CERRITOS COLLEGE

MACHINE TOOL TECHNOLOGY PROGRAMS TECHNICAL STANDARDS/ESSENTIAL FUNCTIONS

The following listing has been prepared to assist you in understanding the technical standards of the Machine Tool Technology program in order to affiliate in the industry and ultimately practice the profession. The technical standards as stated herewith are not conditions of admission to a program of study. Rather, they reflect performance abilities that are necessary for a student to successfully complete the requirements of the specified Technology program.

The purpose of this document is to notify prospective Machine Tool Technology students of these technical standards to enable them to make an informed decision regarding enrollment in the Machine Tool Technology program at Cerritos College.

The delivery of safe, effective practice requires that students be able to perform functions related to the technical standards outlined here. The inability of a student to perform these functions may result in the student being unable to meet course objectives and to progress in the Machine Tool Technology program. Additionally, if a student is unable to perform these required competencies, the student may pose a risk of harm to the customer(s) for whom service is provided.

All applicants meeting the appropriate academic requirements shall be considered equally for admission to Cerritos College or any academic program regardless of physical or mental disability, gender, gender identity, gender expression, nationality, race or ethnicity, religion, sexual orientation, age, marital status, or genetic information. (Education Code section 66270, Government Code section 11135, Penal Code section 422.6)

Technical Standards Essential Function	Standard Performed Description	Examples of Activities (Not All Inclusive)
Cognitive Ability	• Demonstrate ability to use logic and technical analysis to identify the strengths and weaknesses of different approaches to complete machining tasks. • Demonstrate personal time management to complete projects by given deadlines. • Exhibit ability to translate written and/or verbal information into actual projects. • Demonstrate ability to execute work requirements in accordance with written instructions. • Exhibit deductive reasoning.	• Establish and manage time requirements for machining project completion. • Demonstrate judgment and decision making as required to organize various tasks to complete machining assignments and projects. • Determine solutions and procedures to guarantee conformance with machining tolerances and specifications. • Use self-evaluation of performance to

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		determine new approaches for personal improvement. • Exhibit the ability to analyze documentation like blueprints and machining procedures specifications and then use this knowledge to build, fabricate, and machining projects. • Accept constructive criticism from instructor and implement recommendations and/or solutions for improvement.
Communication Ability	• Demonstrate use of multiple approaches to convey information. • Demonstrate ability to follow verbal directions. • Demonstrate ability to follow written directions. • Discuss directions and methods required to complete a specific machining task. • Demonstrate use of industry specific machining terms to communicate information.	• Use a variety of strategies to convey the necessary machining information required to complete a specific machining task or project. • Discuss available alternatives and methods that may be used to accomplish the objective. • Use oral expression, reading, and writing comprehension to verify the information was received. • Use machining terms to represent information on • blueprints, projects, work orders, and machining procedure specifications.

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Interpersonal/ Intrapersonal Skills and Behavior	• Demonstrate awareness of other people's reactions and understand why they react the way they do and how you can improve the reception of your work. • Demonstrate ability to identify the nature of problems. • Demonstrate ability to collaborate with others in a group. • Demonstrate ability to maintain and control self-behavior in a group setting.	• Demonstrate respect for individual differences. • Assist peers in resolving problems or conflicts. • Respond appropriately to emergencies. • Work cooperatively within a group to achieve a goal. • Maintain appropriate self-behavior in a group and/or social environment like a classroom lecture or laboratory demonstration.
Visual Ability	• Exhibit recommended 20/20 vision -natural or corrected. • Exhibit accurate vision from 6" to 36" required. • Demonstrate ability to perform required task in both low and bright lighted environments. • Demonstrate ability to visually obtain information from technical drawings or written standards.	• Perform machining tasks from 6" to 36" with natural vision or corrected vision with contacts or glasses. • Identify visually material discontinuities and defects like: size, shape, undercut, or cracks. • Precision use of tools and measurement devices such as dial calipers, micrometers, height gages, or others using the thousandths or ten-thousandths scale. • Demonstrate ability to read detailed orthographic blueprints, symbols, and

