

ELECTRO MECHANICAL TECHNOLOGY

Competency Standards

National Vocational
Certificate Level 1

Version 1 - December 2014



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Authors

Engr. Ghazanfar Abbas (Senior Manager Curriculum, PVTC)
Mr. Maqsood Ahmed (Senior Instructor, VTI Green Town)

Responsible

Director General Skills Standard and Curricula, National Vocational and Technical Training Commission
National Deputy Head, TVET Reform Support Programme, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

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Competency Standards: Electro Machine Technician (Helper) - Level 1

Competency Standard A: Maintain safety, health and cleanliness

Overview: This competency standard is intended to maintain health, safety and cleanliness in a variety of contexts. People holding credit for this competency standard are able to: Identify risks in the workplace; follow cleanliness procedures to control risks; apply safe work procedures; and follow emergency procedures.

Competency Unit	Performance Criteria	Knowledge and Understanding
A1: Identify risks in the workplace	P1- Identify and report health and safety hazards, and hygiene risks P2- Take action to reduce risk	K1- Types of hazards and risks in different workplace context K2- Risk control and assessment
A2: Follow cleanliness procedures to control risks	P1- Apply workplace cleanliness procedures P2- Handle and store items and materials	K1- Personal and workplace hygiene K2- General handling and storing procedures
A3: Apply safe work procedures	P1- Identify, use and store personal protective equipment P2- Interpret safety signs and symbols	K1- Common personal protective equipment K2- Common safety signs and symbols
A4: Follow emergency procedures	P1- Identify and report to appropriate personnel P2- Carry out evacuation procedures	K1- Emergency and evacuation procedures K2- Types of fire

Competency Standard B: Communicate in different work contexts

Overview: This competency standard is intended to apply basic communication skills in a variety of work contexts. People holding credit for this competency standard are able to: Gather, convey, and receive information; apply routine face-to-face communication; apply visual communication; and complete relevant work related documents.

Competency Unit	Performance Criteria	Knowledge and Understanding
B1: Gather, convey and receive information	P1- Gather, receive and respond verbal and written actions P2- Convey instructions P3- Clarify understanding by asking questions	K1- Types of verbal and non-verbal messages K2- Purpose and function of communication devices K3- Question techniques
B2: Apply routine face-to-face communication	P1- Receive and follow routine instructions P2- Carry out procedures according to requirements P3- Access and interpret information from a range of sources P4- Complete verbal and/or written reporting	K1- Purpose of instructions K2- Purpose of set requirements K3- Different types of sources K4- Purpose of reporting; Types of reports
B3: Apply visual communication	P1- Obtain and acknowledge attention of communicating parties P2- Clarify and confirm the intention of visual communication	K1- Methods of official correspondence K2- Visual communication skills
B4: Complete relevant work related documents	P1- Complete range of forms P2- Complete job cards	K1- Examples of work forms and their purpose K2- Purpose of job cards

Competency Standard C: Apply a problem solving method

Overview: This competency standard is intended to apply a problem solving method in a variety of contexts. People holding credit for this competency standard are able to: Define a problem; choose a method for solving an identified problem; and apply the problem solving method.

Competency Unit	Performance Criteria	Knowledge and Understanding
<p>C1: Define a problem</p>	<p>P1- Define problem in terms its nature, parties involved, and the effects it may have</p> <p>P2- Describe the problem in terms of ownership, responsibility, its sphere of influence and authority</p>	<p>K1- Problem solving methods:</p> <ul style="list-style-type: none"> • Brainstorming • Pros and cons • IDEAL • Research
<p>C2: Choose a method for solving an identified problem</p>	<p>P1- Describe problem solving method in terms of processes to be undertaken</p> <p>P2- Select and describe problem solving method in terms of its suitability</p>	<p>K1- Problem solving methods:</p> <ul style="list-style-type: none"> • Brainstorming • Pros and cons • IDEAL • Research
<p>C3: Apply the problem solving method</p>	<p>P1- Apply chosen method</p> <p>P2- Describe the outcome of the problem</p> <p>P3- Implement a conclusion to the problem</p>	<p>K1- Problem solving methods:</p> <ul style="list-style-type: none"> • Brainstorming • Pros and cons • IDEAL • Research

Competency Standard D: Apply basic reading, writing and speaking skills in English in different life contexts

Overview: This competency standard is intended to assist people in applying basic reading, writing and speaking skills in English in different life contexts. People holding credit for this competency standard are able to: read texts used in different contexts; write texts for different contexts; and apply speaking and listening skills.

