

Specification of Competency Standards
for the Manufacturing Technology Industry
Unit of Competency

Functional Area - Product Design and Development

Title	Select and apply conventional metal materials, metal composites and other new materials
Code	106476L4
Range	This unit of competency is applicable to the design and development departments of metal products manufacturing industry. Practitioners should be capable to be familiar with the types, characteristics and applications of all kinds of materials, so as to select suitable materials for the products
Level	4
Credit	3 (For Reference Only)
Competency	<p>Performance Requirements</p> <ol style="list-style-type: none"> 1. Understand the types, characteristics and applications of all kinds of metal materials <ul style="list-style-type: none"> • Understand the mechanical properties of the commonly used metal materials and metal composites, such as strength, toughness, ductility, hardness, coefficient of elasticity, fatigue, high temperature strength, creep resistance and abrasion resistance • Understand the physical properties of the commonly used metal materials and composites materials, such as density, specific heat, melting point, thermal expansively, thermal conductivity, electrical conductivity and magnetic property • Understand the commonly used chemical properties of metal materials and composite materials, such as corrosion resistance, oxidation resistance, toxicity and flammability • Understand the fabric ability of the commonly used metal materials and composite materials, such as castability, forgeability, bendability, machinability and weldability • Recognise the characteristics and application of all kinds of new metal materials, such as magnesium, titanium, amorphous metal and earth alloy 2. Select and apply conventional metal materials, metal composites and other new materials <ul style="list-style-type: none"> • Apply all kinds of materials database which is on the market, collect, analyse and apply relevant information of materials • Select the commonly used metal materials, metal composites and other new materials which are suitable for lab verification • Under the principle of cost control, apply all kinds of new metal and composite materials to enhance the function and value of metal products • In response to the customer's requirements, including function, assembly, safety and surface treatment, select and apply suitable metal materials, composite materials or other new materials • With the concept of environmental design and manufacture, select and apply suitable metal materials, composite materials or other new materials 3. Professional handling of selection and application of all kinds of materials <ul style="list-style-type: none"> • Detailedly consider elements such as safety, risk, productivity, quality, environmental protection and cost, select and apply conventional metal materials, metal composites and other new materials and meet all aspects of requirements
Assessment Criteria	<p>The integrated outcome requirements of this unit of competency are:</p> <ul style="list-style-type: none"> • Capable to describe and analyse the mechanical properties, physical properties, chemical properties and application of different types of commonly used metal material, composite materials and other new materials, • Capable to collect, analyse and apply the relevant materials information on the market and international information of metal coding
Remark	