**DACUM Chart for MECHANICAL PRODUCTION TECHNICIAN Level 5**

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| **DUTIES** | **TASKS** | | | | | | |
| **BASIC COMPETENCIES** | | | | | | | |
| **A**  **DEMONSTRATE COMMUNICATION SKILLS** | A1  Meet communication needs of clients and colleagues | A2  Contribute to development of communication strategies | A3  Conduct interviews | A4  Facilitate group discussion | A5  Represent the organization |  |  |
| **B**  **DEMONSTRATE DIGITAL LITERACY** | B1  Identify computer software and hardware | B2  Apply security measures to data, hardware, software in automat environment | B3  Apply computer software in solving basic tasks | B4  Apply internet and email in communication at workplace | B5  Apply Desktop publishing in official assignments | B6  Prepare presentation packages |  |
| **C**  **DEMONSTRATE ENTREPRENEURIAL SKILLS** | C1  Develop business innovation strategies | C2  Develop new product/markets | C3  Expand customers and product lines | C4  Motivate staff/workers | C4  Expand employed capital base | C6  Undertake county/regional business |  |
| **D**  **DEMONSTRATE EMPLOYABILITY SKILLS** | D1  Develop self-awareness and understanding of every day demands and challenges in the workplace | D2  Demonstrate critical safe work habits for employees in the workplace | D3  Lead a workplace team | D4  Plan and organize work | D5  Maintain professional growth and development in the workplace | D6  Demonstrate learning, creativity and innovativeness in the workplace |  |
| **E**  **DEMONSTRATE ENVIRONMENTAL LITERACY** | E1  Control environmental hazard | E2  Control environmental Pollution | E3  Demonstrate sustainable resource use | E4  Evaluate current practices in relation to resource use | E5  Identify environmental legislations/conventions for environmental concerns | E6  Implement specific environmental programs | E7  Monitor activities on environmental protection/programs |
|  | E8  Analyze resource use | E9  Develop resource Conservation plans |  |  |  |  |  |
| **F**  **DEMONSTRATE OCCUPATIONAL SAFETY AND HEALTH PRACTICES** | F1  Identify workplace hazards and risk | F2  Implement control measures to hazards and risks | F3  Implement OSH programs, procedures and policies/ guidelines |  |  |  |  |
| **COMMON COMPETENCIES** | | | | | | | |
| **A**  INTERPRET TECHNICAL DRAWINGS | A1  Use drawing instrument, and materials | A2  Interpret plane geometry drawings | A3  Interpret solid geometry drawings | A4  Interpret orthographic and pictorial drawings | A5  Produce assembly drawings | A6  Perform Computer Aided Drafting |  |
| **B**  **USE COMMON METALLIC AND NON-METALLIC MATERIALS** | B1  Identify properties of engineering materials | B2  Identify ore extraction processes of metallic materials | B3  Identify methods of producing engineering materials | B4  Perform heat treatment | B5  Prevent material corrosion |  |  |
| **C**  **PERFORM BENCH WORK OPERATIONS** | C1  Observe safety rules and regulations | C2  Plan work operations | C3  Mark out dimensions on work pieces | C4  Set up work pieces on holding devices | C5  Use hand tools | C6  Use power tools, machines and equipment | C7  Assemble metal parts and sub-assemblies |
|  | C8  Inspect finished work | C9  Maintain hand tools and equipment | C10  Perform housekeeping | C11  Prepare job reports |  |  |  |
| **D**  **APPLY ENGINEERING MATHEMATICS** | D1  Apply algebra | D2  Apply co-ordinate geometry | D3  Apply trigonometric functions | D4  Carry out mensuration | D5  Apply statistics | D6  Apply matrices | D7  Apply vectors |
| **E**  **APPLY MECHANICAL SCIENCE PRINCIPLES** | E1  Determine forces in a system | E2  Demonstrate understanding of moments of forces | E3  Demonstrate understanding of friction | E4  Demonstrate motion concepts in engineering | E5  Apply concepts of work, energy and power | E6  Perform machine calculations | E7  Demonstrate understanding of gas principles |
|  | E8  Apply concepts of heat | E9  Apply density principles | E10  Apply pressure principles |  |  |  |  |
| **F**  **APPLY ELECTRICAL SCIENCE PRINCIPLES** | F1  Apply basic concept of electrical quantities | F2  Use the concepts of D.C and A.C circuits in electrical installation | F3  Use basic electrical machines | F4  Perform earthing in Electrical installations | F5  Apply lightening protection measures |  |  |
| **CORE COMPETENCIES** | | | | | | | |