Competency Unit	Performance Criteria	Knowledge and Understanding
<p>D1: Read texts used in different contexts</p>	<p>P1- Identify and interpret the purpose of text</p> <p>P2- Identify and interpret main ideas and/or key procedures in the text</p> <p>P3- Identify and interpret the meaning of key words and phrases in the text</p> <p>P4- Express opinions on the text or on its subject matter in a clear and simple manner</p>	<p>K1- Importance of written texts</p> <p>K2- Importance of correct interpretation of texts</p> <p>K3- Key words and key phrases</p> <p>K4- Explanation of text in a variety of contexts</p>
<p>D2: Write texts for different contexts</p>	<p>P1- Use clear and simple English on familiar subjects</p> <p>P2- Apply planning, drafting and editing processes</p> <p>P3- Apply correct and coherent sequence and structure of information and/or ideas</p> <p>P4- Achieve reasonable comprehension of written text through correct spelling, punctuation, and use of grammar</p>	<p>K1- Methods of simple English writing</p> <p>K2- Planning, drafting, and editing processes</p> <p>K3- Summarising and paraphrasing of informed action</p> <p>K4- Principles of English grammar</p>
<p>D3: Apply speaking and listening skills</p>	<p>P1- Identify and interpret key points</p> <p>P2- Convey information in a clear and concise manner</p> <p>P3- Use speaking and listening skills effectively</p>	<p>K1- Speaking and listening skills</p> <p>K2- Speaking and listening skills</p> <p>K3- Speaking and listening skills</p>

Competency Standard E: Apply basic numeracy skills in different life contexts

Overview: This competency standard is intended to assist people in applying basic numeracy skills in different life contexts. People holding credit for this competency standard are able to: Apply knowledge and conventions of common shapes to represent real life objects; Measure materials or objects; perform basic calculations associated with money, and time; use and create tables and graphs to represent and interpret public information; and apply simple formulae to solve arithmetic problems in real life contexts.

Competency Unit	Performance Criteria	Knowledge and Understanding
E1: Apply knowledge and conventions of common shapes to represent real life objects	P1- Identify and name common two and three-dimensional shapes P2- Represent two and three-dimensional shapes and objects in diagrammatic form P3- Assemble simple three-dimensional objects	K1- Types and terminology of common shapes K2- Differentiation between two and three dimensional shapes / objects K3- Differentiation between two and three dimensional shapes / objects
E2: Measure materials or objects	P1- Identify and use measuring instruments P2- Apply simple formulae to calculate area and volume of regular shapes	K1- Types and purpose of measuring instruments K2- Units of measurement and abbreviations
E3: Perform basic calculations associated with money, and time	P1- Perform simple calculations involving time P2- Convert fractions, decimals, and percentages P3- Perform simple calculations involving money	K1- Rounding techniques K2- Types of fractions K3- Rounding techniques
E4: Use and create tables and graphs to represent and interpret public information	P1- Identify and interpret key features of everyday tables and graphs P2- Collect, sort and record data in a table P3- Construct and label simple graphs	K1- Different types of tables and graphs K2- Preparation of basic data, tables & graphs K3- Meaning of graphs, such as increasing, decreasing, and constant value
E5: Apply simple formulae to solve arithmetic problems in real life contexts	P1- Use simple formulae and algebraic expressions P2- Verify solutions to simple arithmetic problems	K1- Interpretation of simple formula & algebraic expression K2- Arithmetic problems and solutions

Competency Standard F: Demonstrate positive workplace attitude and behaviours

Overview: This competency standard is intended to assist people in developing a positive attitude and behaviour in a work environment. People holding credit for this competency standard are able to: Apply knowledge of positive workplace attitude and behaviours; interact with people in the context of a work environment; and assess own professional behaviour in a work environment setting.