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		machining procedure specifications.
Auditory Ability	• Demonstrate hearing ability sufficient to communicate with peers in close or far proximity. • Demonstrate hearing awareness of potentially hazardous industrial equipment. • Demonstrate ability to hear alarms, bells, sirens, and various other safety alerts. • Demonstrate ability to detect and/or identify machine tool under load and/or being strained. • Tolerate exposure to extremely noisy and loud environments.	• Communicate effectively with other machinists or peers inside of an industrial shop or in the field by voice, loud speaker, phone, and/or two-way radio. • Hear and detect safety hazards. • Hear and detect industrial equipment problems, overloading, and/or failures. • Demonstrate ability to accurately adjust machining equipment by sound. • Demonstrate ability to concentrate and perform machining duties while being exposed to an industrial noisy environment for lengthy periods of time.
Tactile Ability	• Demonstrate tactile ability sufficient for physical control of tools and equipment. • Demonstrate manual hand dexterity with repetitive precision movements and techniques. • Demonstrate ability to manually manipulate small parts less than 1/16” in diameter.	• Perform functions of physical control with various tools and equipment. • Perform repetitive machining techniques in multiple positions with both hands simultaneously. For example, loading and unloading a fixture once the part is machined.

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	• Demonstrate ability to tactically use multiple extremities simultaneously. • Demonstrate ability to use finger and hand pressure to grip various shaped objects.	• Demonstrate ability to have individual hands perform different manual functions simultaneously. One hand holding a part and the other measuring one of the part's characteristics. • Demonstrate ability to manipulate and feed small parts tactically with hands and fingers. • Demonstrate ability to perform machining operations using both hands.
Olfactory Ability	• Demonstrate ability sufficient to detect contaminant odors in the workplace. • Demonstrate ability to detect gas leaks. • Exhibit identification ability when working with chemicals, solvents, and petroleum-based liquids. • Demonstrate ability to detect various burning materials. • Demonstrate ability to detect electrical and/or burning synthetic materials.	• Detect hazardous and/or objectionable machining fumes. • Detect specific flammable leaks in a machine shop environment. • Detect various burning materials. • Detect smells that represent a potential hazard such as smoke from a fire or burning electrical equipment and/or synthetic materials. • Tolerate the normal smells and fumes produced by machining processes with or without

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		coolants.
Strength and Mobility	• Demonstrate sufficient physical strength, mobility, and body positions to perform industrial metal fabrication, machining and cutting operations, including: standing, sitting, bending, crouching, kneeling, pushing and pulling, twisting, working overhead or working on the ground. • Demonstrate ability to push and pull industrial equipment up to 300 lbs. • Demonstrate ability to lift 50 lbs. from the ground to the overhead position. • Demonstrate ability to pick up and carry industrial building materials like: steel pipe, tube, angle, channel, and flat bar weighing up to 100 lbs. with assistance. • Demonstrate ability to lift, and move heavy metal projects and/or structures manually or by chain fall, come-along, cables, straps, ropes, etc.	• Perform machining and cutting tasks requiring standing, sitting, bending, crouching, kneeling, pushing and pulling, twisting, working overhead and/or working at ground level. • Machining and cutting operations requiring repetitive movements of the arms, hands, wrists, and feet. Demonstrate the ability to perform these duties in uncomfortable positions for long periods of time while working with heavy tools, and equipment. • Demonstrate ability to lift raw material parts weighing 50 lbs. from the floor up to a machine table usually at waist height. • Demonstrate ability to pick up and carry structural steel materials (pipe, plate, tube, angle, flat bar etc.) and/or industrial equipment weighing up to 100 lbs. with assistance. • Demonstrate ability to work in numerous positions from on the ground to overhead as well as over, under, and around parts, projects and/or structures.