| **A**  **FABRICATE SHEEET METAL PARTS** | A1  Observe safety rules and regulations | A2  Use sheet metal machines, tools and equipment | A3  Plan work operation | A4  Mark out work pieces | A5  Set- up sheet metal machine and equipment | A6  Fabricate sheet metal component(s) according to specifications | A7  Assess quality of fabricated component(s) |
|  | A8  Maintain sheet metal machines, tools and equipment | A9  Perform housekeeping | A10  Prepare job reports |  |  |  |  |
| **B**  **PERFORM GRINDING OPERATIONS** | B1  Observe rules and regulations | B2  Identify machine parts, accessories and their functions | B3  Identify types of grinding wheels | B4  Prepare work operation plan | B5  Set up the grinding machine | B6  Perform grinding operations | B7  Assess quality of finished work |
|  | B8  Maintain the grinding machine | B9  Perform Housekeeping | B10  Prepare job report |  |  |  |  |
| **C**  **PRODUCE PARTS ON THE LATHE MACHINE** | C1  Observe safety rules and regulations | C2  Identify machine parts, tools, accessories and their functions | C3  Prepare operations plan | C4  Mount work piece | C5  Perform machining to specifications | C6  Assess quality of finished work | C7  Maintain machine tool and accessories |
|  | C 8  Perform house keeping | C8  Prepare job report |  |  |  |  |  |
| **D**  **PRODUCE COMPONENTS ON A MILLING MACHINE** | D1  Observe safety rules and regulations | D2  Identify machine parts, tools, accessories and their functions | D3  Plan work operations | D4  Mark out work piece | D5  Set up milling machine tool for a specific operation | D6  Perform machining to specifications | D7  Assess quality of finished work |
|  | D8  Maintain machine tool and accessories | D9  Perform housekeeping | D10  Prepare job report |  |  |  |  |

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| **General knowledge and skills** | **Worker Behaviour** |
| **Knowledge on**   * Occupational Health and Safety Act of Kenya laws 2007 with focus on personal safety, machine safety and workplace * National Environment Management Authority Act, Kenya 2004 * Equipment manuals * Basic technical drawing complying to ISO, ANSI & BS standards * ISO 1101 Geometrical tolerance and where to use the norm * Work Planning and documentation * Measuring tools * Hand tools * Bench work * Portable and bench drilling machines * Inspection and quality control * Preventive maintenance of machine tools * Metal cutting technology * Materials and metallurgy * WIBA act (2007) * Report writing * Sheet metal development * Transmission systems * Joining methods (bolts, screws, rivets, seams, soldering, brazing and welding [gas and MMAW welding]) * Cutting, bending, and rolling machines * Drilling, and punching machines,drills and punches * Use of the Guillotine, bending and rolling machines * Production of holes in sheet metal * Safety practices and procedures * Fasteners * Joining methods and techniques * Methods of marking out * Procedure for safe disposal of waste materials   **Skills in**   * Communication skills * Problem solving * Data collection and analysis * Use of tools and equipment * Basics on mechanical maintenance * Use of test and measuring instruments * Organisation * Interpreting and following information on written job instructions, manufacturer specifications, standard operating procedures, charts, lists, reports and other applicable reference documents * Interpreting layout drawings and specifications * Checking and clarifying information * Reporting – oral/written * Planning and sequencing tasks * Measuring to specified tolerances * Performing numerical operations, geometry and engineering calculations/formulae within unit's scope * Creativity and innovation * Use of tools and equipment * Technical drawing * Installation and fabrication * Welding * Material testing * Weld inspection * Weld positions * Non-destructive testing (NDT) * Destructive testing (DT) * Sheet metal development * Soldering * Seaming * Riveting * Bolting * brazing * Use of the Guillotine, bending and rolling machines * Use of hand tools to cut, fold and form sheet metal * Production of holes in sheet metal * Using portable and bench drilling machines | * Attentive to detail * Focused * Integrity * Honesty * Assertive * Team player * Creativity * Time conscious * Self-motivated * Work ethics * Accountability |
| **Future Trends and Concerns:** | |
| **Future trends**   * Technological advances * Self-training * Automation of systems * Vision 2030 * Robot technology * Cloud computing * Mobile computing   **Concerns**   * Self-training * Environmental concerns * Safety and health concerns * Disposal concerns * Technological advances * Artificial intelligence | |