Competency Unit	Performance Criteria	Knowledge and Understanding
F1: Apply knowledge of positive workplace attitude and behaviours	P1- Describe proper dress code in a work environment P2- Demonstrate positive listening skills P3- Explain the concept of work ethic	K1- Acceptable and unacceptable dress code K2- Positive listening strategies K3- Responsibility and accountability of the individual
F2: Interact with people in the context of a work environment	P1- Describe the importance of first impression P2- Demonstrate interaction with people in a work environment setting P3- Explain good customer service practice P4- Demonstrate ways of behaving professionally when provoked P5- Explain the importance of confidentiality	K1- Grooming, Attire K2- Ways of greeting, introducing and interacting with people K3- Define customer service K4- Patience and tolerance K5- Confidentiality of: <ul style="list-style-type: none"> • Information • Material • Documents
F3: Assess own professional behaviour in a work environment setting	P1- Analyse personal behaviour in three different situations in a work environment P2- Measure personal behaviour against personal or company standards	K1- Influencing factors in personal behaviour, e.g. <ul style="list-style-type: none"> • Anger • Stress • Depression K2- General code of conduct

Competency Standard G: Carry out maintenance procedures as Electro Machine Technician (Helper)

Overview: This competency standard is intended to carry out maintenance procedures. People holding credit for this competency standard are able to: Demonstrate knowledge of preventive maintenance; carry out a preventive maintenance programme; and demonstrate safe working procedures.

Competency Unit	Performance Criteria	Knowledge and Understanding
G1: Demonstrate knowledge of preventive maintenance	P1- Define 'preventive maintenance' P2- Explain the importance of maintenance	K1- Preventive and corrective maintenance K2- Safety; Efficiency; Time- and cost saving
G2: Carry out a preventive maintenance programme	P1- Explain preventive maintenance programmes P2- Follow preventive maintenance programme	K1- Scheduled maintenance K2- Maintenance of: <ul style="list-style-type: none"> • Tools • Equipment • Machinery • Facilities
G3: Demonstrate safe working procedures	P1- Wear personal protective equipment P2- Adhere to documented maintenance procedures	K1- Types of personal protective equipment K2- Types of documents

Competency Standard H: Produce a plan for career options related to an Electro Machine Technician

Overview: This competency standard is intended to assist people in planning for their career by developing an own plan for future directions. People holding credit for this competency standard are able to: Gather information for a personal profile; and produce a plan for achieving future directions.

Competency Unit	Performance Criteria	Knowledge and Understanding
<p>H1: Gather information for a personal profile</p>	<p>P1- Gather information relevant to own future directions decision-making</p> <p>P2- Identify options compatible with personal profile</p> <p>P3- Investigate sources of current career information in terms of planning for future directions</p> <p>P4- Select information sufficient and relevant to the identified options in terms of producing a plan for future directions</p> <p>P5- Prioritise and justify options on the basis of gathered information</p>	<p>K1- Analysis of own knowledge, skills, and abilities</p> <p>K2- Description of personal profile and compatible options</p> <p>K3- Methods of research work</p> <p>K4- Recognition of best available options</p> <p>K5- Methods of prioritising the options</p>
<p>H2: Produce a plan for achieving future direction</p>	<p>P1- Produce a plan using identified information sources</p>	<p>K1- Career guidance plan</p>

Documents, policies, guidelines:

- International Labour Organisation (ILO) Standards on Occupational Health and Safety
- Pakistan Electricity Act, 1910 and subsequent amendments
- Institute of Electrical and Electronics Engineers Standards Association (IEEE-SA)
- Industry code of practice

Tools and Equipment:

No.	Description	Quantity
1	Safety signage	Multiple
2	Personal protective equipment	15 sets
3	Hand tools (basic electrical toolbox)	15 sets
4	Measuring instruments (Rulers, watches/clocks, scales, thermometer, AVO meter, gravity meter)	20
5	Two- and three dimensional shapes / objects	Multiple
6	Text books	as per required
7	Reference books (Manufacturer's specification, Installation guides, Workplace documents)	10
8	Visual aids, demonstration models	as per required

Consumables:

No.	Description	Quantity
1	Fire extinguisher	3
2	Fire blanket	3
3	Fire bucket	3
4	Computer	8
5	Printer	1
6	Scanner	1
7	Multimedia Projector	1
8	Flip chart with stand	3
9	Internet connection	1

National Vocational and Technical Training Commission (NAVTTTC)

 5th Floor Evacuee Trust Complex Sector F-5/1, Islamabad.

 +92 51 9044 04

 +92 51 9044 04

 info@navttc.org

 www.navttc.org