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Motor Skills	• Demonstrate physical abilities including: standing, sitting, walking, stooping, crawling, reaching, squatting, lifting, and bending. • Exhibit full range-of-motion of all extremities. • Demonstrate balance sufficient to conduct precision repetitive movements. • Demonstrate ability to keep balance and equilibrium when in various physical positions. • Demonstrate ability to perform controlled accurate movements, motor skills, and techniques with both hands and both arms independently and/or simultaneously.	• Demonstrate ability to perform physical machining operations in an industrial laboratory while wearing all required personal protective equipment. • Demonstrate ability to perform various machining and cutting tasks while the body is in an awkward and/or uncomfortable position. • Demonstrate ability to perform repetitive physical movements and motor skills intermittently and/or continuously for extended periods of time. • Demonstrate ability to continuously improve and further develop manual motor skills and machining techniques. • Demonstrate ability to develop and refine manual dexterity motor skills to implement various machining techniques required to produce acceptable parts.
Physical Endurance	• Demonstrate sufficient physical endurance to complete assigned industrial work and/or machining projects. • Demonstrate ability to work with hands and arms extended	• Sit and/or stand for up to 8 hours a day with arms extended to waist level, face level and/or overhead

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	overhead or below the waist for long periods of time. • Demonstrate ability to perform manual activities with industrial equipment for extended periods of time. • Demonstrate ability to work long extended overtime hours including weekends. • Demonstrate physical endurance to perform machining work duties in arduous environments like when ambient temperatures exceed 100° F.	positions while performing machining operations. • Make repetitive motions (machining techniques) for several hours with the hands, wrists, arms, and feet. • Perform manual operations for extended periods of time. • Operate and control CNC machines working at up to 10,000 RPM. • Perform machining and cutting operations for up to 8 hours while wearing all required personal machining safety equipment while utilizing and working with machining equipment. • Perform strenuous machining and cutting activities in adverse conditions and environments that may be hot, cold, dusty, windy, noisy, and/or in direct sunlight
Environmental Tolerance	• Demonstrate ability to function safely in an industrial laboratory environment. • Demonstrate ability to work inside for extended periods of	• Adapt and work in congested areas and/or confined spaces like a small machining or inspection area.

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	time. • Tolerate exposure to industrial equipment and other potentially hazardous equipment like forklifts, manlifts, overhead cranes, iron workers, shears, saws, and grinders.	• Perform machining tasks and work in hot, dusty, noisy and/or highly ventilated forced air environments. • Tolerate odors and fumes associated with machining and cutting operations with various coolants. • Work indoors while wearing full protective machining safety equipment. • Tolerate exposure to an environment that contains industrial hazards like: heavy parts and metals, flammable gasses, sharp objects, metal saws, grinders, hydraulic and • electrical equipment.

Disability Statement:

If you have a disability or acquire one, you may be entitled to receive support services and/or accommodations intended to assure you an equal opportunity to participate in, and benefit from, the program. Reasonable accommodations for students with disability related needs will be determined on an individual basis taking into consideration the standards and essential skills which must be performed to meet the program objectives. To receive more information or to apply for services, please contact the Center for Access and Disability Services (CADS) at (562) 8602451 ext. 2335 or (562) 274-7164 (VP), or visit them in the Santa Barbara Building. All prospective and current Machine Tool Technology students must be able to meet these standards with or without reasonable accommodations.

Cerritos College is committed to providing an educational environment that is free from discrimination and harassment. We do not discriminate on the basis of race, color, national origin, sex, disability, age, or any other characteristic protected by law in any of our programs or activities. For more information regarding our policies, please contact our Director, Compliance, Diversity, & Title IX Coordinator at https://www.cerritos.edu/hr/

All career technical education (CTE) opportunities will be offered regardless of race, color, national origin, sex, or disability.

Compliance with Title IX and Section 504/Title II are the responsibility of the District's Director of Diversity, Compliance, & Title IX.

Human Resources
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