/DD/YY)</th>
<th>Apprentice Entry Wage Rate</th>
<th>36. Journey Wage Rate</th>
<th>37. Number of Periods</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td>$</td>
<td>$</td>
<td></td>
</tr>
</tbody>
</table>

### RTI - RELATED TECHNICAL INSTRUCTION INFORMATION

38. Instruction Method: Classroom  
39. Delivery Technique: Competency

40. Instruction Provider: Community College  
41. Wages Paid During RTI (Y/N)

42. Hours Instruction Provided: During the Day  
43. Total Length of Instruction: 650

44. RTI Provided By: DMACC

### RTI SOURCE INFORMATION

45. RTI Location: Des Moines Area Community College (DMACC)

46. Contact Person: John Neumayer  
46a. Contact Number: 515 964-6416  
46b. Fax: 515 964-6815

47. Address of Source: 2006 South Ankeny Boulevard, Bldg 3E

48. Zip Code: 50023  
49. City: Ankeny  
50. State: Iowa

### Approval Signatures:

49. DMACC Committee Official:  
50. Date:

51. OA Official:  
52. Date

### SIGNIFICANT DATES

49. Registration Date:  
50. Registration Number:

51. Apprenticeship Committee Exists: Yes  
52. Membership List Attached (N):

Note: This Appendix shall be submitted by the Employer to DMACC; DMACC will forward to the Registration Agency along with the Employer Acceptance Agreement and Occupation Schedule for consideration of program registration. The Registration Agency will return (registered) forms to the Sponsor and to the Employer.

Disposition:  
Original – [Employer]]  
Copies – DMACC and Registration Agency